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A Study of Image Schema and Visual Representation with Touchpoint Design

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ABSTRACT

Touchpoints refer to any interaction and contact between customers or potential customers and a brand, often occurring through various channels. Each touchpoint provides an opportunity for a brand to communicate its values, create a positive impression, and engage with its target audience. Effective touchpoint design requires designers to have a deep understanding of human cognition and perception, particularly how individuals mentally represent and interpret visual stimuli. Image schemas are cognitive structures humans use to comprehend the world around them, serving as fundamental building blocks of mental representation and playing a crucial role in the interpretation of information visually. Visual representation is essential in touchpoint design for shaping user experience and perception, and the use of appropriate visual elements and image schemas can significantly impact user engagement, understanding, and emotional responses. This study aims to explore the connection between image schema and visual representation in touchpoint design, with a particular focus on understanding how both factors influence user interactions and cognitive processing in touchpoint design.

Based on theories from cognitive psychology, design principles, visual perception, and other relevant fields, this study employs a mixed-method approach, including literature review and case analysis, to collect and analyze data. Firstly, a literature review is conducted to gain an understanding of relevant theories and to identify the connections and interactions between touchpoint design, image schema and visual representation. Subsequently, typical cases are analyzed to examine the application of image schema and visual representation with touchpoint design.

The research has found that the use of image schema can enhance the accuracy and continuity of visual representation, and they can be employed as a design language. Effectively utilizing image schema plays a positive role in inspiring designers to enhance user experiences and facilitate effective communication in touchpoint design.

These research findings provide continuity to a series of literature related to cognitive psychology and visual representation, offering new insights into the relationship between image schema, visual representation, and touchpoint design. By delving into the interaction of these concepts, designers and relevant practitioners can gain a better understanding of the complexity of user cognition and emotional experiences, thereby providing robust guidance for creating more attractive and effective touchpoint designs. These findings provide a valuable foundation for future research and design practices to meet the evolving needs and expectations of users.

KEYWORDS

Touchpoint Design, Image Schema, Visual Representation, User Experience, Brand Touchpoint

INTRODUCTION

Background and purpose of the study

In an era of rapidly advancing modern technology, the points of contact between people and brands are becoming increasingly diverse and complex. The design of these brand touchpoints has evolved over different eras and technological advancements, transitioning from traditional media to digital media, and further towards multi-channel integration and user experience, gradually moving towards a mobile-first approach. These touchpoints can be physical, digital, or social, including websites, mobile applications, social media, customer service centers, physical stores, and more. Visual representation plays a crucial role in touchpoint design. It attracts the user's attention and conveys the purpose and value of the design, helping users quickly understand information, improve service quality, convey emotions and brand image, and shape the brand's personality and characteristics through the selection and combination of design elements. Excellent visual representation can flexibly adapt to diverse touchpoints and maintain consistency in enhancing the user experience. Users expect more intuitive, efficient, and enjoyable interactions with brands or products, which requires designers to have a deep understanding of human

cognition and perception in touchpoint design, especially how the target users mentally represent and interpret visual stimuli. Image schema is psychological representations of specific concepts or emotions that play a crucial role in interpreting visual information. In recent years, the application of image schema in the field of design has become a trend.

The purpose of this study is twofold: first, to explore the connection between visual representation and image schema with touchpoint design, and second, to understand how both of these elements impact user interactions and cognitive processing in touchpoint design.

Scope and method of research

The scope of this study includes literature research, case analysis, and design exploration, with a focus on examining the relationship between image schema and visual representation. Furthermore, it delves into how image schema plays a role in the visual representation of touchpoint.

The research methodology consists of three main steps. Firstly, a literature review is conducted to gain an understanding of relevant theoretical concepts and to compile previous research findings. This step serves as a reliable theoretical foundation for establishing connections among touchpoint design, image schema and visual representation, with a particular emphasis on exploring the correlation between image schema and visual representation. Secondly, a case analysis approach is employed to analyze the design of signage systems in the Brooklyn Botanic Garden in New York, which incorporates the theory of image schema. This analysis aims to identify and summarize the characteristics of this specific case. Lastly, the findings from both the theoretical research and the case analysis are combined to provide insights into the potential applications of image schema in various touchpoint designs.

