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Edited by Marcelo Ambrosio and Carlo Vezzoli

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CONTENTS

VOLUME 3 (paper in this volume)

6. DESIGN FOR SUSTAINABLE CULTURAL AND BEHAVIORAL CHANGE

8. DESIGN FOR SUSTAINABLE TECHNOLOGIES AND RESOURCES

VOLUME 1

2. PRODUCT-SERVICE SYSTEM DESIGN FOR SUSTAINABILITY

VOLUME 2

4. SYSTEM AND CIRCULAR DESIGN FOR SUSTAINABILITY

VOLUME 4

9. ARCHITECTURAL AND INTERIOR DESIGN FOR SUSTAINABILITY

EMPATHY SQUARE: AN AID FOR SERVICE DESIGN FOR BEHAVIOUR CHANGE TO SUPPORT SUSTAINABILITY

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ABSTRACT

Service Design for sustainability requires an integrative intertwined approach for interventions addressing economic, environmental, and social concerns. These design interventions are socio-technical in nature where human beings play a crucial role. To contribute to the larger cause of sustainability, people may have to change their behaviour according to a complex pattern: behaving in a desirable manner once, for a short duration and eventually sustaining the behaviour for a long time. Inducing behaviour change in people often poses an ethical dilemma. Assuming that services trigger new behaviours, designers need to achieve a delicate balance between the concerns of the service-user, human-touchpoints (service staff), service organization and the society or environment as a whole in order to foster more sustainable habits. When designers attempt to address the concerns of all these four stakeholders represented as the Empathy Square, it enables them to facilitate a balanced and ethically appropriate service design solution.

Key Words: Sustainability, Service Design, Behaviour change, Empathy Square

1. INTRODUCTION

Service Design for sustainability requires a human-centric, holistic and integrative approach that balances the individual's perspective and the larger economic, environmental, and social concerns. The design interventions are socio-technical in nature in which human beings play a crucial role. To contribute to the cause of sustainability, people often need to change and align their behaviours to sustainability goals. They may have to adopt a new behaviour, increase desirable behaviour, decrease and eventually cease current undesirable behaviour, or sometimes balance between the two equally desirable behaviours. These behaviour changes would typically progress as one time, initial behaviour change, a continuation of the changed behaviour for a short duration of time and eventually sustaining the behaviour for a long period of time (Fogg, 2009). Considering the noble cause of sustainability, people would progress from being unaware of the needs and suitable behaviours to become the advocates of the intended, desirable behaviour change.

Induced behavioural change often poses an ethical dilemma for designers because there is no universal truth about what is ethical and what is not. Instead, an ethical approach is considered as the act of making conscious and deliberate decisions addressing concerns of all stakeholders in a particular context (Acaroglu, 2019). It becomes challenging for service designers to select the consequential ethics approach i.e. maximise the best outcome for the most people or deontological ethics approach i.e. do the right thing using whatever is current 'rightness' (Acaroglu, 2019). Considering the subjectivity associated with the ethical dimensions of human behaviour, it becomes challenging for service designers to coincide both ethical approaches to initiate and facilitate design interventions. This paper explains how to navigate through this ethical dilemma by balancing the concerns of multiple major stakeholders while designing services for sustainability.

1.1. Sustainability from a social, economic and environmental perspective

Several researchers define sustainability as an interconnection between three pillars – environmental sustainability, economic sustainability and social sustainability (Elkington, 1997). Environmental sustainability is the process of maintaining a balanced environment by considering factors like conservation of natural resources and environmental protection among others on a long-term basis. Social sustainability aims at creating healthy and liveable communities both for current and future generations. Economic sustainability aims at having long lasting and fair activities. Overall, sustainability is a broad area of research aiming at design, development, and use of resources in the environment to ensure a balance between meeting the current and futures needs, while achieving social justice. Achieving sustainability requires intricate attention and conscious efforts towards the design and development of products and services. It involves a holistic approach considering technologies, change in human behaviour, man-made architectures, consumption of natural resources, and so on.

Environmental and social sustainability related problems are rooted in human behaviour. For example, the way we consume natural resources might lead to scarcity of that resource in future or the way we use products (e.g. vehicles) for our convenience might lead to unsafe (polluted) environments for our future generations. To achieve and to maintain environmental and social sustainability, individuals can contribute significantly by promoting sustained behaviour that can contribute to a greater cause (Abusafieh & Razem, 2017). Therefore, there is a need to examine the role of human behaviour while designing sustainability-driven solutions. It is well established that design interventions influence user behaviour and hence, designers have the potential to consciously design products, services, and systems with an intent to change people's behaviour. While cultivating human values and socially desirable behaviours, designers need to understand the human-environment dynamics in promoting pro-environmental behaviour for users.

