

**Impactful Fusion: The Synergy Behind Emotional Design and Circular Economy  
for Eco-conscious Product Design**

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## **Impactful Fusion: The Synergy Behind Emotional Design and Circular Economy for Eco-conscious Product Design**

As our world becomes increasingly conscious of our growing environmental crisis, more and more people are moving towards sustainability. This expanding shift raises an important question: How does product design contribute to the creation of sustainable practices, and what are the key factors that influence its effectiveness in driving sustainable outcomes?

Appreciating the importance of product design within the context of eco-consciousness is crucial for highlighting the substantial influence that product design exerts on environmental benefits, sustainable consumption, circular economy principles, product lifecycle, innovation, and user experience. It underscores the necessity for designers to prioritise eco-conscious design principles and highlights meaningful opportunities for designers to make a positive impact on the environment while creating engaging and purposeful products for consumers. By extension, understanding the value of eco-conscious product design from a business standpoint is also relevant because it enables businesses to align their practices with environmental goals, meet consumer demands, enhance their brand reputation, comply with industry standards, and contribute to a more sustainable future.

But first, what does product design mean in today's modern world? Product design encompasses much more than the physical appearance of objects. Traditionally associated with items such as furniture and electronics, product design extends its reach to digital products like software applications and websites. Therefore, product design is not restricted to tangible objects; it encompasses both the physical and digital worlds.

With regard to environmental consciousness, product design plays a vital role in developing eco-friendly solutions across various domains. It involves design principles that facilitate the creation of sustainable practices and products by influencing user experience through feedback, creating products that can be fully recycled or biodegraded, and fostering

a connection with the environment through impactful and meaningful communications that drive changes in consumer behaviour.

Recognising the contributions of product design to drive positive environmental and social change through creative and culturally conscious product design is far-reaching and consequential. However, despite the importance of product design in cultivating eco-consciousness, there remains a gap in fully identifying its potential. This lack of awareness often leads to a less comprehensive integration of sustainability principles into design practices, hindering the widespread adoption of sustainable design solutions. Through an exploration of the interplay between design, culture, innovation, and creativity, this research aims to shed more light on the pivotal role of product design in fostering sustainable practices and products.

To bridge this gap, the theory of Emotional Design, which focuses on creating products that evoke emotional responses and connections with users, can offer insights. By understanding how it can be used to elicit positive feelings and attitudes towards design and sustainability, we can make products that not only fulfil their functional purpose but also create emotional bonds with users, inspiring them to embrace eco-conscious behaviours. This understanding sheds light on why product design should incorporate emotional resonance. Additionally, the principles of Circular Economy complement this understanding by emphasising sustainable resource management and waste reduction. By applying it, we acquire understanding of the importance of designing products with an emphasis on minimising environmental impact. By utilising emotional design strategies with circular economy principles, designers can create products that not only resonate emotionally but also contribute to a more sustainable and circular economy.

To achieve this, the research will analyse a range of case studies providing insights into different aspects of how product design affects environmentally friendly practices. Specifically, the following case studies will be presented: World Wildlife Fund's campaigns, analysing the role of product design in fostering eco-consciousness; Ecovative, exploring

product design and sustainable products & practices; Apple's iPhone/iPad; and Eileen Fisher, to analyse the intersection of product design, emotional design, and the circular economy. In addition, the principles of Emotional Design and Circular Economy will be further illustrated through the following businesses: Anthill Fabrics, a social and cultural fashion brand, and Method, an eco-friendly personal care and home cleaning products company.

## Theories of Emotional Design and Circular Economy

### What is Emotional Design?

Emotional design refers to the intentional creation of branding, products, and experiences that elicit emotional responses from users. It emphasises that emotions play a crucial role in shaping the user's perception and experience. Academic, author and cognitive scientist, Don Norman (2004) has significantly shaped the discourse surrounding user-centred design and human-computer interaction. In his book, *Emotional Design: Why We Love (or Hate) Everyday Things*, he discussed that there are three levels of design: visceral, behavioural, and reflective (p.78); each impacting the user's response in distinct ways.

### The Different Levels of Emotional Design and Their Impact on Product Design

The first level is the visceral level, which focuses on initial and sensory reactions that arise, or the first impression experienced by users upon encountering a design's appearance. This is akin to human's primal instincts. The second is the behavioural level, placing emphasis on the usability and functionality of a design; ensuring it is intuitive, easy to use, and efficient. The third is the reflective level, going beyond aesthetics and functionality to evoke a deeper emotional connection. This includes aspects of personalisation and the ability of the design to align with users' values and aspirations. It involves creating a deeper emotional connection and fostering long-lasting satisfaction and meaning.

Collectively, these three levels establish a comprehensive framework that enables a deeper understanding of emotions and their integration into the design process. By considering the principle of emotional design, designers gain a holistic understanding of how emotions influence user experiences, thereby empowering them to discern what to create and how, resulting in the development of products and services that elevate overall user satisfaction. These ideas will be examined in the following case studies: the 'Earth Hour' campaign by the World Wildlife Fund (2023) intertwines emotions and design, encouraging environmental action; Apple's iPhone/iPad (2023) embodies emotional design with user-centredness, fostering user loyalty; and Method (2024), showing how emotional design can

turn ordinary products into positive experiences through delightful packaging and environmentally conscious messaging.

