How does it affect me? The need for empathy in a sustainable world

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1. Introduction

As the human population constantly grows, there is a subsequent increase in our consumption of natural resources. This increase in resource consumption, combined with the constantly accelerating industrial development has put a tremendous burden on the limited resources available in nature. The overconsumption of resources has resulted in several detrimental effects, both, on humans, as well as natural ecosystems, and one of the prominent effects is climate change.

While climate change is a global issue affecting everyone in the world, its effects are not experienced uniformly by everyone. For example, the United States is the second most polluting country in the world [1]; however, the 500 most polluted cities in the world do not feature any cities from the US [2]. Furthermore, cities with significantly higher population densities tend to demonstrate higher temperatures and greater levels of pollution compared to rural areas with sparse populations [3]. These differences in the source and the consequent experience of climate change present the question: ***How can those who don't fully experience the effects of climate change be motivated to make sustainable choices?***

This question was motivated by a similar cause and effect disparity observed in the outbreak and prevention of the ongoing COVID-19 pandemic. The virus was modelled to have an approximate fatality rate of 1-2% - indicating that one to two individuals out of a hundred infected individuals were likely to suffer from severe, life-threatening consequences. However, certain demographics are more likely to suffer from fatal effects compared to others [4]. These at-risk individuals comprise those above the age of 60 or those who suffer from conditions such as asthma [5], and these groups form a relatively small part of the general population. While less likely to suffer from the severe consequences, the low-risk individuals – forming a majority of the population – could still be carrying and thereby, spreading the virus. Furthermore, these carriers were also susceptible to being asymptomatic, i.e., they carry the virus while showing no symptoms of the infection themselves [6]. Therefore, several countries declared nationwide lockdowns to contain the spread of the virus, especially to the at-risk individuals. These lockdowns, however, had severe adverse economic effects such as negative oil prices [7] and the largest unemployment rates in history [8]. These adverse effects, in turn, resulted in protests by individuals who demanded to reopen the economy and these

protests had a common theme: they believed that since they were healthy and were less likely to suffer from the virus, they should be permitted to go back to work. This theme suggested a lack of empathy among healthier, low-risk individuals towards those who were at risk.

Similar to the effects of COVID-19, the effects of climate change are not experienced uniformly by everyone, and these effects do not necessarily relate to the intensity of the source of the problem. Therefore, those who do not experience the effects of climate might not be motivated to buy in into making sustainable choices, especially in the workplace. For an organization to be successful in 2035, it is crucial that its employees, especially those involved in the decision-making in areas such as engineering design and manufacturing, adopt a sustainability-focused mindset. However, this is difficult without sufficient motivation.

Individuals' empathy influences their tendency and motivation to take others' perspectives into account when taking action. Therefore, individuals who empathize with those who experience the harsh effects of climate change could demonstrate a greater motivation and propensity towards adopting sustainable measures. Motivated by this observation, I argue for the need for empathy and perspective-taking in an organization that strives to be sustainable. In the next sections, I discuss the research gaps needed to achieve this, the mode of operation for an organization that strives for sustainability, and the technologies and partnerships needed to achieve this.

2. Key Company Characteristics

As resources move towards depletion, companies must move towards incorporating sustainable design and manufacturing efforts in their product development. To achieve this, companies must integrate sustainable design and manufacturing principles and techniques, early in their design and manufacturing processes. This integration must be proactive and intentional, as opposed to the reactive measures currently in place. However, to achieve this, employees at all levels must be sufficiently motivated to adopt a mindset that emphasizes sustainability. Furthermore, employees must actively seek to address the sustainability issues both, within their own experiences, and beyond. *Therefore, a company that seeks to be sustainable in their design and manufacturing must develop a workforce that is empathic towards others' experiences in the context of sustainability.* Such an empathic workforce will enable employees to adopt a sustainability-driven mindset by looking at these issues from the perspective of those affected [9], a quality often attributed to the construct of empathy [10]. Additionally, such organizations must also work towards developing a

working environment that promotes empathic behavior, especially in the context of sustainability. Such an empathic working environment and culture requires significant efforts from all employee levels, especially from the higher-level leaders. However, to achieve this, several research challenges exist, as discussed next.

3. Research Challenges

To cultivate an empathic workforce to achieve a sustainable future, two research challenges were identified, as discussed next.

3.1. Empathy in the context of sustainability

One of the early stages of engineering design is to identify the requirements of the product, and in the case of consumer products, this stage involves understanding user needs. Researchers in product design have argued that designers who can empathize with the user are more successful in developing impactful products as they can better understand the users' needs and perspectives. Specifically, in engineering design, there is a growing body of research that demonstrates the utility of empathy towards encouraging the development of user-centered solutions and has been considered as a key step in the design thinking process [11]. For example, Surma-aho *et al.* [12] observe that individuals with high cognitive empathy are more successful in accurately understanding their users. Furthermore, they also observe that designers with higher affective empathy demonstrate higher levels of motivation to solve users' problems.