LITERATURE REVIEW

Image schema and touchpoint design

Regarding touchpoint design, scholars and experts in the fields of user experience design, service design, and brand management typically discuss its definition and principles.

Philip Kotler and Kevin Lane Keller's co-authored book "Marketing Management"(2009) explore the concepts of brand management and touchpoints, emphasizing the importance of touchpoints in brand establishment and main-

tenance. Don Norman, in his book "The design of everyday things: Revised and expanded edition,"(2013) emphasizes the interaction between products and users, particularly achieving a good user experience through the design of interface elements. Marc Stickdorn and Jakob Schneider, in their co-authored book " This is service design thinking: Basics, tools, cases"(2012) introduce methods for service design, including the design and management of user touchpoints. Jesse James Garrett's work "Customer loyalty and the elements of user experience,"(2006) explain touchpoints in user experience design and how to optimize user interactions with products or services through design. It also presents a hierarchical model of user experience, which includes different levels of user-system interactions.

In summary, touchpoint design refers to the deliberate planning and structuring of interaction points between a user and a product, service or system. These touchpoints can include physical and digital elements that facilitate user engagement and interaction. Touchpoint design is a critical aspect of user experience (UX) and service design, aiming to create meaningful and positive user interactions at various stages of a customer journey or user engagement with a brand or offering. The touchpoint in branding refers to any interaction or point of contact that a customer or potential customer has with a brand.

The concept of image schema was introduced by linguist and cognitive scientist George Lakoff and philosopher Mark Johnson in their groundbreaking work "Metaphors We Live By"(1980). In this book, they propose that image schemas are fundamental cognitive structures that underlie metaphorical representations in language. Image schemas are described as abstract patterns that arise from our sensory and motor experiences interacting with the physical world. Johnson suggests that image schemas are dynamic organizing forms that recur in the perception and interaction between individuals and their external environment, providing consistency and structure to human experiences. He defines image schemas as having three layers of meaning: (1) recurring patterns of experience (2) relatively simple components and (3) strong internal structure. He lists over twenty image schemas, including Container, Balance, Path, Link, Process, Near-Far, Part-Whole, and more.

These image schemas, composed of simple mental images, can be seen as cognitive tools residing in people's subconscious. By repeatedly applying a particular image schema, individuals gain a methodological guide to understanding and reasoning about the objective world, deriving meaningful insights from the external world. The process of image schema construction is the same as in

Figure 1.

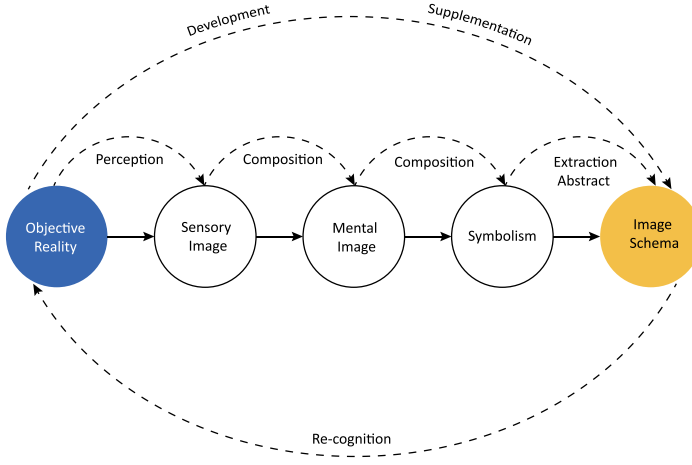

Figure 1. The process of constructing an image schema.[Drawn by the author]

Gibbs believes that image patterns can be universally defined as dynamic simulations representing spatial relationships and motion in space. In other words, image patterns are non-symbolic and interactive. Ungerer suggests that humans gain experience through daily life and interaction with the external world, and image schemas are fundamental cognitive structures formed based on this experience. In other words, image schemas stem from personal experiences and practice. Oakley argues that image schemas are synthetic representations of sensory experiences, which arise from mappings of conceptual structures. In other words, image schemas serve as preprocessing mechanisms that can trigger emotional mappings in individuals. Hampshire contends that image schemas are recurring, specific experiential patterns that can form cross-form and cross-disciplinary meanings and understandings. He emphasizes the multicultural and universal nature of image schemas.