In each case study, the exploration of Emotional Design and its distinct levels will be discussed, and how it relates to sustainable and effective product design. For example, in the context of 'Earth Hour' (2023), the campaign employs powerful visuals to elicit immediate emotional responses at the visceral level. On the behavioural level, strategic design influences user interactions, prompting engagement and action. At the reflective level, the campaign stimulates contemplation, encouraging individuals to reflect on the broader environmental consequences of their choices. Likewise, in the case of Apple's iPhone/iPad (2023), these different levels also apply, such as at the visceral level, sleek aesthetics create instant positive responses. At the behavioural level, the brand's priority on creating intuitive and user-centred interactions results in a seamless and enjoyable user experience. Lastly, at the reflective level, its continuous innovation and creativity cultivates a deep connection, making ownership a reflection of users' identities. Finally, taking Method (2024) as another case study, the visceral level is apparent in its visually appealing packaging. The behavioural aspect is manifested in the functional and reusable bottles, offering a sense of satisfaction. At the reflective level, the inclusion of environmentally friendly messaging on the packaging serves as a means to promote thoughtful consideration toward sustainability.

### **What is Circular Economy?**

While Emotional Design theory and its three levels contribute to a satisfying product user experience, merging this concept with Circular Economy principles aligns enhanced user experiences with sustainability objectives. For this reason, Circular Economy will be explored. According to the United Nations Development Programme (UNDP), Circular Economy is an economic framework of production and consumption that aims to optimise the value and usability of natural resources by minimising waste, extending the use, and regenerating nature (UNDP, 2023). This principle aims to reduce the amount of waste and pollution generated through designing products and materials that can be reused, repaired,

or recycled. In this sense, it is a clear departure from the conventional linear economy which is characterised by the "take-make-dispose" mindset.

In a circular economy, resources are managed in a way that promotes their reuse, recycling, and regeneration, whereas in a linear economy, resources are managed in a way that focuses on their extraction, production, and consumption without a significant emphasis on regeneration. Following this principle, resources are managed strategically to foster their reuse, recycling, regeneration, and innovation. When designing products with longevity and sustainability in mind, it aligns with circularity. This becomes more evident when designers advocate for sustainable material choices like recycled or biodegradable alternatives, and champion long product lifespans, substantially restraining the demand for frequent replacements and consumer waste. These key factors of waste reduction, longevity, and material selection, collectively amplify the effectiveness of driving sustainable outcomes, producing products that endure, constructing creations with life cycle impact in mind, and developing designs that empower users to extend the life of their possessions.

### **Key Principles of Circular Economy and its Importance in Product Design**

From understanding what constitutes a Circular Economy, then moving to exploring the principles, provides a practical application of the idea. Therefore, to serve as a practical source, designers can use the principles presented by the Ellen MacArthur Foundation, the foremost authority on the concept of circular economy (Stephenson, 2018). As outlined on the foundation's website, the three key principles that guide this framework (Ellen MacArthur Foundation, n.d.) are the following: first, eliminate waste and pollution, which refers to the idea of designing products that prioritise compostability, durability, or reusability; second, maintain the circulation of products and materials to facilitate their extended lifespan; third, regenerate nature which shifts the focus from resource extraction to restoration and enhancement of natural systems.

Therefore, the circular economy is an important element in sustainable product design because it promotes waste reduction, resource efficiency, product innovation, and product longevity. This approach contributes to a sustainable and environmentally friendly



ecosystem, encouraging a circular flow of materials and minimising the negative impacts of traditional linear models. In this paper, the following case studies will highlight the viability of a circular approach: Ecovative (2023b), for its use of biodegradable and compostable materials made from mycelium (mushroom roots); Eileen Fisher (2023b), in relation to how creative reuse can extend the lifecycle of textiles and divert them from landfills; and Anthill Fabrics (n.d.), for its cultural advocacy, promotion of livelihood sustainability through fair trade partnerships, and upcycling initiatives.

### **The Interplay Between Emotional Design and Circular Economy**

The connection between emotional design and the circular economy lies in their shared approach to user-centred design, where connection, aesthetics, preferences, and design innovation are vital elements.

Emotional design recognises that people's emotions and experiences play a significant role in their interaction and connection with products. By incorporating aesthetics, usability, and emotional appeal into the design process, it seeks to create products that not only fulfill functional needs but also elicit positive emotional responses such as joy, satisfaction, and attachment. This, in turn, enhances user engagement and reduces the likelihood of premature disposal.

The circular economy, on the other hand, is an economic model that aims to decouple economic growth from resource consumption and waste generation. It emphasises the design of products with the intention of extending product lifespan, facilitating disassembly, and ensuring that materials can be efficiently recovered and reused at the end of their life.

The interplay between emotional design and the circular economy becomes apparent when considering the implications of emotional attachment and user experience on sustainable consumption patterns. The emotional connection between users and products creates a sense of attachment and individuality, increasing the likelihood of product longevity and reducing the desire for constant replacement or impulsive disposal. By considering the link between emotional design and the circular economy, product designs could be strongly

influenced by factors that collectively contribute to creating sustainable practices and products.

Both concepts are also instrumental in facilitating and engaging society to act towards sustainability and will be further realised through the case studies in the succeeding chapters.

## **Product Design: Eco-consciousness and Engagement**

### **How Design Facilitates and Engages Society**

Product design, whether in the physical or digital space, plays a vital role in promoting engagement and eco-consciousness. In the context of brand campaigns, product design can facilitate engagement with its communications by creating visually compelling and emotionally resonant experiences. The theory of Emotional Design applies in the World Wildlife Fund's (WWF) 'Earth Hour' (2023a) campaign, and focusing on its application can provide insights into how the principles of emotional design can be implemented. WWF is a renowned global conservation organization that is successful in creating engaging communications through storytelling. The incorporation of storytelling involves the use of narratives to convey a message and inspire engagement. It enables designers to communicate the story behind a product or a campaign, its impact on the environment, and the potential benefits of adopting sustainable practices. When applied to design, storytelling can be utilised in various design contexts, from branding and product design to content design, and user experience design (Dominik, 2023).

