

The Impact of Cartoons on Children's Toy Design

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Abstract. In recent years, cartoon characters have not only been confined to the animation industry. As one of the important derivatives of the animation industry, they have fully exerted the internal driving force of design innovation based on the design concept of children's toys. Disney is a successful example of creating global Disney culture and commercializing animation culture. By comparing the commercial revenue data related to the commercial success of the domestic animation "Nezha the Demonic Child" (hereinafter referred to as "The Demonic Child"), it can also be found that the mutual stimulation effect between cartoon characters and toy design. This multi-dimensional mutual promotion is giving rise to new vitality in the process of children's consumption, which also provides a direction for the research of college students majoring in art design.

Keywords: Cartoon Character; Anime Industry; Children's Toy Design; Multi-dimensional Interaction; Fine Arts Design Major

1. Toyization Translational System of Cultural Symbols

The symbol system formed by Disney over the past century has enabled its animated characters to have a standard operating method when transformed into toy forms. For instance, Elsa the Snow Queen in "Frozen" was transformed into an LED light-up toy, while Lea Pele, the Golden Hair Princess, was decomposed into detachable hairpieces that can be assembled. During the process of converting visual symbols into physical forms, the principle of "symbol image - symbol transformation - symbol emotion" was followed. In "The Magician", the designers transformed some symbol elements from the animation visuals into "rebellious symbols", creating features different from the original classic Naiwa, such as the "Sky Dragon Silk" and "Heavenly Circle" of Naiwa. The Sky Dragon Silk was transformed into a metallic device with a different plate composition and texture, while the Heavenly Circle was transformed into a light-emitting launcher. Such visual transformation made the products not only fun to play with but also very cool.

Disney researchers pointed out that the pink and blue products in the Disney princess series saw a 37% increase in sales compared to pure pink ones. Therefore, in "Ocean Tale", the design of the protagonist Moana's appearance increased the color contrast between coral orange and blue. The "Magician" production team was aware of this and transformed the "dirty circle" on Naiwa's face into a sticker for wiping, and modified the red-black combination sweatshirt into a replaceable outfit system. This "destructive aesthetics" could "hit the mark" precisely because it was the subcultural aesthetic of Generation Z children.

2. Design Methodology for the Entire Chain of Animation Images

Disney pioneered the "toy-defined image" design, which was jointly designed by character artists and toy industrial designers in the conceptual stage. In "Toy Story 4", the curved joints of Forky, the toy fork, catered to the morphology engineering of building blocks; in "Zootopia", Judy the Police Officer's movable double ears were equipped with 32 joints, and such a morphological design gave the plush toy real interactivity. Compared with the more utilitarian mechanical design in "The Magician", the design of the mechanical Naiwa did not appear in the released film, but it was very friendly for the "Magician" derivative toys: the shoulder plates could be pulled out to become a prop for the windwheel, and the internal magnets of the Sky Dragon Silk could be

connected with each other. Under the limited product variety, the product possibilities were expanded by three times.

Theme amusement and entertainment experience companies can understand children's behavioral data through AR game trial-play monitoring methods, thereby discovering different needs for product behaviors. In "The White Helmet Armor", it was found that children aged 7 to 9 would immerse themselves for 45 minutes, while ordinary children could only immerse themselves for 20 minutes. Based on this, Disney also launched a magnetic transformable Big White Helmet Armor, inspired by "The Incredibles". In China, through the "Chinese Cultural Trend Creation" method, through crowdfunding, 133 out of 17 submitted works were selected as the real production toys from the game arsenal design, reducing the development cycle by 40%.

3. Synergistic Evolution Theory of Cultural IP and Toy Industry

The global licensing of Disney has formed its unique value-added chain. Shanghai Disneyland's "One Park, One Product" has its own exclusive sales doll of Linna Belle, which enlarged the character's face shape and face proportion by 12% and 8% respectively, achieving a "mellower transformation" and increasing the repurchase rate by 65%. The "One Thing, One Solution" project of "The Magician" collaborated with the Dunhuang Museum to design the "Lotus Pattern Heavenly Circle" toy with light-effect linkage, allowing the 407 cave of the Sui Dynasty in Dunhuang Mogao Caves to be presented in an innovative way through cultural premium on the basis of the light-effect display. The data from the trendy toy e-commerce platform shows that the premium rate of this product is 220%, and the proportion of consumers aged 25-35 is 35%, hitting the breakthrough positioning of changing the purchase range of traditional children's products. Secondly, from the perspective of environmental protection, Disney has promised that all its toys will use recyclable plastic by 2023. In "Frozen II", Elsa's skirt is made of plastic made from 92% of marine debris. Meanwhile, the toy company Toymon where "The Magic Boy" is set has designed a "growth mode toy" system. In this system, the Nianma magic pearl of which the child can transform from a magic pearl to a war god when growing up can be tested for stress on materials. The modular design enables the toys to last for 2 to 3 years. The virtual growth mode system in the game has over 12 million daily active users.

4. The Paradigm Shift of Art Education Inspires Us

The upgrading of the animation toy industry has certain requirements for the accumulation of disciplinary knowledge in art design disciplines. In the "Toy Narrative Design" teaching of China Academy of Art, students' role design for toys need to provide three-view diagrams, joint decomposition diagrams, and material stress tests. The Lego studio of Central Academy of Fine Arts, "Application of Golden Ratio in Modular Systems", research has also been applied to the limited sets of Disney's New Year edition.

In terms of cultural dissemination, the "Eastern Movable Joint System" of Guangzhou Academy of Fine Arts integrates the movable joint mechanism of Chinese mortise and tenon and ball joint mechanism. This ensures that the "Ao Bing" design can express the freehand feeling of dragon scales and that the Magic Boy can be played with. At the German Nuremberg Toy Fair in 2023, the "Eastern Movable Joint System" became a pioneering design and won the Innovation Gold Award. China's own aesthetic concepts have become the discourse power.

5. Conclusion

Whether it is the story of Disney creating an animation kingdom or the phenomenon of "Magical Boy" creating a miracle in the local animation game industry, we can see that the design of characters and playmates has become the basic logic of the "production-sale-business-trade" operation in the cultural industry. The four major links of production-sale-business-trade are the

value sources of the hundreds of billions of derivatives. The industrial chain cycle of "industry - game character production - derivative products - audience feedback - character reshaping" is the true classic. For young designers, it is very important to find a balance point between artistic creation and market consumption in the future. In the future, when the metaverse permeates the integration of virtual and real dolls, it will also be a new chapter opening up the children's play world.

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