In summary, image schemas are fundamental patterns of perception and movement that serve as the basis for human understanding of the world. These schemas are formed through repetitive and consistent patterns of bodily experience and are considered to be a priori, cross-cultural and universal. However, their exact nature and composition may vary due to individual and cultural influences. This is because they are influenced by our personal experiences and cultural backgrounds. In other words, Image schema refers to a cognitive framework or mental structure that humans use to understand and represent

spatial and sensory information in their minds. These schemas are abstract, recurring patterns of thought that help individuals make sense of their surroundings and experiences. Image schemas are often used to understand and communicate concepts, ideas, and relationships.

In the context of touchpoint design, image schema can be applied to enhance user experiences by leveraging these cognitive patterns. Here's how the concept of image schema relates to touchpoint design(refer to Table 1.).

Table 1. Difference of poetry and painting

RELATIONSHIP	CONTEXT
Spatial Understanding	Image schemas help individuals understand and navigate physical spaces. In touchpoint design, considering how users perceive and interact with spatial aspects of interfaces or physical products can improve usability and user satisfaction.
Metaphorical Representation	Image schemas are often used metaphorically to represent abstract concepts. Touchpoint designers can employ metaphorical representations to convey complex ideas or functions more intuitively. For example, using a "folder" icon to represent a digital filing system leverages the image schema of containment and organization.
Embodied Cognition	Image schemas are linked to embodied cognition, which means that our bodily experiences shape our mental representations. In touchpoint design, considering how users physically interact with devices or interfaces can inform design decisions to make interactions more natural and user-friendly.
Pattern Recognition	Image schemas involve pattern recognition, which is essential in design. Recognizing how users perceive and interpret visual and interactive patterns can guide the creation of effective touchpoints.
Sensory Modalities	Image schemas can incorporate various sensory modalities, such as visual, auditory, and tactile experiences. Touchpoint designers should consider how different sensory cues can be integrated to enhance the user experience.

In summary, image schema in touchpoint design involves understanding how people mentally organize and interpret information, both spatial and abstract, and using this understanding to create user-friendly and effective touchpoints, whether they are digital interfaces or physical products. By aligning

design choices with how users naturally think and perceive, designers can create more intuitive and engaging touchpoint experiences.

Visual Representation with Touchpoint Design

Based on the research conducted by multiple scholars mentioned in the previous text, it can be concluded that the goal of touchpoint design is to ensure that each interaction aligns with the overall core experience and helps foster positive relationships with customers. It involves considering the customer journey and identifying key touchpoints where the organization has an opportunity to make an impact.

In touchpoint design, visual representation refers to the process of conveying information, guiding users, creating a brand image, and providing a user experience through visual elements and principles. These visual elements include but are not limited to color, typography, icons, layout, shapes, lines, images, videos, and other visible design elements. Professor Albert Young Choi in his work "Cultural Code Brand Design Methodology" (2018) points out that the visual representation of brand touchpoint design can be divided into direct visual representation, abstract visual representation, and systemic visual representation. Visual representation aims to present the appearance and feel of products, interfaces, websites, applications, or other interactive systems through various design decisions in a visual manner.

Visual representation is crucial in touchpoint design, as it directly influences users' perception and experience. Below is the diagram depicting the components of the core experience. See Figure 2.