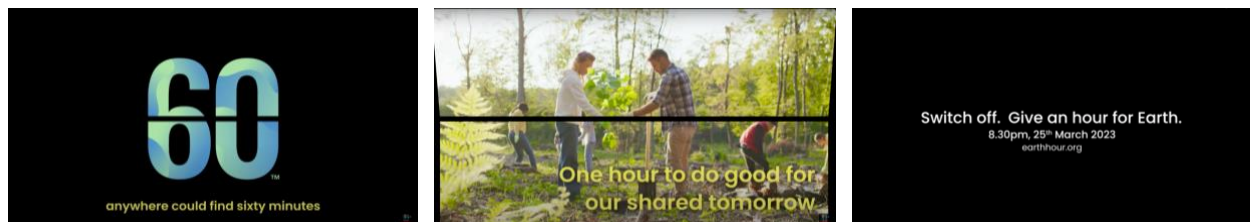
### **Motivation and the Earth Hour Campaign**

The aforementioned campaign organised by WWF, called, 'Earth Hour' (2023a), is an example of impactful storytelling and connection that utilizes the different levels of Emotional Design. To illustrate, first is the visceral level, where the campaign visuals feature striking and emotionally compelling imagery, capturing the attention of viewers and immediately eliciting a connection to environment. Immediate responses may vary from perceiving depicted animals as endearing and then feeling affection towards the creatures, to seeing cruelty and then eliciting sympathy, or encountering a deteriorated forest and then experiencing emotions of anger and a sense of loss, yet knowing that something can be done to resolve the issue. Then second, the sentiment of resolution and action is what the WWF's movement evokes at the behavioural level. This is exemplified through visual designs that are easy to understand and with straightforward action steps (see Figure 1),

thereby facilitating easy engagement in eco-conscious actions, such as turning off lights during a specific hour. This level also extends to their digital communications such as their website, where users are guided through information about the movement and encourages active participation through signing pledges or sharing content to help spread awareness. Then third, at the reflective level, users are prompted to engage in contemplation about the significance of their actions. This reflection process is facilitated through the sharing of personal experiences and is reinforced by the WWF's emphasis on the cumulative impact of individual endeavours, exemplified by outcomes such as the reduction in electricity consumption. Ultimately, this approach nurtures a sense of responsibility and pride among the participants.

### Figure 1

*Visual synopsis of Earth Hour's campaign video titled, Could an Hour Change the World?*



(Earth Hour, 2023a)

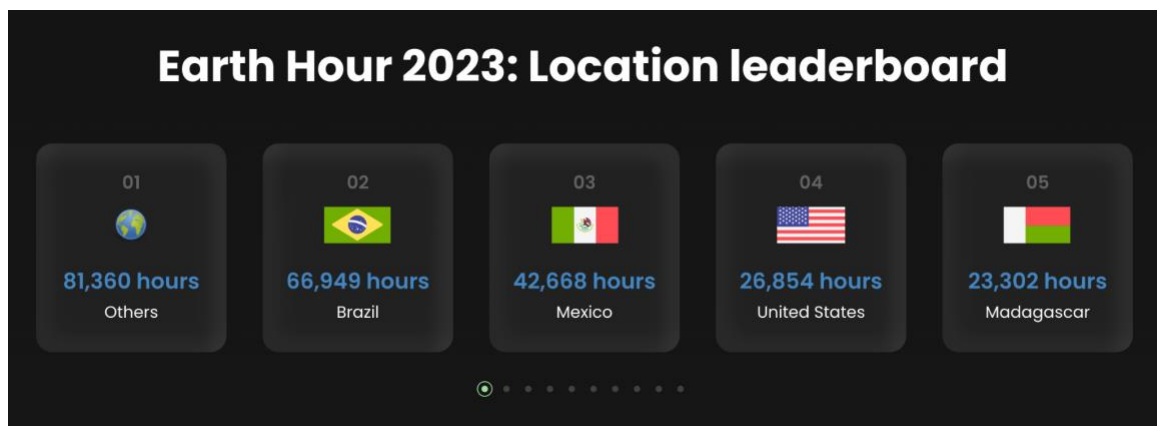
Earth Hour is a global initiative urging society to turn off non-essential lights for one hour as a symbolic gesture and simple action to help the planet (Earth Hour, 2023b, *What does Earth Hour ask people to do?*). It is a significant initiative that is supported by individuals, businesses, and landmarks all over the world, such as the Sydney Opera House in Australia, the Sheikh Zayed Grand Mosque in the United Arab Emirates, the Eiffel Tower in Paris, and the Empire State Building in New York. The combined effort of turning off lights for a certain period of time showed an average of 4% reduction in electricity use, based on a 2018 study published a year later by Andreas Jechow (Jechow, 2019). The electricity reduction percentage may seem minuscule, but the amount of support garnered by the

campaign is vast. It started in Sydney, Australia in 2007, and by 2023 had 187 participating countries (Earth Hour, 2023d).

This massive impact of the campaign effectively employs storytelling to raise eco-consciousness and encourage engagement by creating a connection between the campaign and its audience. The connection is forged through considering the cultural values and aspirations of the target audience. For example, WWF's Earth Hour campaign uses visuals that are native to each country, such as local people and surroundings, as well as providing feedback and motivation by publishing a leaderboard of countries with their total number of hours contributed, as seen in Figure 2. This feedback is also complemented with personalised impact as seen on their social media channels where they present relatable narratives and real-life examples of participation, as well as encouraging participants to share their experience.

