

Transformative Object Design: Unveiling the Characteristics that Foster Emotional Attachment between Individuals and Objects

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Abstract: This research explores the intricate relationship between objects and individuals, specifically exploring transformative properties within objects that can engender emotional attachment. While previous studies have acknowledged the potential of transformative qualities such as “wearing away through use” in fostering connections between objects and users, a systematic investigation into the specific characteristics of transformation has been lacking. This study aimed to determine the distinct characteristics of transformation, providing insights into the nuanced ways in which intentional transformations within objects contribute to enduring relationships toward users. The qualitative research design was utilized in this study in order to offer a comprehensive analysis of the key elements in object transformation. As a designer, the researcher offered how such transformation was applied in artifacts to discuss real-world instance of emotional attachment to objects. This enabled a cross-reference analysis of the primary research findings pertaining to the pivotal characteristics of transformation. The results of the study revealed four characteristics of transformation: the slow and subtle transformation, constituting transformation, elevating positive transformation within object, and the active involvement of the user in the transformation process and showed that they foster emotional relationship between objects and individuals. By grasping the nuances of these emotional attachments, designers and creators can not only craft functional objects but also create objects of profound personal significance, enriching the human experience. Designers and creators can use these insights to craft objects that not only serve their functions but also become deeply significant to users and prolong the life of objects. These findings contribute not only to the emotional design but also have broader implications for product design, marketing, and consumer behavior. Understanding how intentional transformations influence emotional bonding with possessions can empower designers to craft objects that transcend mere functionality, becoming profound sources of personal significance and enhancing the overall human experience. This research thus opens avenues for further exploration into emotional design and its potential to reshape the ways we interact with and cherish the objects in our lives.

Keywords: Transformational Objects, Emotional Attachment, Positive Aesthetic Transformation, User Involvement, Emotionally Durable Design

1. Introduction

Emotional attachment is a fundamental and intricate aspect of human experience[1], shaping our relationship with objects, individuals, and the world around us. It encompasses a wide spectrum of emotions, from love[2] and affection to nostalgia and personal significance[3]. At its core, emotional attachment reflects the profound connections we develop with people, place, and things through repeated

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interactions[4], shared experiences[5], and a deep sense of belonging. These attachments are not solely limited to human relationships but extend to our interactions with inanimate objects, offering comfort, meaning, and a sense of continuity[6].

Numerous studies have explored design properties aimed at establishing connections between objects and users. Among their proposed solutions, transformative properties have been suggested as means of fostering emotional attachment. Despite claims by numerous researchers regarding the potential of transformative properties to create a connection between object and user by giving examples of objects such as teddy bear and jeans[7], a systematic investigation into the specific characteristics of transformation has been lacking. Hence, this research aims to identify the specific characteristics of transformation that forge enduring and meaningful connections between individuals and objects.

The research methodology involves an exploration of existing knowledge and proposals regarding the creation of emotionally attached objects, extracting properties of transformation. Additionally, practical approaches taken by designers, which apply transformative qualities, are examined. This allows for a cross-reference analysis of the primary research findings related to the characteristics of transformation.

This study, aiming to identify characteristics of transformation within objects to foster emotional attachment, hold significance across various fields of study. It contributes to our understanding of design's profound impact on emotional connections, emphasizing intentional transformation in objects to nurture enduring relationships between individuals and the material world. Therefore, the understanding the dynamics of emotional bonding with possessions has broader implications for product design, marketing, and consumer behavior, providing valuable insights for designers, makers, and businesses aiming to create enduring connections with their audience. Furthermore, intentional transformation can contribute to a sustainable future by fostering enduring relationships between individuals and their possessions. This approach allows designers to craft objects that not only serve their functions but also hold deep significance for users.

2. Literature Review

2.1 Emotional Attachment

Emotional attachment is a complex and multifaceted psychological phenomenon that has intrigued researchers across various disciplines. While many associate emotional attachment with human relationships, this study broadens the concept to encompass the emotional bonds between individuals and objects or possessions.