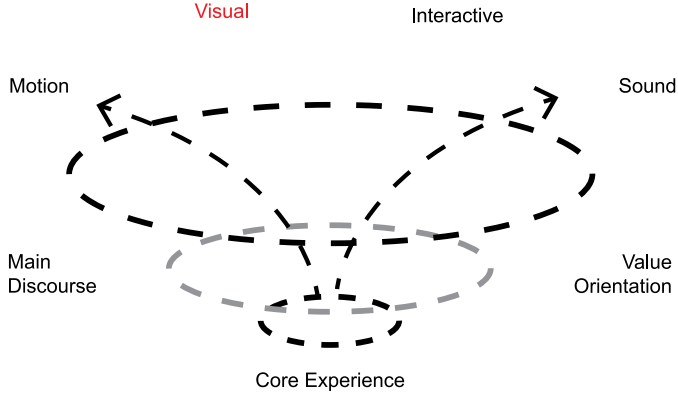

Figure 2. Composition diagram of the core experience.
[Source: Lecture material of designer Tingan He]

As can be seen from the above, visual representation is a crucial element in shaping the core experience, encompassing all aspects of what humans can see and recognize about a brand or product. It serves as the most direct means of engaging with people. Visual representation has the power to capture users' attention, convey information, enhance user experiences, shape brand identity, improve usability and provide aesthetic enjoyment. By placing emphasis on visual design, an outstanding interactive experience can be provided to consumers, encouraging them to sustain their interest in the brand, product, or service.

Furthermore, visual representation not only concerns the selection and layout of design elements but also takes into account aspects such as consistency, color psychology, layout principles, graphic information conveyance, interactive feedback, and more.

In summary, visual representation is a comprehensive design field in touchpoint design, aiming to convey information, deliver user experiences, and establish emotional connections with users through visual means.

The relationship between image schema and visual representation

In the process of touchpoint design, there exists a symbiotic relationship between image schema and visual representation. During the research and investigation phases, designers have the ability to extract image schemas that pertain to the target audience. These image schemas encapsulate cognitive frameworks, embodying pre-existing knowledge, experiences and expectations concerning visual structures and modes of comprehension. These image schemas serve as invaluable guides in the conceptualization phase, providing designers with a deeper understanding of user characteristics.

Subsequently, in the design phase, the challenge is to bridge abstract cognitive patterns with concrete visual expressions. Image schemas act as a bridge, effectively translating theoretical concepts into tangible designs. Meanwhile, the visual elements employed in the design also convey the information encapsulated within these image schemas, aiding users in comprehension and interaction. Designers strategically harness visual representations to convey specific mental images, thereby eliciting relevant cognitive and emotional responses within the user's mental model.

In the evaluation phase of the design process, touchpoint design, when tested in interactions with users, may lead to the modification or even the creation of new image schemas. This iterative process subsequently informs and guides future design endeavors, ensuring that touchpoint design aligns more harmoni-

ously with the user's mental model and expectations. For a more comprehensive understanding, please refer to Figure 3.

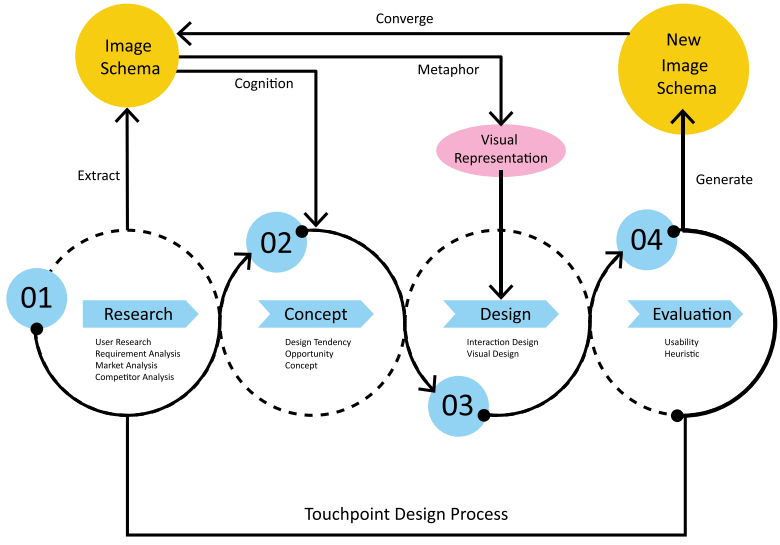

Figure 3. Model diagram of the relationship between image schema, visual representation, and touchpoint design.[Drawn by the author]

The previous discussion on the relationship between image schema and visual representation in touchpoint design process reveals that in the design of brand or service touchpoints, there exists a close interconnection between image schema and visual representation. They mutually influence and collaborate with each other to shape the brand image and deliver a consistent user experience.