## Figure 2

*Leaderboard Graphic*



(Earth Hour, 2023c, Screenshot from website's homepage)

Furthermore, people become more determined to engage and take part as WWF's Earth Hour campaigns through visual communication that is simple and easy to understand, informing individuals to switch off their lights for one hour as a tangible demonstration of how they can participate in the movement. This uncomplicated gesture is easily undertaken by

people from all walks of life, effectively raising awareness about climate change and the imperative for collective action. Lastly, visual elements play a significant role in the storytelling of the campaign. WWF uses powerful and emotionally stirring images to convey the beauty of nature, the threat it faces, and the potential consequences if no action is taken. These visual representations tap into people's emotions, evoking feelings of love for nature, sadness for its potential loss, and determination to protect it. As Don Norman (2013) highlighted in his book, *The Design of Everyday Things*, people are inherently inclined to look for causes of events and form explanations and stories, which makes storytelling a compelling element in design.

### **Connection to Emotion**

Emotional connection allows individuals to recognise the significance of their actions and encourages them to make sustainable choices in their daily lives. On the other hand, storytelling provides a narrative framework that makes complex sustainability issues more relatable and persuasive. The creative integration of these complementing elements in product design plays a pivotal role in cultivating eco-consciousness. The WWF campaign highlights the power of emotional connection and storytelling in promoting sustainability by evoking emotional responses, raising awareness, and inspiring behavioural change. Ultimately, product design's contribution to sustainable practices and products lies in its ability to inspire and engage individuals, cultivating action and shaping behaviours towards eco-consciousness and engagement.

## **Product Design: Sustainable Products and Practices**

### **How Design Enhances and Propels Sustainability**

The integration of creative elements and innovation has become instrumental in enhancing the appeal of eco-friendly products and practices. By infusing artistic and imaginative approaches into sustainable design, companies are able to captivate consumers with visually appealing and innovative solutions. In the context of sustainability, innovative products and practices aim to minimise waste, keep products and materials in use for as long as possible, and regenerate natural systems. Within this framework, the concept of Circular Economy, as exemplified by companies like Ecovative, is at the forefront of reimagining sustainable design as this business innovates for sustainability through its use of biodegradable mycelium-based materials and by promoting reuse of their products. The innovation of mycelium aligns with the challenge that McDonough and Braungart (2013) introduced in their book *The Upcycle: Beyond Sustainability – Designing for Abundance*, claiming that people can transition from being “less bad” by practicing production and consumption patterns that integrate into the earth's natural cycle of regeneration (p. 21). In line with the idea that doing less bad is not the same as doing more good, there has been a growing movement towards the creation of sustainable products and materials that actively contribute to a beneficial footprint.

### **Green Design and Ecovative**

A prominent identity in using mycelium is Ecovative (2023a). This company optimizes resources by specializing in the development and production of sustainable materials, more particularly the innovative use of mycelium as a replacement for traditional materials like plastic foams. Figures 3 and 4 show the company's flagship product called "Mycelium-based Mushroom Packaging," which is an eco-friendly alternative to Styrofoam and other petroleum-based foams (Ecovative, 2023b, *Packaging*, para. 1). The packaging material is made by growing mycelium on agricultural waste, such as corn stalks or husks, which acts as a natural binder. The resulting material is biodegradable and compostable, and can be

moulded into various shapes and sizes to fit different packaging needs. As a result, its sustainable consumption and production patterns, exemplify Circular Economy as they not only minimize environmental impact, but also promote a closed-loop system where products are designed with end-of-life considerations in mind, in this case, products that can be biodegraded and composted, instead of going to the landfill.

**Figure 3**

*Sandor Natural Hair Care*



(Ecovative, 2023b)

**Figure 4**

*Loli Skincare*



(Ecovative, 2023b)

To attain a more sustainable future, mycelium-based materials serve as effective alternatives to plastics and leather. Mycelium, the vegetative part of a fungus, is utilised to create eco-friendly materials with low energy consumption (Alemu, Tafesse & Mondal, 2022, para. 4), has garnered attention for its remarkable properties that make it a promising substitute for traditional materials. By harnessing the regenerative and versatile nature of mycelium, innovators are able to create biodegradable packaging, building materials, and even fashion items (Chung, 2021) that are not only environmentally friendly but also offer unique benefits. These sustainable alternatives not only reduce waste and pollution but also have the potential to improve soil health and sequester carbon (Williams, 2023). By shifting focus from mere minimisation to actively seeking out and embracing beneficial footprints, transitioning to a more sustainable future is possible.



Ecovative's mycelium-based materials have been used in packaging applications across various industries, including electronics, furniture, and consumer goods. The company's approach offers a sustainable solution to the growing problem of plastic waste and has garnered attention from environmentalists and businesses seeking more environmentally friendly alternatives. By employing sustainable products and practices, Ecovative helps transform the perception of environmentally conscious solutions from waste reduction to waste elimination by producing products that are biodegradable and compostable (Ecovative, 2023a, para 1-2).

Furthermore, Ecovative's creativity in its products aligns with the theory of Emotional Design and its three levels. For example, at the visceral level, their mycelium-based packaging materials, evoke an immediate positive sensory response. The organic and natural feel of the materials, resonate with human instincts and a connection to the natural world. Next is on the behavioural level, where users have a clear understanding of the products' lifecycle. In other words, its biodegradability contributes to its appeal as users and businesses become more conscientious about the ecological consequences of their choices. Finally, at the reflective level, the company's innovative products becomes a means for reflection, offering insights into the circular economy. This discovery and learning of environmentally friendly ideas empowers users with knowledge that connects with their values and aspirations.