These studies provide important insights into the importance of empathy in developing user-centered designs. However, given the influence of design task contexts on designers' empathy [11], *there is a need to investigate the effect of empathy in the context of sustainability*. Such an investigation will lay the foundation for developing educational and managerial interventions that encourage a sustainability-focused mindset among designers, an observation echoed in [13]. Furthermore, addressing this gap will also help develop and effectively cultivate an environment that encourages empathy in the context of sustainability as discussed next.

3.2. Developing environments to encourage empathy

While individuals' empathic traits influence their tendencies towards perspective-taking, situational and environmental factors also affect individuals' actions. For example, organizational researchers in creativity have shown that the creative climate in organizations, characterized by

factors such as the level of challenge and freedom, influences employees' creative performance. Situational and environmental factors have also been shown to influence individuals' empathy in some contexts like biobehavioral health [14]. Therefore, organizations must strive to develop a work environment that encourages their employees to adopt an empathic mindset in the context of sustainability. This presents the need for future research to explore the role of social and environmental factors in encouraging sustainability.

4. Mode of Operation

To encourage an empathic and sustainability-focused mindset, individuals must be able to view these issues from the perspective of those who suffer from it. To achieve this, companies must encourage employees to collaborate across cultures and locations. Such collaborations will give employees the opportunity to experience some of these problems, thereby presenting the opportunity to be empathic towards these experiences. Therefore, companies must actively work towards establishing distributed, non-co-located teams comprising of individuals from different social backgrounds and geographical locations. Such collaborations with help employees develop an awareness for and empathize with the experiences of people in different parts of the world. These collaborations can be accomplished by leveraging virtual working environments and tools such as augmented and virtual reality. Furthermore, this also presents the opportunity to establish partnerships with other domains, especially the social sciences, as discussed next.

5. Need for Partnerships

Researchers in social and organizational psychology have been studying empathy in social and work settings for years. A majority of these efforts have been directed towards contexts such as gender and racial biases in the workspace, among others. Similarly, medical researchers have also studied the role of empathy in the relationship between doctors and patients. This presents the opportunity to extend findings from these domains and study them in the context of sustainability, especially in the engineering and design domains. Such efforts must also bring together researchers in sustainability, engineering and manufacturing, and social and organizational psychology, to identify potential tools and methods for encouraging sustainability-focused empathy in the workforce. In addition to furthering this area of research, such collaborations also present the

opportunity to bridge the research-practice gap between these areas and find ways to apply findings from the research into real-world applications.

6. Technologies Necessary

To facilitate employees to be empathic towards others' experiences, they must be provided with sufficient opportunities to collaborate in non-co-located teams, with teams working together across the world. To facilitate these global collaborations, several technological advancements are necessary. First, there is a need for robust collaboration tools that can facilitate seamless integration across all business operations. Several efforts are being taken to achieve this in design. For example, Zhou *et al.* [15] study the use of a virtual collaborative CAD tool where designers not co-located can work together in CAD. They observe that designers' emotional responses are influenced by communicating with virtual partners.

Similarly, researchers such as Ostrander *et al.* [16] have studied the use of virtual reality (VR) tools for design and part evaluation. This technology could be used by non-co-located teams to communicate ideas and engage in synchronous activities. Researchers in human-computer interfaces have further provided evidence to support the use of VR to encourage empathy. For example, Kleinsmith et al. [17] demonstrate that in the medical context, medical students' responses to virtual patients tend to score higher on empathy, compared to psychical patient interactions. Similarly, Shin [18] argues for the potential use of immersive VR to elicit empathic responses from individuals with high empathic traits. Similar results have been presented by Schutte and Stilinović [19], who argue for the use of immersive VR as a tool for eliciting empathic responses towards geopolitical crises such as refugees. These studies suggest the potential use of VR to expose employees to new and empathy-inducing experiences as a pathway for encouraging a mindset that emphasizes sustainability.

Therefore, companies of the future must invest sufficiently in adopting virtual collaborative tools to provide their employees with the opportunity to work in non-co-located teams. Such collaborative experiences could provide them with the opportunity to experience situations faced by others and thereby, adopt a sustainability focus by empathizing with those who experience the severe effects of climate change.

7. Conclusion

For a global enterprise to be successful in 2035, it must comprise of a workforce that demonstrates a mindset that emphasizes sustainability. Such a sustainability-focused mindset must be reinforced by developing an empathic workforce which is supported by a workspace that promotes empathy. This can be achieved through collaborative research between fields such as social and organizational psychology and engineering. Furthermore, companies must leverage technologies such as virtual collaborative tools to provide employees with the opportunity to seamlessly collaborate across the world.

8. References

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