To delve further into these associated characteristics, they can be summarized as but not limited to the following:

- Visual Presentation Influenced by Image Schema

Image schema typically encompasses recognizable elements such as a brand's logo, icons, symbols, and the like. These elements directly impact visual presentation, as their selection, size, color, and arrangement in design have a direct influence on the appearance and feel of the user interface. For instance, the color of a brand's logo may be reflected throughout the entire brand identity color scheme to ensure consistency. The logo design and related designs for Helios Bioelectronics are showcased as an example (See Figure 4.).

Figure 4. Helios Bioelectronics logo design and related designs.[Design by Tingan He]

- Visual Enhancement of Image Schema

Visual elements such as color, typography, layout, and composition can enhance the recognizability of image schema. These visual elements can be employed around brand logos or symbols to increase their visibility and appeal. For instance, a brand's primary colors and graphic elements can be used in buttons, text, and backgrounds within a user interface to emphasize the brand's identity (See Figure 5.).

Figure 5. Interface-related design for Helios Bioelectronics.[Design by Tingan He]

- Consistency and Coherence

Consistency between the image schema and visual representation is crucial. Consistency ensures that the brand conveys the same message and emotions across different touchpoints and platforms. Visual consistency helps ensure that the brand's visual identity remains uniform across various brand materials and user interfaces.

- Integration of User Experience

The synergy between the image schema and visual representation contrib-

utes to a unified user experience. Users should be able to easily recognize the brand at various touchpoints (website, mobile app, social media, etc.) and feel the brand's consistency and values. Designers often consider how to incorporate the image schema into the visual representation of user interfaces to ensure that users do not feel confused or disappointed during interactions.

- Conveying the Brand Story

Image schema and visual representation can work together to convey a brand's story and values. The symbols and signs symbolized by image schema often carry metaphorical meanings, and presenting these elements through visual representation helps convey the brand's story and core message. Visual representation tells the brand's story in a visual way through layout, image selection, and color coordination.

In summary, Image schema and visual representation are closely intertwined in the design of brand or service touchpoints, collectively used to convey the brand's identity, emotions, values, and user experience. Coordination and consistency between these two elements are vital for building a strong brand image and providing a satisfying user experience. Designers need to consider their relationship throughout the entire design process to ensure the consistency and coherence of the brand identity.

CASE ANALYSIS

In design practice, many designers have already applied the theory of image schema and produced excellent design works. In the project expansion case of Mr. Fu Qiuyang, the founder of Empty Set Design (former CEO), he cleverly utilized image schema to create a signage design for the wayfinding system of the Brooklyn Botanic Garden in New York. (See Figure 6.)

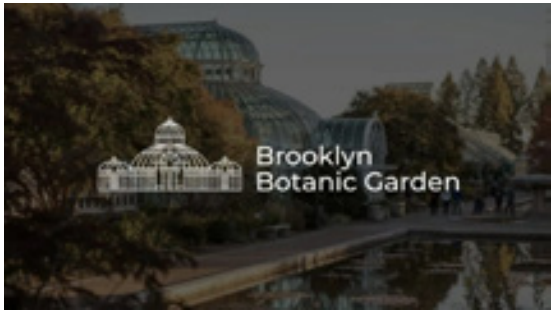

Figure 6. The Brooklyn Botanic Garden's Logo. [Source: Website.]

In the later stages of signage design, designers, through the thoughtful uti-

lization of the image schemas "Path" and "Near-Far," incorporate purposeful design elements into the environment. This not only enhances the practicality and user-friendliness of the signage but also plays a constructive role in crafting a more enriching traveler experience.