### **Relevance to Circularity**

In summary, sustainable and creative elements add aesthetic appeal, making eco-friendly products visually appealing and desirable to a broader audience. Innovation, on the other hand, drives the development of novel and practical solutions, enabling eco-friendly practices to become more accessible, efficient, and cost-effective. This combination not only appeals to consumers who value sustainability but also engages those who may have been previously indifferent or unaware of the environmental impact of their choices. In bringing together creativity and innovation, eco-friendly products and practices become more compelling, driving wider adoption and contributing to a more sustainable future.

Additionally, design has the unique capacity to reflect and reinforce cultural norms, trends, and aspirations, creating a powerful connection between sustainable products and the values of individuals and communities. It is through thoughtful product design that the potential for sustainable practices to become mainstream and deeply embedded in our daily lives is realised. Lastly, by intertwining aesthetics, functionality, and environmental consciousness, product design and sustainable practices forge a symbiotic relationship that paves the way for driving sustainable outcomes.

## **Product Design: Emotional Design and Circular Economy – Theories**

This chapter continues the exploration of the complementary relationship between Emotional Design and Circular Economy, using new case studies to further illustrate these concepts. Expanding on the previous discourse, this section explores the following case studies: first is Apple's iPhone/iPad (2023b), known for its progressive technology and user-centred design; and second is Eileen Fisher (2023b), a fashion brand committed to circularity and environmental responsibility. These cases illustrate how Emotional Design and Circular Economy serve as guiding principles in the creation of emotionally resonant products and how they can lead to sustainability. By examining these seemingly different industries, yet interconnected by product design, the relationship of these theories highlights their capacity to move product design towards a future where emotional design principles and circular practices converge to reinforce sustainability.

### **Emotional Design and Apple's iPhone & iPad**

Apple's iPhone and iPad (2023a) exemplify the integration of emotional design in product design, particularly through user interface and user experience aspects. Emotional Design emphasises the importance of evoking positive emotional responses in users, enhancing their overall experience, and creating long-lasting relationships with products. Apple has excelled in this area, with sleek aesthetics but, more particularly, intuitive interfaces and seamless functionality to evoke delight, satisfaction, and a sense of empowerment among its users. By prioritising user-centred design principles, Apple's products have become trailblazers in technology, driving industry advancements and consumer expectations.

This user satisfaction links back to how Apple became comparatively sustainable through its implementation of the three levels of Emotional Design. Firstly, at the visceral level, Apple products are visually appealing and evoke immediate desire. The brand's devices are contemporary, minimalist, and use premium-looking materials like aluminum and glass. Moreover, these materials are infinitely recyclable, as stated in the article Making

sustainable aluminum by recycling scrap: The science of “dirty” alloys (Raabe et al., 2022, p. 2, para. 2) and written on the Chemical & Engineering News website (Jacoby, 2019), respectively. Secondly, at the behavioural level, the company puts a high priority on functionality and usability, impacting the user's experience. Apple's iOS ecosystem (2023a) across devices is consistent, making it effortless for users to switch between products such as the iPhone, iPad, and Mac. This seamless integration of hardware and software, along with features like Touch ID and Face ID, enhances user convenience, thereby promoting user-centred design. Thirdly, at the reflective level, Apple's branding and marketing efforts foster an emotional connection with users which creates a sense of identity and affiliation. The brand has built an image that signifies innovation, creativity, and a sense of belonging. Their marketing campaigns often evoke emotions like inspiration and aspiration. Apple users identify themselves with the brand, forming a strong sense of attachment. The technology, the device's design, and even the packaging contribute to the emotional attachment users have to the brand and its products. Therefore, with its integration of user experience and emotional design, Apple's model still contributes to a more sustainable practice by reducing the need for new products.

For a consumer-driven industry, Apple also has transitioned to a sustainable model by making its interface and operating systems easily upgradeable by users, hence eliminating the need to purchase a new mobile phone when one with more advanced features is invented and released to the market. To illustrate, it could help to recall how people needed to change their analog mobile phones, such as Nokia, Siemens, and Motorola, some just after one year, because the functions were outdated, or simply, the features did not satisfy them anymore. In comparison, Apple offered the public the convenience of updating to new software without disposing of the old mobile phone that they were using. Although this might negatively impact businesses' bottom line, which needs to generate sales continuously by not making durable products (Norman, 2013), in the case of Apple, they prioritised the user experience and fostered customer loyalty by implementing a seamless software update system. This emotional resonance not only keeps products in

circulation longer but also plays a pivotal role in reducing electronic waste and resource consumption. In essence, user satisfaction and emotional connection could also promote a more sustainable practice by eliminating the need to throw away the current hardware.

However, it is essential to acknowledge the tension in this sustainability narrative. While Apple's approach minimises waste through prolonged use of its products, it does not entirely eliminate the company's carbon emissions. Setting aside the thought that complete carbon emission is unlikely when it comes to technology, it can still be argued that Apple's massive production and iCloud storage, and other forms of cloud storage for that matter, contribute to large carbon emissions. This complex situation challenges the notion of Apple as a standard for sustainability. Nevertheless, the brand's ability to foster emotional bonds with its users has the side effect of extending the lifespan of its products, thereby reducing the amount of waste generated.