Emotional attachment to objects can be observed throughout various cultural and historical contexts. For instance, consider the practice of Japanese Kintsugi, which involves repairing broken pottery with lacquer mixed with powdered gold, silver, or platinum. Instead of disguising the cracks, Kintsugi highlights them as part of the object's history and beauty. Similarly, in many cultures, heirlooms like antique furniture, family jewelry, or cherished books are often passed down through generations. These items accumulate emotional attachment over time as they become repositories of family history, memory, and tradition. The patina on a well-loved piece of furniture or the annotations in a vintage book can tell a story of its use and the emotional connections of those who interacted with it. In many cultures, the emotional attachment to objects is rooted in the idea that these items carry a piece of our personal history and experiences, making them more than just functional possessions.

The exploration of how emotions can be cultivated between humans and objects has been a multifaceted endeavor, engaging both practitioners and theorists. After Buchanan's seminal paper in 1989[8], which examined user emotions, this subject has grown to become an indispensable and expansive area of study within the realm of design. Subsequent research, notably the work of Desmet[9],

Jordan[10], and Norman[11], has propelled the field forward by presenting frameworks that clarify the ways in which design can evoke shape human emotions. Donald Norman, renowned for his book “Emotional Design: Why We Love (or Hate) Everyday Things” is particularly notable for identifying three levels of brain mechanism in relation to objects. Another group of theorists, including Chapman[12], Van Hinte[13], Verbeek[14], and Walker[15] has extended this line of inquiry, with a focus on the enduring nature of emotional relationship between human and objects. This cadre of researchers assisted in framing the concept of emotional attachment of this research by providing a more pragmatic examples of design products and current objects.

2.2 Emotionally Durable Design

The exploration of “Emotionally Durable Design” seeks to identify and define designs capable of being treasured over extended periods. It aims to propose a novel genre of sustainable design, fostering stronger connections between products and users to mitigate consumption and waste. Key figures in this field include Jonathan Chapman, author of “Emotionally Durable Design: Objects: Experiences and Empathy” and Stuart Walker, who examines the wearer’s relationship with spiritual objects in “Object Lessons: Enduring Artefacts and Sustainable Solutions.” Additionally, Claudel Arguin[16], in a research thesis titled “Emotional Durability is the New Sustainability” and Ed van Hinte, editor of “Eternally Yours: Visions on Product Endurance”, contribute valuable perspectives through their works, enriching the discourse within Dutch industrial design.

Discussing love in the context of material objects may seem unusual. However, Chapman highlights the presence of emotional attachment to material objects in cultural contexts, citing instances such as an Australian man marrying his beloved TV set and designer Tony Brook expressing fondness for his G5 Mac. The study of “Emotionally Durable Design”, as elucidated by Chapman, goes beyond immediate affection for objects. It parallels the love for an old friend cultivated over years, emphasizing the attachment formed through shared experiences and mutual development, a relationship influenced and enacted by both parties involved.

Chapman and other researchers of the field provide many widely recognized objects to illustrate the concept of emotional attachment. The main idea of those objects are objects that “enable users to sculpt rich and individually crafted narratives that map subject-object relationships as the evolve over time”[17].

Denim jeans stand as an example of emotionally durable objects, originating from Levis Strauss in the US to outfit laborers during the mid-1800s San Francisco Gold Rush. As Chapman notes, jeans have successfully delivered narrative experiences over decades. Users develop an intimate bond with their jeans due to their capacity to accumulate character through wear. Jeans evolve through personalization, sculpting, and natural wear, becoming akin to cherished companions-living repositories of memories. They embody a life narrative, mapping events and experiences, offering comfort akin to a familiar embrace.

Another example is teddy bear, a treasured item with a profound narrative history for countless individuals. This object carries emotional weight because a new bear cannot replicate the intricate, intimate story associated with the old one. The layers of emotional attachment woven into the well-lived bear are irreplaceable, defying any attempts at imitation or recreation.