1.2. Holistic and Integrative Service Design

Designing services that evolve over time through a sequence of events, is a user-centric activity of orchestrating people, infrastructure and communication as an integrative socio-technical system (Bitner, Ostrom, & Morgan, 2008) (Fensel, Facca, Simperl, & Toma, 2011). Service Design provides a holistic approach while solving problems, by leveraging trans-disciplinary collaborations. It encompasses the design of all human-human and human-machine interactions involved in the service. It also focuses on the service environment and the service experiences, by dealing with the emotions and values of humans along with the functionality of the service in a given context. Design in general and Service Design in particular can definitely shape user's behaviour and facilitate to maintain it for a long period. When a service user is using the service for a certain duration, the behaviour of an individual or within a group is influenced by the designed product-service systems. Changing or shaping an individual's behaviour, eventually after a certain time, is a starting point towards the change at a wider level e.g. societal level.

Users of today have an abundance of choices of products and services. Service providers find challenges in being a differentiator in the market and sustaining their users. Value creation through impactful service experiences is the locus of service-providing organizations today. Traditionally, it was a common assumption that organizations can solely design, develop, and sell products and services with little or no interference from their users. This assumption is slowly fading away and the need for value co-creation is becoming more prominent, wherein the users are actively engaged, rather than merely being passive recipients of the service. (Prahalad & Ramaswamy, 2004) (Prahlad & Ramaswamy, 2004). Value co-creation can be defined as a 'benefit

realized from the integration of resources through activities and interactions with collaborators in the customer's service network." (McColl-Kennedy, Vargo, Dagger, Sweeney , & Kasteren, 2012). Co-creation of value is heavily based on the interactions between the user and the provider, of which the basic components have been identified as dialog, access, transparency, relationship, and some others. (Prahlad & Ramaswamy, 2004) (Hansemark & Albinsson, 2004), Along with the service users, human touchpoints i.e. service staff involved in service, play a crucial role in enabling the value co-creation for a user.

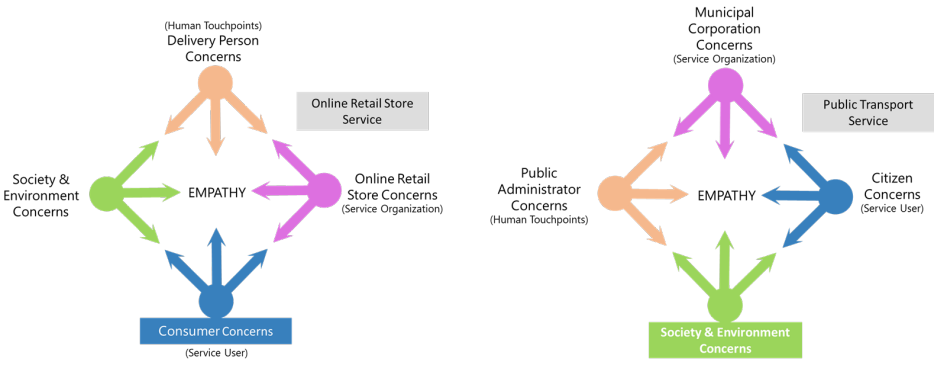
2. ROLE OF BUSINESSES AND CORPORATIONS IN SUSTAINABILITY

Every human being is responsible for shaping a sustainable ecosystem. Individuals, group of individuals, businesses, and government organizations share an active responsibility in crafting and enabling activities that create a symbiotic and sustainable tomorrow. With the increasing rate of climate change affecting the global landscape, it's imperative to include sustainable design as an integral part of business models and state policies. The transformational era of higher automation and interconnectedness in industries compel the later to initiate sustainable design not as a separate corporate social responsibility but as a core to every industrial activity by leveraging on smart solutions that facilitates long term relationship rather than one term consumerism. The movement towards being empathetic towards society and environment as part of the business planning and not as a separate corporate social responsibility i.e. CSR initiative is now evident in organizational practices. It is a right time to adopt social and environmental responsibility through each and every corporate action.

