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Original Paper

A Study on Tactile Spatial Perception of Modern Ceramic Art Creation under Digital Technology

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Abstract

According to art historian Alois Riegl, "The tactile sense forms the foundational underpinning of the perceptual process, providing essential support to the sense of vision." This sensory modality represents the most "primordial" means through which individuals engage with and comprehend the world. In the contemporary digital age, modern ceramists have embarked on an exploration of an extended spectrum of tactile sensations within the realm of ceramic art, thus entering into uncharted realms of creative expression. This exploration has transitioned from an exclusive focus on physical tactile sensations to the incorporation of diverse virtual tactile experiences. The fundamental objective of this study is to probe into the influence of digital technology on the perceptual dimensions of tactile engagement within the domain of pottery creation. This investigation centers on a comprehensive analysis of the utilization of digital technology tools and their impact on the creative encounters of pottery artists who harness these technologies in their craft.

Keywords

Digital technology, Modern pottery creation, Tactile space

1. Introduction

The tactile sense: as its name implies, is the perception resulting from physical contact with objects. Is there any space within this sense? "Located in the body, the sense of touch is an essential sensation for living beings. It is impossible to assume that a person could manipulate their own body without any sense of touch in the body," the renowned philosopher Shankar Nancy one said. Therefore, is this sense, located in the body, the tactile space? Currently, there is a debate between representationalism and anti-representationalism regarding tactile perception of space. Brian O'Shaughnessy, an advocate of representationalism, argues that to perceive the spatial attributes of objects, such as their shape, we must to rely on our awareness of the spatiality and movement of the body (shape). On the other hand, the

anti-representationalist Filip Mattens, believes that "the basic content in tactile perception is the alternation of directional continuity and change," implying that tactile perception of external objects is captured through a sense of direction. Both of these conclusions offer innovative perspectives for the advancement of modern ceramics. In today's digital age, the creation process of modern ceramics has evolved from mechanical physical perception to the spatial exploration of indirect tactile perception.

Digital technology plays a pivotal role in modern ceramics creation. With the widespread use of technologies like 3D Studio Max, Digital Film, TouchDesigner, VR, AR and others, modern ceramics creation has become more flexible and diverse. Beyond physical contact, a new concept known as virtual tactile sense, has emerged, expending the tactile space in modern ceramics creation.

2. Precision in Space Perception

Traditional ceramic craftsmanship, with its exquisite techniques, often results in its clay products. Ceramic molding pushes the boundaries of clay's shape and reveals the unique surface texture of the clay. If this extreme texture is what people desire, then 3DMax can fulfill the aspirations of traditional techniques. When using 3DMax software for modeling, creators can manifest their ideas to craft unique shapes, regardless of the limitations of the clay material itself. With its clear and precise modelling and program control capabilities, various forms of characters, animals, and plants can be created, and the clay combinations can be easily transformed, modified and even edited. Creators have freedom to invent whatever they envision, granting them nearly absolute creative control. Much like the Creator, clay artisans now dominate and direct the presentation of their clay works, turning the once passive use of clay into an active endeavor. Japanese artist Toshiya Masuda's mosaic works serve as excellent examples of this. In traditional pottery creation, creators must consider the clay's plasticity and expression, making it extremely challenging to produce works with precisely equal spaces. In fact, it is nearly impossible to achieve this level of precision. However, in the process of modelling, the final work can accurately replicate the height, width, and density by combining the "original" perception of the watermelon's shape and the mosaic's density. This represents what we can call an absolutely precise space perception.

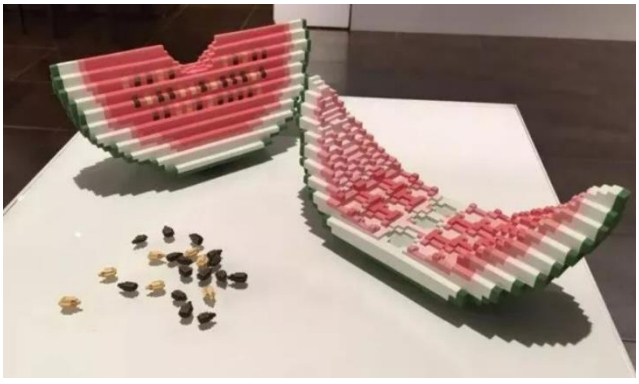

Figure 1. (Image Source: Wechat Subscription: Manlian Education)