In books and journal articles written by researchers of the field presented a range of everyday items and designed products, delineating essential characteristics required in objects to nurture emotional bonds. These instances were pivotal in identifying the fundamental traits vital for instilling emotional attachment in objects. Thus, the exploration of “Emotionally Durable Design” provided concrete insights into how a positive relationship is established between a person and an object, establishing a theoretical foundation for this research.

3. Research Methodology

In this study, the literature review forms a foundational component of the research methodology informing and supporting the research. The review encompassed an extensive analysis of scholarly articles, books and academic papers related to emotional durable design, emotional attachment to objects and transformational objects.

As it can be seen in [Table 1], once the literature was collected, a thematic analysis was done to categorize and organize the information. Among the many solutions towards making emotionally attached object, an examination on the source was done to extract key themes, ideas and concepts related to transformation in objects and its role in fostering emotional attachment. Afterwards, a comparative analysis on the information was done to identify commonalities and difference in how various researchers approached the topic. This method allowed for a more comprehensive grasp of the intricate facets of transformation within objects and its implications for emotional attachment. Furthermore, through the literature review, the research identified the pivotal findings: the fundamental characteristics of transformation within objects.

The findings regarding the characteristics of transformation within objects were seamlessly incorporated into the primary research phase. This research explored into academic research, practical experiments, exhibition catalogues, design projects, and online blogs to discern how precisely transformation was applied in artifacts crafted by designers and makers, offering real-world instances of emotional attachment to objects. This scrutiny of practical artifacts enabled a cross-reference analysis of the primary research findings pertaining to the pivotal characteristics of transformation.

[Table 1] Research Methodology

Review	Methods	Findings
Theoretical review	Thematic analysis Comparative analysis	-broad understanding of emotional attachment towards object -examples of everyday objects -keywords that identifies key characteristics of transformation that engender emotional attachment
Practical Review	Cross-reference analysis	-examples of design artifacts (attempts made by designers and makers) -cross-reference review of the key characteristics of transformation

4. Findings: Characteristics of Transformational Objects that engender Emotional Attachment

This section explores the research findings regarding the specific characteristics of transformation that evoke emotional attachment. These characteristics have been deduced from a comprehensive investigation of emotionally connected objects, encompassing both theoretical and practical aspects of emotional design. In the pursuit of creating objects that foster emotional bonds, this research focuses on the transformative elements within these objects and defines a structured framework for characterizing these transformative features.

The research findings unveil four distinctive characteristics of transformation. These traits are elucidated with insights drawn from researchers in the emotional design and emotionally durable design field, who assert that these specific transformation characteristics within objects nurture a profound connection with users. Each characteristic is subsequently illustrated through real-life example of design artifacts, contributing to a comprehensive understanding of these transformation features and how they

cultivate emotional attachment with users.

4.1 Slow and Subtle Transformation

This research underscores the significance of a “slow and subtle transformation” as a vital characteristic that engender emotional attachment in users. It entails a gradual and uninterrupted shift intentionally crafted within an object by the creator, resembling what cognitive scientist Donald A. Norman terms “just noticeable difference” or “JND”[18]. Norman characterizes JND as “the amount that something must be changed for the difference to be noticeable, defined to mean that the change is detectable half the time.” This process advances in tiny increments, indiscernible in real-time, akin to the gradual erosion of jeans, the rusting of a steel gate, or the gradual peeling of paint on a bench.

The element of time assumes a central role in shaping the characteristics of transformation, as the changes observed on an object serve as tangible manifestations of the passage of time. These alterations, often described as “traces of time passed”, are significant as they imbue objects with a sense of history. Objects that undergo gradual transformations over time acquire depth and accumulate layers of narrative, becoming mirrors of their users’ experiences. Consequently, these temporal imprints can foster a deeper and more meaningful connection between the object and its user.