At the same time, these green initiatives, while significant, are juxtaposed against Apple's aggressive product launch cycle, raising doubts about the company's motives and sincerity toward the cause, and whether it is as environmentally friendly as it continues to boast. With each new iPhone release, tens of millions of people around the world are enticed to upgrade, even if the changes are relatively minor. Additionally, Apple's reluctance to transition to universal ports like USB-C makes one wonder about the company's motivations. This emphasis on environmental sustainability can be considered as either a genuine commitment or a well-timed marketing strategy to appeal to an increasingly environmentally conscious consumer base. Alternatively, it could be a combination of both factors.

Still, if Apple was truly prioritizing the environment, it might encourage extended device use and consider lengthening the time between major releases as suggested on CNET's website (Lanxon, 2023). By doing so, the company could better demonstrate its commitment to the environment. But at the same time, it is essential to acknowledge that Apple is a publicly listed company, making it inherently structured to protect and enhance its

bottom line. This presents challenges such as financial pressures and market competition as factors that can influence the company's decision-making process.

In terms of emotional design versus sustainability, Apple is often recognised for its mastery of emotional design, however critics argue that Apple could do more to address issues such as planned obsolescence, repairability, and the environmental impact of production. To earnestly align emotional design with sustainability, the brand must reassess its product lifecycle practices and embrace more eco-conscious strategies.

### **Circular Economy and Eileen Fisher**

From one field to another, this exploration moves from technology industry to fashion industry with Eileen Fisher (2023a) as the case study of this section. Eileen Fisher is a brand committed to circularity, it has implemented several initiatives to embody this theory. Sustainability in practices and products is prominently exercised in the principle of Circular Economy (CE). The concept of CE focuses on designing products and systems that minimise waste and resource consumption, and promote the reuse, recycling, and regeneration of materials.

Notably, the brand's collaboration with certified dyehouses that prioritise the use of safer chemistry or, in some products, completely eliminates the use of dyes. This approach avoids the use of toxic dyes and mitigates the issue of wastewater pollution (Eileen Fisher, 2023a). Furthermore, the Resewn collection, the brand's prominent take-back programme collects worn or torn garments, diverting them from landfills and utilising them to produce new ones. This initiative not only serves as a sustainable practice but also doubles as a charitable endeavour. As reported on the U.S. Chamber of Commerce Foundation website, profits generated from the programme are donated to organisations that champion women, girls, and environmental causes, aligning with Eileen Fisher's (2017) dedication to socio-economic responsibility. Additionally, Fisher observes that establishing distinct links between the new seasonal collections and the Resewn pieces leads to increased sales. Developing sustainable products and practices proves to be a smart business move, benefitting both the planet and the brand. It has successfully attracted a younger demographic, effectively

addressing affordability concerns. Fisher explains that this younger consumer resonates with their Renew line, finding them philosophically appealing and a pathway to feeling good about shopping at Eileen Fisher (Fernandez, 2017).

This sustainable practices and products from the brand's Resewn and Renew collections show how the three different levels of Emotional Design relate to the brand. For instance, the tactile experience of wearing sustainable materials can create an immediate positive connection, associating the brand with comfort and ethical choices. This first phase of emotion relates to the visceral level; while its take-back programme and the utilization of worn garments, where customers actively participate in a sustainable lifecycle, represents the second phase which is the behavioural level. Lastly, customer participation in its sustainable initiatives through garment recycling offers a way for consumers to reflect on their impact on the planet and society while expressing their values and making a positive difference through their purchasing decisions which aligns with the reflective level.

By closing the loop in their supply chain and nurturing connection with consumers, Eileen Fisher reduces the environmental impact of their products and actively contributes to a more sustainable fashion industry. This approach demonstrates how emotional design and circular economy principles can be integrated into product design practices to foster a sustainable economy in an industry infamous for being the third-largest contributor to global emissions (Segran, 2022, para. 4). It illustrates how a fashion brand can proactively reduce waste, lower resource consumption, and emphasize environmental responsibility.

In essence, Eileen Fisher's dedication to circularity, exemplified by initiatives like the take-back programme and sustainable dyeing practices, underscores the powerful impact of circular design principles in circularity while illuminating the almost intrinsic connection between circularity and the emotional resonance of sustainable choices. This brand highlights the pivotal role of product design in reshaping industries towards more environmentally responsible and sustainable practices and products.

## **The Loop Between the Theories and the Brands**

The integration of emotional design and circular economy in product design aligns with the central role of emotions in influencing user experience and the user-product relationship. Emotional design emphasises the significance of establishing positive emotional connections between users and products, thereby fostering long-term engagement and loyalty. By incorporating circular economy principles, designers can create products that evoke positive emotions that could lead to a more sustainable future. This alignment is crucial in an industry that holds distinction for contributing to landfill waste and resource depletion.

Considering Apple's iPhone/iPad and Eileen Fisher as examples, the link between the two theories becomes more evident. Apple's user-centred principle, based on Emotional Design, which aims to enhance user experiences and foster a deep and enduring connection between consumers and their devices, may lead to an approach that aligns with the circular economy concept. Crucial as it is, achieving a balance between emotional design and sustainability can be challenging, particularly in fields where rapid technological advancements and frequent product upgrades are common. Apple highlights the broader challenge faced by tech companies in aligning with both consumer satisfaction and environmental objectives. This difficulty can be an opportunity for innovation, as demonstrated by Eileen Fisher, wherein products can be better aligned with circularity principles through a more proactive stance by the company. This may involve collaborating with suppliers who share similar values, implementing strategies for reusing existing materials and responsibly sourcing them. Eileen Fisher's approach to Circular Economy underscores how sustainability in design serves as a pivotal force in advocating for greater environmental responsibility and creating products that resonate with consumers. By prioritising these two theories, product designers can transform industries, reduce environmental impact, and help shape a future where sustainable design practices and products become the norm.