3. Process Perception of "Metaphor" in Mud and Fire

"The perception of space, from a perceptual standpoint, heavily relies on experience and the accumulation of visual and tactile movement experiences hold the most authoritative cognition for the sense," as Maertens suggests. He further explains that "The fundamental 'content' in tactile perception is the alternation between continuity and changes in direction." He provides two examples to illustrate this point: "Firstly, when we touch a disc using a chopstick instead of our hands to follow the the plate's contours, it conveys a sense of gradual change of direction, allowing us to perceive the roundness of the plate through the characteristics of this direction change. Secondly, even when the body is immobile, such as when our hands are fixed, we can still perceive continuity and sudden changes in direction when the inner side of the plate moves around our hands." From these examples, we can conclude that tactile perception can be externally detected through changes and directions. In the realm of modern ceramics creation, a new field has emerged: ceramic film. With the assistance of digital technology, ceramic films offer enhanced image quality and more diverse shooting methods. The application and presentation of these shooting techniques in films have introduced a new perspective for creators and viewers in the tactile space.

For instance, in the installation work "The Great Compassion Mantra" from artist Lu Bin, the final presentation includes elements like Buddhist pagodas, Buddhist scriptures, blue and white porcelain, and more. If the work only presents these objects directly, viewers might find it confusing. At most, they may be interested in understanding the culture of Buddhism but not able to perceive the emotions contained in the creation process. However, the artist employs the theory that the core of the sense of touch is the continuity and sudden changes in direction, leading viewers from the present moment to the unseen past process of creation and artistic expression, thereby rekindling the original sense of touch perception. In this work, Lu uses the filming techniques. Buddhist pagodas and blue and white porcelain gradually fade away like snowflakes over time. These close-up shots are impactful, enabling the audience to gradually grasp the metaphorical emotions and thoughts related to these objects. When it comes to scenes outside the temples and the monks, long lenses are employed to present a sense of realism, allowing viewers to feel as if they are there themselves. When depicting factories, a combination of fast-forward and slow-motion skills is used to make viewers follow and experience the numbness and mechanical movements of the workers. "Emphasis on the use of long lens and depth of field lens can strictly avoid limiting the viewers' perceptual process. Focusing on revealing motives through the normality and complete movement of things, we can maintain a sense of realism, transparency, and multiplicity of events. Respect the temporal flow and spatial completeness of events, and put a focus on the full picture of things and the connections between things." The ingenious design of these filming techniques extends the original tangible tactile space into a virtual tactile space. In fact, "Movies are like collages of text, aiming for an effect where A 1+1>2 or A+B>C". The author uses viewers' sense of silence in the "original" tactile space to express emotions through filmic techniques, enhancing tactile space perception with the help of the camera. "The recording of images evokes viewers' past memories, and they are the

emotional storage that each person leaves behind after being exposed to something good, bad, stinging or soft."

Figure 2. Image source: http://www.cjicb.com/lubin.html; Screenshot from the Video of "The Great Compassion Mantra")

4. Dynamic Spatial Perception with Infinite Possibilities

The definition of modern pottery works is undergoing a significant transformation. In the past, works primarily existed as direct presentation of "matter" and "quality". However the advent of technologies such as VR, AR, TouchDesigner, and others has broadened the scope of modern pottery creation, shifting the focus from creators to the audience. This transformation allows the audience to become an integral part of the artwork. In the early 20th century, the renowned French philosopher Merleau Ponty introduced the phenomenology of perception on the theory of phenomenology. He asserted that "the body and the subject are, in fact, the same entity, with blurred boundaries and no clear distinction between subject and object. The body is the subject of perception and experience. It participates in the activities of reality as part of the cognitive subject." Modern ceramic art creation under digital technology leverages the extreme possibilities offered by digital tools to provoke various forms of perceptual explorations.