3. EMPATHY SQUARE

Design for sustainability is not just a human-centered design approach but an ecosystem-based holistic design attitude which enables rich symbiosis between the stakeholders constituting the ecosystem. The stakeholders can be majorly categorized as users, design enablers such as industry, service providers, business organizations, society, and environment (includes various flora and fauna). It is imperative that an integrative design approach for sustainability will include the perspectives, concerns, desires, and mutual-benefit of all the stakeholders. Let us take an example; Electric cars are positioned as an eco-friendly vehicle because they run on battery-stored electricity producing no poisonous smoke, minimizing air pollution for a safer environment. However, if one observes with a holistic lens, one can evidently see the amount of pollution that emerges during the manufacturing process of electric batteries that are used in the Tesla cars. Furthermore, it's worth wondering about the lifecycle of all the other materials that are used in the Tesla cars, and their possible impact on the holistic sustainability of our living ecosystem. (Tesla's Electric Cars Aren't as Green as You Might Think, 2016)

The design philosophy of Design for Circular Economy (Ellen MacArthur Foundation, 2015) enables designers to look at the complete lifecycle of products and materials and directs the design ideation from building '*consumership*' of products towards '*usership*' of the same. Circular Economy enables this paradigm shift in design ideation towards Design for Sustainability by engaging into six principles (Macarthur, 2006) namely: designing out waste, building resilience in diversity, thinking in cascades, thinking in systems, shifting to renewables, and by focusing on restoration and regeneration. There are similar examples, which emphasises on the role of service design for solving sustainability problems by unlocking value for each stakeholder in a value chain. Among the various stakeholders, service staff i.e. human touchpoints are generally getting less or no attention, which may be detrimental for sustainability. On one side, service staff plays a key role in helping service users to encourage, engage, perform and maintain the behaviours towards sustainability. On the other side, it needs are very often neglected, as the staff was not part of a wellbeing equation that is not only crucial for social sustainability, but for the overall quality of the service too (Meroni & Sangiorgi, 2011). It's the prima facie responsibility of the service organizations to take care of the social and financial wellbeing of its service staff.



[Figure 1] CraftChange – Empathy Square (Mahamuni, Khambete, & Mokashi-Punekar, 2019)

Through multiple service design for sustainability projects (Prendeville & Bocken, 2017) (Matthing, 2017) it is evident that the service design solution needs to be empathetic to the concerns of a service user, service organization, human touch points and most importantly society and environment. To achieve this and arrive at a balanced

and ethically appropriate service design solution for any kind of problems, Empathy square (Mahamuni, Khambete, & Mokashi-Punekar, 2019) as shown in figure 1 seems useful. It can enable designers, all along the design process, to focus on the ecosystemic approach, so to maintain the delicate balance between the concerns of the service-user, human-touchpoints (service staff), service organization and the society or environment. During 1970s Victor Papanek, first asserted that "*Design, if it is to be ecologically responsible and socially responsive, must be revolutionary and radical*" (Papanek, 1970).

The Empathy Square requires the design team to explicitly articulate and match, not only the concerns of the service provider and service user, but also those of the human touchpoints (the staff) and of the society and environments, as entities that have the rights to be "served" and fulfilled in order to achieve sustainability.

In case of online retail shops, to address the concerns of the service user i.e. purchasing required goods effortlessly, anywhere at an affordable cost, service organizations are providing access to the various goods at affordable rates through their websites and mobile apps to the service users leading to the increase in gross revenue. To make it affordable, the service organizations need to address the concerns of the human touchpoints that is in this case, a delivery person from a social and economic wellbeing perspective. While making it affordable to the service users, organizations should not give inadequate wages to the delivery person leading to negligence towards their social and economic wellbeing. The environmental concerns need to be taken care of, by reducing plastic usage as part of packaging and use of non-polluting vehicles to deliver the goods. For example, the iPhone ships with a biodegradable potato-starch-based shipping material rather than plastics (Sheesley, 2008). Thus addressing the concerns of all the four major stakeholders, the overall solution can be sustainable.

There is no sequence to start from a specific node of empathy square. Designers may start with a node that requires immediate attention and can act as an anchor for other three nodes as shown in figure 1. If it's a sustainability initiative, then designers may start from society and environment node and sequentially move to the other nodes. For an employee wellbeing initiative, designer can start with human touchpoint node and then balance the concerns within other nodes. It's important to be empathetic to the concerns of all four nodes while designing the services to sustain it for a longer period of time. We have used Empathy Square in multiple projects in social and business sector; and found it to be promising. It gets operationalized by addressing the concerns with an anchor node and then taking care of concerns of the other three nodes. It is a part of the larger CraftChange framework (Mahamuni, Khambete, & Mokashi-Punekar, 2019) which is achieved through multiple canvases and design enabler cards. CraftChange is Design for Behaviour change framework which has other elements such as add-on process, Current Intervention Cards for user research phase, Ignite Cards for ideation phase, Challenge Cards for validating and prioritizing ideas and Enrichment Cards for checking completeness of ideas. All these elements, along with multiple canvases, have undergone initial testing and seems promising. The work is in progress and would be reported shortly.