- Path

"Path" comprises a starting point, an endpoint, a sequence of continuous points, and connecting lines, whether virtual or physical. A person's gaze instinctively follows the trajectory of an object or a specific direction. By infusing design concepts into the "passing" points along the path, the guidance provided along park pathways is reinforced. (See Figure 7.)

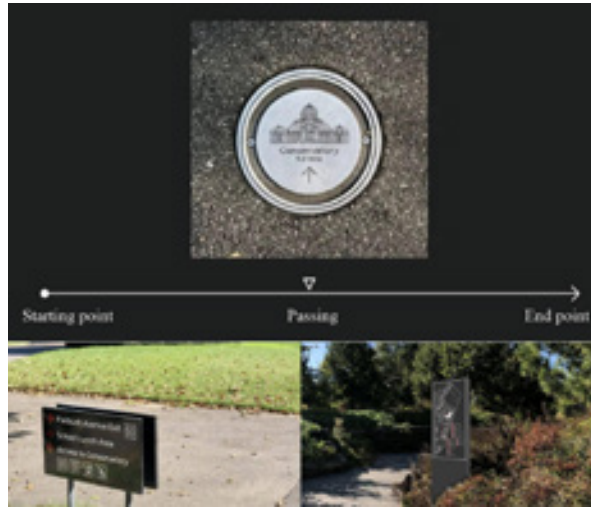

Figure 7. "Path" image schema in the Brooklyn Botanic Garden project. [Source: Website.]

As visitors step into the garden, the entrance serves as the natural origin point of a map-like path, with the diverse attractions they seek to explore acting as unique destinations along this symbolic route. Innovatively, the design process extends beyond traditional attraction signs on signposts to embrace the conceptualization of a map-like path. This concept is brought to life along the very pathways visitors tread on their journey to various attractions. Within this context, the garden integrates attraction signage, information on path distances, and directional guidance onto the visible floor tiles. These elements collaboratively provide visitors with a clear and intuitive wayfinding system, streamlining their navigation within the park.

Moreover, the design harmoniously marries signage principles with the in-

nate cognitive concept of "path" By incorporating attraction signage directly into the pavement tiles, these tiles assume a heightened role in offering directional orientation. This strategic integration seamlessly aligns with how individuals naturally perceive and follow "path." Consequently, the overall touring experience within the scenic area is notably enriched. Visitors are guided more effectively, and their interaction with the environment is enhanced.

The application of the "Path" image schema at the Brooklyn Botanic Garden's signage system is a testament to the efficacy of cognitive design, rendering the visitor experience more accessible, informative, and engaging, all while simplifying navigation and enriching the overall visit to this splendid botanical garden.

- Near-Far

In the context of the signage system at the Brooklyn Botanic Garden, the "Near-Far" image schema serves as a foundational principle for adjusting the level of information detail, depending on the visitor's physical proximity to the signage. This adaptation encompasses careful considerations of font sizes and iconography, all strategically aimed at enhancing the visitor experience and simplifying wayfinding throughout the garden. (See Figure 8.)

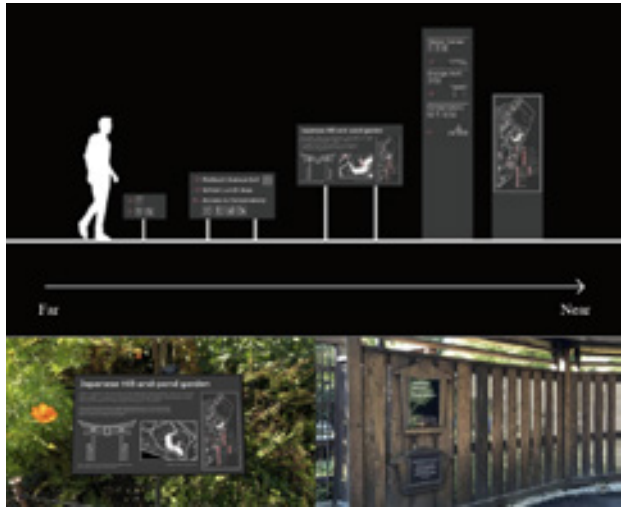

Figure 8. "Near-Far" image schema in the Brooklyn Botanic Garden project. [Source: Website.]