For example, in the process of creating Jun porcelain, the author of "Fu of Kiln God" contemplates the phenomenon of kiln transformation and the spirit of craftsmanship. Through the lens of human and nature, using materials such as porcelain and computers as a comprehensive medium, the author designs interactive device for a porcelain-smashing sacrificial ceremony, involving the participation of the audience. The creator's goal is to establish a connection between the artwork, the audience and the author

through interaction. This work offers an immersive experience and captures the changes of kiln, making full use of the visual and tactile sensory functions to convey a sense of natural randomness and the spirit of craftsmanship. From a visual perspective, the utilization of digital interactive art's randomness allows viewers to activate a computer algorithm device. To achieve this, viewers must possess a good understanding of Jun porcelain, interact with device, and obtain random outcomes generated by the algorithm device due to various variables. This process closely resembles the nature variable factors involved in the kiln transformation, and viewers derive visual satisfaction. From a tactile perspective, the worship of the Kiln God is a significant ceremony for pottery makers. The shape of the altar designed by the creator in digital art draws inspiration from triple structure of Liangzhu civilization's altar, and the choice of rammed earth emphasizes its critical meanings and primitive feel. The round-shaped altar features layers that exhibit a gradual subsidence from the edge to the center. When the audience, in the form of a digital persona, stands in the center of the altar and places porcelain from the display table on the worship platform in any direction, a gravity sensor beneath the table senses the porcelain. This action causes the visual pattern on the porcelain to change, revealing a speckled crystal flower. The placement of the "worship table" impacts the location of the "markings". Through the audience's random selections, the number, size, and location of the markings are generated on the canvas accordingly. The successful outcome of the kiln transformation can only be triggered when the porcelain is placed in the position corresponding to the timing of the worship table. Otherwise, it results in failure. Upon reaching the third level of the center, at the location of the main altar, viewers place the porcelain on the main altar and initiate the porcelain-breaking ritual. The outcome can take one of two forms: a successful ceremony, marked by an opening effect accompanied by a crisp sound, or a failed ceremony fails, marked by the porcelain breaking, accompanied by the sound of shattering. Viewers actively engage with actions such as standing, placing and hammering to complete the interaction of the installation, experiencing the dynamic tactile perception of the space through technologies like VR, AR and TouchDesigner. Throughout the creative process, creators offer viewers an infinite realm of dynamic spatial perception through virtual design and control of spatial transformations.

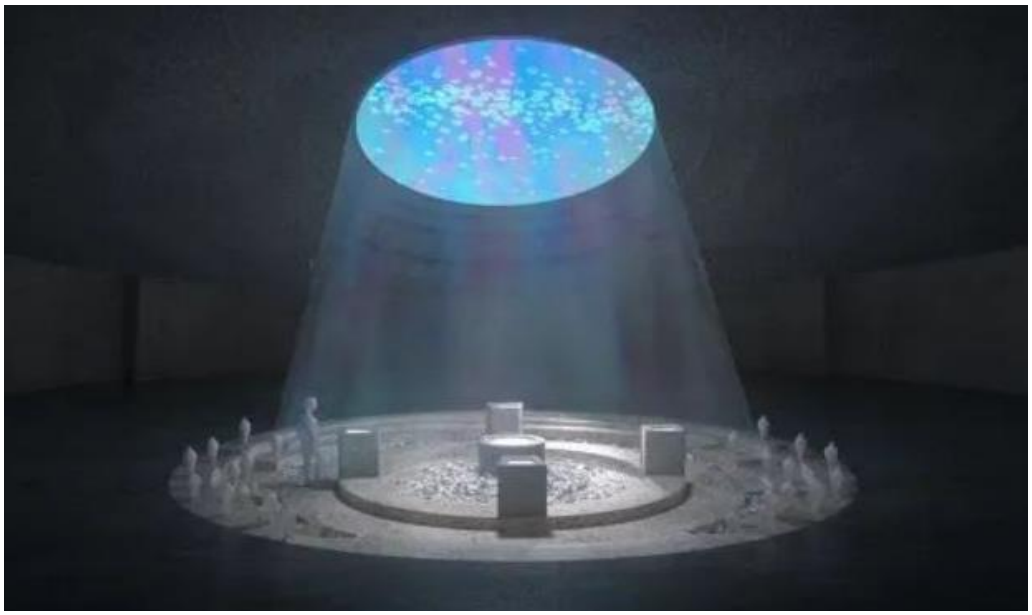

Figure 3. (Image Source: WeChat Public No. Virtual Space Art)

5. Conclusion

In conclusion, the advancement of digital technology has significantly enhanced the texture and dimension of modern pottery creation. The exploration of tactile space has ushered creators into an unprecedented experience. The sense of touch has transcended its traditional boundaries no longer confined to direct bodily perception but now extending into the domains of "virtual" and "metaphorical" tactile space exploration. Technology is not a monster nor a disaster, it will not drown the unique charm of traditional handmade pottery, but rather offers a richer means and more possibilities for modern ceramics creation in emotional and artistic expression.

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