The two theories may not always work together due to constraints that designers and companies face, such as durability versus novelty. Circular Economy advocates for the creation of durable, repairable, and reusable products, emphasizing longevity. In contrast, Emotional Design may at times prioritize the introduction of novel features or aesthetics for user engagement. However, by addressing these constraints, designers and companies can create a working relationship between Emotional Design and Circular Economy. This can involve exploring innovative ways to make products designed for disassembly emotionally engaging, through timeless aesthetics, or interactive features designed for adaptability. By doing so, creators can make products that not only resonate emotionally with users but also align with the principles of Circular Economy, leading to sustainability and longevity in the product lifecycle.

Therefore, rethinking the design process in consideration to sustainability is feasible and making further efforts to integrate these two principles can lead to remarkable outcomes. To summarize, this section underscores the importance of Emotional Design and Circular Economy working together, showcasing how these factors can synergistically influence the creation of sustainable practices and products. It also underscores the potential for such strategies to serve as industry standards, highlighting that the integration of emotional connection and circularity principles is not only beneficial for the environment but also economically viable and capable of enhancing customer loyalty. These insights, therefore, pave the way for a broader understanding of the significant contribution of product design in advancing sustainability goals.

## Product Design: Emotional Design and Circular Economy – Research

This last section explores the seamless and clear blend between the emotional connection users have with products and the feasible shift towards sustainable, circular design practices. These examples serve as a foundational exploration for understanding how the fusion of both Emotional Design and Circular Economy principles can inform the creation of eco-conscious products and practices. The following are two examples to help further illustrate the point of intersection between emotional design and circular economy.

### Synergy of Principles and Anthill Fabrics

Anthill Fabrics, a fashion brand in the Philippines, provides a compelling example of how Emotional Design theory is applied in product design. They revive culture and heritage through design, fostering national pride and making traditional weaves accessible and wearable. They do this by integrating traditional weaves into contemporary everyday attire (see Figure 5) while respecting and preserving their cultural significance. Moreover, Anthill Fabrics is founded on the principles of cultural preservation and sustainable livelihood, Anthill collaborates closely with partner artisan communities to weave a vibrant tapestry of tradition and innovation (Anthill Fabrics, n.d.).

### Figure 5

*Bomber jacket in Kinan-ew weave by Sagada Kindasan community.*



(Photograph supplied by A. Magtira)

By reviving traditional textiles and patterns that evoke nostalgia and connect with heritage, Anthill Fabrics taps into the emotional aspects of its target audience. This approach allows them to create a unique and meaningful experience for customers who value cultural heritage and storytelling, as when traditional patterns are incorporated into product design, they have the potential to evoke strong emotional responses from individuals who are familiar with or have a personal connection to those patterns. When people encounter these designs, they may experience a sense of belonging and a connection to cultural identity. Additionally, Anthill Fabrics skillfully weaves the narratives and stories behind these patterns, emphasizing their cultural significance and the preservation of traditional craftsmanship. The brand goes a step further by incorporating the personal stories of the weavers into their products, highlighting the artisan's tribal origins and identity. This storytelling approach enhances the bond between the brand and its community of "proud weave wearers."

Furthermore, Anthill Fabrics stands out as a prominent Circular Economy (CE) brand through its dedicated circularity programmes. Through their innovative approaches, Anthill actively promotes more conscious consumption and production patterns, effectively extending the lifespan of materials and minimising waste in landfills. As highlighted in the brand's website, the following initiatives help in supporting their CE practices: Firstly, their Weave Exchange programme, which fosters a circular mindset by allowing Proud Weave Wearers to return pre-loved ANTHILL clothing in exchange for gift cards, ensuring that garments continue to be cherished rather than discarded. Secondly, the Zero Waste programme, which takes an active stance against textile waste by making new items out of fabric scraps (see Figure 6), and repurposing discarded materials collected from corporate partners, local businesses, and designers. These materials are transformed into new weaves by the skilled Argao Weavers at Anthill's Textile and Innovation Centre. Thirdly, through its Re-Weave programme, which reduces waste by offering repaired and reconstructed pre-loved weaves at accessible prices, promoting sustainability and

affordability hand in hand. Through these circular initiatives, Anthill Fabrics exemplifies its dedication to environmental stewardship and CE principles (Anthill Fabrics, n.d.).

### Figure 6

*Christmas angels made from production line fabric scraps.*



(Photograph supplied by A. Magtira)

More and more fashion brands are gearing towards circularity practices and products, but what sets Anthill Fabrics apart, is its approach to business, firmly rooted in the mission to keep heritage weaving thriving and accessible, alongside production sustainability for their products and livelihood sustainability for their partner artisans, a mission that extends beyond product sustainability to encompass livelihood sustainability for their partner artisans. This holistic perspective goes beyond their own company's production sustainability. The brand actively empowers artisans from various communities to secure sustainable income beyond their collaboration with the brand. Through initiatives like fundraising programmes for indigenous weavers to establish their craft and design shops or small *sari-sari* stores (akin to dairy stores in New Zealand), Anthill Fabrics not only supports these artisans but also promotes local sourcing and production, engages in fair trade partnerships, and fosters sustainable practices within the broader community. The brand also exhibits transparency breaking down costs in diagrams to show how funds are allocated

to programmes, artisans, overheads, and margins; which in turn fosters customer appreciation (Lacsamana, 2022, para. 5-6). This comprehensive approach exemplifies the brand's dedication to cultivating sustainability on multiple fronts, creating a more holistic and inclusive model of sustainable fashion.