When examining the signage within close proximity to the observer, one

can observe signboards featuring elaborate textual information and comprehensive park maps. This approach is deliberate and ensures that visitors, when nearby, can readily access and delve into comprehensive details about the garden, thus facilitating their exploration.

However, as visitors move further away from the signage, a deliberate transformation unfolds. The abundance of textual content gradually diminishes, and the extensive park map, along with iconic landscape photographs, progressively yield ground to simplified icons. Distant signage relies primarily on icons and directional cues to guide visitors through the park. This design evolution is rooted in the principle that, as viewers move farther from the signage, icons become more visually prominent and efficient in conveying essential information, as opposed to lengthy textual descriptions.

This design strategy seamlessly aligns with the incorporation of visual concepts. When individuals grapple with abstract concepts presented in text, their cognitive processes often convert this information into mental images. These mental images are not only easier to grasp but are also more readily stored in memory. This approach reinforces the shift towards icon-based signage as the visitor's distance from the information source increases.

The Brooklyn Botanic Garden's deliberate application of the "Near-Far" image schema in its signage design signifies a thoughtful and adaptable approach, attuned to the visitor's proximity. This dynamic strategy enhances the visitor experience, streamlines wayfinding, and resonates with the natural cognitive processes that individuals employ when interacting with information at various distances within the garden's landscape.

In conclusion, by implementing image schema in the signage design of their wayfinding system, the Brooklyn Botanic Garden can achieve better brand recognition, navigation, and user experience. This example highlights the significant role image schema play in touchpoint design, not only aiding in conveying the brand image but also offering practicality and recognizability to improve user satisfaction and brand recognition.

CONCLUSION

This study delves into the relationship between Image Schema and visual representation, as well as how to apply them in Touchpoint Design. Through theoretical exploration of Image Schema and practical case analysis, several important conclusions have been drawn. These conclusions not only contribute to

further research on the application of Image Schema but also provide valuable insights for the fields of design and cognitive science.

Firstly, this study confirms the crucial role of Image Schema in cognitive processes. Image Schema, as a fundamental cognitive structure, aids individuals in understanding and processing complex visual information by providing abstract representations of objects, space and time. This finding underscores the importance of thoroughly considering Image Schema in design to enhance users' cognitive experiences.

Secondly, the study examines the interactive relationship between visual representation and Image Schema. Visual representation is a vital means of conveying information and emotions through visual elements such as color, shape, and arrangement. It was found that visual representation can effectively activate and enhance cognitive processes associated with specific Image Schemas. This implies that in design, careful selection and adjustment of visual elements can guide users to a deeper understanding and experience of information.

Furthermore, this study introduces the concept of Touchpoint Design and discusses how it can be combined with Image Schema and visual representation. Touchpoint Design emphasizes interaction with users' emotions and experiences, enhancing the interaction between users and information through emotional resonance and connection. Research results demonstrate that Touchpoint Design can not only complement the activation of Image Schemas but also coordinate with the optimization of visual representation. Image Schema and visual representation can synergistically impact Touchpoint Design, creating richer and more meaningful experiences for users.

Finally, this study emphasizes the importance of interdisciplinary research. Image Schema theory originates from cognitive science, while Touchpoint Design involves fields such as design and affective psychology. Combining these two areas not only enhances our understanding of cognitive processes and emotional experiences but also helps in designing more attractive and effective user experiences. This interdisciplinary approach provides valuable ideas and insights for future research and design practices.

In conclusion, this study offers new insights into the relationship between Image Schema, visual representation and Touchpoint Design. By exploring the interactions of these concepts in depth, designers and related professionals can better grasp the complexity of user cognition and emotional experiences, thereby providing strong guidance for creating more appealing and effective Touchpoint Designs. These findings provide a valuable foundation for future research and design practices to meet the evolving needs and expectations of users.

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