4. CONCLUSION

Service design, due to its holistic and long temporal nature, is a desired approach where sustainability concerns are to be addressed in a sustainable manner. It is evident that people's sustained behaviour plays a crucial role in sustainability endeavours. If service design takes care of sustainability concerns by designing for sustained behaviour change, it will contribute to a long lasting impact. Thus, business organizations can change the focus from CSR initiatives to make sustainable service design as a part of their core business strategy. Empathy Square enables the service designers to balance the concerns of multiple major stakeholders, interlinking service design, sustainability and sustained behaviour change.

With a drastic increase in awareness about sustainable actions among people, society and organizations, it is inevitable to address the concerns of all the four stakeholders consistently through actions, as part of their business. This shift from sustainability as CSR activity to becoming a crucial element of core business strategy has started, and this congruence can expedite the process. We believe that this knowledge will be helpful while designing impactful design interventions, addressing sustainability concerns.

BIBLIOGRAPHY

1. Abusafieh, S., & Razem, M. (2017). *Human Behavior and Environmental Sustainability: promoting a pro-environmental behavior by harnessing the social, psychological and physical influences of the built environmen*t. *23*, p. 2003. EDP Sciences.
2. Acaroglu, L. (2019, Jan 25). *How Design Designs Us - The Ethics of Design*. Retrieved from Disruptive Design: https://medium.com/disruptive-design/how-design-designs-us-part-3-the-ethics-of-design-ca40e33f5842

Bitner, M. J., Ostrom, A. L., & Morgan, F. N. (2008). *Service blueprinting: a practical technique for service innovation.* California management review, *50*, 66-94.

3. Elkington, J. (1997). *Cannibals with forks: the triple bottom line of twenty-first century business.* Capstone. Oxford.
4. Ellen MacArthur Foundation. (2015). *Towards a Circular Economy: Business rationale for an accelerated transition.* Ellen MacArthur Foundation.
5. Fensel, D., Facca, F. M., Simperl, E., & Toma, I. (2011). *Semantic web services.* Springer Science & Business Media.
6. Fogg, B. J. (2009). *A behavior model for persuasive design.* Proceedings of the 4th international Conference on Persuasive Technology (p. 40). ACM.

7. Hansemark , O. C., & Albinsson, M. (2004). *Customer satisfaction and retention: the experiences of individual employees. Managing Service Quality*: An International Journal, 40-57.
8. Macarthur, E. (2006). *Towards the Circular Economy*. Journal of Industrial Ecology, 4-8.
9. Mahamuni, R., Khambete, P., & Mokashi-Punekar, R. (2019). Behaviour Progression Framework for Designing Sustained Behaviour Change. In *Research into Design for a Connected World* (pp. 39-50). Springer.
10. Matthing, J. (2017). *Connected heating cabinets provide an overview of food transport*. Retrieved 02 01, 2019, from RISE: https://www.ri.se/en/our-stories/connected-heating-cabinets-provide-overview-food-transport
11. McColl-Kennedy, J. R., Vargo, S. L., Dagger, T. S., Sweeney , J. C., & Kasteren, Y. K. (2012). *Health care customer value cocreation practice styles*. Journal of Service Research, 370-389.
12. Meroni, A., & Sangiorgi, D. (2011). *Design for services*. Gower Publishing, Ltd.
13. Papanek, V. (1970). *Design for the Real World: Human Ecology and Social Change*. Academy Chicago Publishers.
14. Prahalad, C., & Ramaswamy, V. (2004). *The future of competition: Co-creating unique value with customers*. Harvard Business Press.
15. Prahlad, C. K., & Ramaswamy, V. (2004). *Co-creation experiences: The next practice in value creation*. Journal of interactive marketing, 18(3), 5-14.
16. Prendeville, S., & Bocken, N. (2017). *Sustainable business models through service design*. Procedia Manufacturing, 292-299.
17. Raar, J. (2002). *Environmental initiatives: towards triple-bottom line reporting*. Corporate Communications: An International Journal, 169-183.
18. Sheesley, J. (2008, 07 23). *Destroying the planet one iPhone at a time*. Retrieved from TechRepublic: https://www.techrepublic.com/blog/decision-central/destroying-the-planet-one-iphone-at-a-time/
19. Tesla's Electric Cars Aren't as Green as You Might Think. (2016, 03 31). Retrieved 02.10.2019, from Wired: https://www.wired.com/2016/03/teslas-electric-cars-might-not-green-think/.

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