[Fig. 1] Alessia Giardino, *Natural Footprint* 2010,
Source: <https://materialdistrict.com/material/natural-footprint/>

In the pursuit of designing slow transformation, the choice of materials play a pivotal role. A diverse array of materials exists, ranging from those designed for enduring strength to those specifically engineered to “age well.” A concrete type named as Natural Footprint[19] [Fig. 1] serves as an illustrative example, blending photo catalytic cement with laser-cut plywood. The imprinted patterns of laser-cut plywood on the concrete gradually detach and break down in reaction to pollution and weathering, producing “shadowy lace-like effect” as they warp and bend. Ultimately, these elements fall away, leaving a lasting imprint of the concrete surface. This intricate interplay of organic and inorganic materials results in textured surface that undergo transformation over time, underscoring the “symbiotic relationships” observed in the natural world, where one organism thrives off another. Chapman notes that quantifying experiences in terms of their intensity of strength can be counterproductive. Consequently, the utilization of subtle and more transient experiences has the potential to deeply influence the user’s psych through the gradual passage of time.

4.2 Constituting Transformation

This study highlights the importance of constituting transformation within the object itself. Objects that deteriorate completely and rapidly tend to evoke weaker emotional responses compared to objects in which transformation serves as a record of the passage of time within the object. In a study of investigating the reasons for preserving certain items in the context of interaction design conducted by

researchers[20] the significance of the historical element within objects is underscored. For example, they explore the patina that gradually forms on cherished furniture over time. They emphasize the value of materials capable of retaining traces of past use, such as patina, as these traces contribute to infusing an object with a sense of history and significance.



[Fig. 2] Simon Heijdens, *Broken White* 2004, Source: <http://www.simonheijdens.com/indexbig.php?type=project&name=Broken%20White>

The characteristics of transformation manifest in a collection of ceramic plates crafted by Simon Heijdens [Fig. 2], revealing small cracks that appear on their smooth surfaces with use. These cracks are intentionally crafted by the maker to develop floral patterns on the plates. As detailed in Heijdens' text[21], the transformation within the artwork can “relate to an evolving entity, such as a friend or a flower”. This incorporation of transformation within the object is vital for fostering an emotional attachment, as this kind of transformation becomes an intrinsic and meaningful part of the object.

4.3 Positive Transformation

This research emphasizes the necessity of cultivating a positive approach to the design of transformational objects. In accordance with Saito's perspective[22], transformations that occur gradually over time can adversely impact the object's appearance, as such objects are often perceived as having passed their prime and are associated with negative aesthetics for the observer. In order to cultivate emotional attachment in users, the transformation must deviate from what Saito categorized as a negative aesthetic shift, encompassing “age, decay, decline, deteriorate, wane, decompose, get old.” Instead, it should embrace a positive transformation marked by terms such as “mature, ripen, develop, mellow, season.” This transition is vital to create emotional bonds with users.



[Fig. 3] Ann Demeulemeester, *Carte Blanche Table*, Source: <http://www.remodelista.com/posts/furniture-anne-demeulemeester-carte-blanche-table>

An approach to transforming the negative aspects of transformation into positive aspects is exemplified in a table [Fig. 3] designed by fashion designer Ann Demeulemeester for the Belgian

company Bulo, challenging conventional perceptions of aging. She took this blank canvas quite literally, creating a series of desks without embellishment, entirely covered in white canvas. With this work, she challenges the delicate boundary between what is considered dirty and clean. Some may view stains on the white canvas table as dirt, while others perceive them as unintentional works of art or favorable transformations. As per Douglas's insights in "Purity and Danger"[23], an object is categorized as dirty when it is not in its rightful or anticipated place, drawing a parallel with shoes considered dirty when placed on a dining table. Similarly, if dirt stains the canvas of Demeulemeester's table, it might be perceived as art considering its placement on a white canvas. Through both theoretical and practical exploration, this study contends that a positive transformation proves more effective in eliciting the positive emotions linked to emotional attachment. Thus, it becomes imperative to explore strategies to shift the negative connotations of transformation into positive aspects.