Ultimately, Anthill Fabrics' emphasis on slow fashion, implying sustainability as opposed to the industry standard's fast fashion, makes them a leading advocate of the Circular Economy. The brand's circularity programmes and emotionally resonant designs showcase the pivotal role of product design in cultivating sustainable practices and products.

### **Synergy of Principles and Method**

Method (2024), a company producing eco-friendly home cleaning products, exemplifies the integration of Emotional Design and Circular Economy principles into their products and practices. They offer a range of eco-friendly products such as personal care and home care items. Method has gained recognition for its aesthetically pleasing packaging (see Figure 7), which reflects Emotional Design principles. In the early 2000s, when the company was founded, there was a lack of emphasis on the incorporation of fun and creative packaging for cleaning materials, and the concept of refills was not widely embraced. Being a pioneer in this aspect makes Method an important example of the abovementioned principles. Additionally, the company has achieved distinction as one of the pioneers in green cleaning enterprises with an entire range of products certified under the cradle-to-cradle framework. (Boerner, 2020, *Looking at Cleaning Products*, para. 3).

## Figure 7

### *Method's packaging*



(Harvard Business School, 2015, from Method's website)

The company's focus on beautiful packaging aligns with the principles of Emotional Design, as it aims to create an emotional connection with customers through visually appealing products. Also, Method's commitment to the Circular Economy is demonstrated through its Cradle-to-Cradle endorsement, which ensures that its products are designed for recycling and safe disposal, reducing waste and promoting resource efficiency. By combining Emotional Design and Circular Economy principles, Method not only appeals to customers' aesthetic preferences but also addresses their environmental concerns, fostering a sense of well-being and sustainability.

In essence, Method's innovative approach to design serves as a compelling example to the symbiotic relationship between product design and sustainability. This harmonious fusion of design ideas not only caters to customers' visual desires but also conscientiously addresses environmental imperatives, culminating in the achievement of sustainable products and practices.

### **Impactful Design Through Emotional Design and Circular Economy**

The interplay between Emotional Design and Circular Economy that the two companies demonstrate, carries significant implications for today's product designers. These implications shape the roles, responsibilities, and approaches to design such as a more holistic design thinking that considers the entire lifecycle of a product, from sourcing raw

materials to end-of-life disposal; as well as collaboration and multidisciplinary approaches such as engaging with professionals in fields like environmental science, engineering, and social sciences to gain further innovative solutions that consider both sustainability and user needs.

Many designers are strongly aware of the principles that can be employed to support sustainability. However, there are ongoing challenges such as increased complexity in the design process wherein designers need to navigate through technical limitations, market dynamics, cost considerations, and organisational constraints.

In the grander scheme of things, the challenges could also provide better clarity to the contribution that product design could bring to the creation of sustainable practices and products such as incorporating the following:

1. Design for User - Through a user-centric design approach, designers have the ability to understand user needs, preferences, and behaviours deeply. By adopting a user-centred design approach, designers can identify opportunities to integrate sustainability into products in ways that resonate with users. This approach ensures that sustainable solutions are not only environmentally friendly but also user-friendly, enhancing adoption and satisfaction.

2. Design for Connection - Designers can leverage Emotional Design principles to create products that foster emotional connections with users. By considering aesthetics, storytelling, and meaningful experiences, designers can elicit positive emotions and engage users on a deeper level. This emotional connection can inspire users to value and maintain products, extending their lifespan and reducing overall waste.

3. Design for Life Cycle Assessment (LCA) - By integrating LCA into the design process, designers can create sustainable practices and products that minimise resource consumption, reduce waste generation, and allow for disassembly and recycling. To create sustainable products and practices, considering the environmental impacts of a product's entire life cycle is crucial in the design process.

4. Design for Advocacy - Designers have the potential to influence norms and practices through their design choices and advocacy for sustainability. By demonstrating the feasibility and desirability of sustainable design solutions, designers can encourage other businesses and fellow designers to follow suit, creating a ripple effect and driving broader industry change.

Overall, product design's contribution to sustainable practices and products is strengthened through a user-centric approach, designing for emotional connection, and influence on industry standards.



## Conclusion

In conclusion, product design plays a critical role in contributing to sustainable practices and products by influencing the way we interact with and perceive the products around us, while making it a positive experience. It encompasses not only the aesthetics and functionality of a product but also its emotional impact and sustainability. By understanding users' needs, preferences, and aspirations, product designers can create products that elicit positive emotions, foster strong user connections, and contribute to a more sustainable future.

Through emotional design, products can go beyond their functional purpose and create meaningful experiences that resonate with users on an emotional level. By incorporating elements that evoke joy, satisfaction, and delight, designers can forge lasting connections between users and products, leading to increased user satisfaction and brand loyalty. Furthermore, the role of product design extends beyond Emotional Design to encompass the principles of the Circular Economy. By embracing sustainable practices and designing for the entire product lifecycle, designers can contribute to minimizing waste, optimizing resource consumption, and promoting sustainable consumption patterns.

The crucial contribution of product design lies in its ability to merge different principles to obtain a holistic approach. By integrating emotional design principles with the ideals of the circular economy, product designers can create products that are not only aesthetically pleasing and emotionally engaging but also environmentally responsible.

In summary, product design has a transformative impact on the lives of individuals and the society as a whole, shaping experiences, emotions, and interactions with the products we use. By utilizing Emotional Design and embracing the principles of the Circular Economy, designers have the power to create products that forge deep connections, enhance user satisfaction, and contribute to a more sustainable and environmentally friendly economy. The role of product design is not only important but also essential in creating a more meaningful and sustainable world.

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