Similarly, when dirt stains the canvas of Demeulemeester's table, it may be seen as art since it is placed on a white canvas. From both theoretical and practical exploration, this research asserts that a positive transformation is more effective in evoking the positive emotions associated with emotional attachment. Therefore, it is crucial to find ways to shift the negative connotations of transformation into positive aspects.

4.4 User related Transformation

Another critical characteristic that necessitates consideration and emphasis is the user's involvement shaping the transformation. This research underscores that the user's involvement in bringing about the transformation is pivotal for nurturing an emotional attachment between them and the object. This concept aligns with the notion of a "unified experience"[24]. Chapman suggested, for a transformational object to cultivate emotional attachment, the changes should be initiated by the user, fostering a shared experience. A more profound connection is established when the user plays an active role, effectively becoming co-producers of the object.



[Fig. 4] Bethan Laura Wood, images of *Stain teacup*, Source: <http://www.woodlondon.co.uk/index.php?/tableware/stain/>

The work "Stain teacup" [Fig. 4] crafted by Bethan Laura Wood, offers a compelling example of the user's pivotal role in participating in the transformation of an object. This collection of teacups is made to enrich the bond between user and object through the activity of "drinking". Wood challenges the conventional notion that use inevitably leads to damage, and instead, she leverages the nature of ceramics. The "Stain Teacup" are intentionally crafted to accumulate tea stains with repeated use, gradually revealing concealed patterns on their interior surfaces. Users become co-producers of the transformational object, actively influencing the change by reflecting on their tea-drinking habits, which fosters a more intimate bond with the teacups than mere passive observation.

This research underscores the idea that the bond between the user and the object naturally intensifies

when users are actively involved as co-producers in the narratives of the object, as opposed to being passive observers of transformation. Operating on this premise, the study posits that emotional attachment is nurtured when the user engages actively in, or initiates, the object transformation.

In summary, the term transformation of this research is defined as:

The term “transformation” in the research refers to a deliberately crafted, visible and physical alteration within an object by the maker, aimed at fostering emotional attachment in the user. This concept revolves around subtle and gradual changes, in contrast to abrupt shifts in shape, and is brought about by the user through the natural aging of the object, marked by traces of long-term usage. Such a transformation breathes life into objects, displaying incremental growth akin to the development observed in plants, aligning with Chapman’s notion of “mutual evolution and growth” between the object and the user. Furthermore, these transformative qualities embody positive elements by leveraging material properties. This research argues that materials that undergo positive transformation have the potential to evoke positive emotions.

5. Conclusion

This research aimed to identify the specific characteristics of transformation that forge enduring and meaningful connections between individuals and objects. As research findings, this study presented four characteristics of transformation in objects that can be applied to design process to foster an attachment with user and discussed how these insights can be crafted into objects for designers and makers. The findings were: slow and subtle transformation, constituting transformation in the object, positive transformation, user related transformation.

By utilizing the literature review method, the research was able to systematically gather, analyze, and synthesize exiting knowledge and theories related to transformation in objects and how it is performed in practical design artefacts. This approach allowed the research to establish a well-informed theoretical foundation and to identify these key characteristics, which in turn shaped the research’s findings. The findings, grounded in the literature review, provided valuable insights into how transformation within objects influences emotional attachment. This contribution enhances broader understanding of emotionally durable design and its implications for design practice.

This study emphasized the transformative impact of design on emotional connections, highlighting the role of intentional transformation in fostering enduring relationships between individuals and objects. Understanding these emotional nuances enables designers to create functional objects that hold profound personal significance, contributing to a sustainable future by prolonging the life of cherished items. The research opens avenues for further exploration in emotionally durable design and its influence on our interaction with surrounding objects.

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