

Stimulating Everyday Creativity: Mediating Role of New Tools in DIY Craft

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ABSTRACT

Everyday creativity helps people consciously develop themselves, respond to challenges, and actively participate in actions that promote social change. This paper focuses on how the renewal of tools in contemporary DIY craft practices affects this human creativity potential. Based on the perspective of post-phenomenology theory, taking tufting activities as a case, through practice-led research and the ethnographic method, the authors elaborate that technological interventions do not only functionally enhance people's ability, but also shape actions and experiences. On the one hand, participants' sensory experiences, as well as their ways of seeing and making are reshaped by modern tools, and new experiences and skills are acquired. On the other hand, people are encouraged to go beyond the limits of skills and rules for creative exploration and personalized expression. The research also pays attention to the potentially negative aspects of tool upgrading in creative practice, where limitations in usage and lack of direct material experience inhibit the space for creativity. Finally, the authors point out how designers should consider the mediating role of tools in the design process to define a more valuable craft experience.

Keywords: Everyday creativity, DIY craft, Postphenomenology, Technology mediation

INTRODUCTION

While the technological development has brought positive changes to human society, it has also sown various hidden dangers. The excessive pursuit of new technologies has led to an overall crisis of ecology, economy, and culture, and modern people are facing a double alienation of labor and consumption (Zhong, 2021). The rapid changes in society and the shroud of instrumental rationality have plunged people into uneasiness and anxiety (Veeber, Syrjäläinen and Lind, 2015), and the impact of COVID-19 pandemic has forced us to face the sense of out-of-control in life.

Creativity is one of the core qualities to meet contemporary challenges and is considered a powerful driver of personal and social development (Gan et al., 2020). Everyday creativity, which is the focus of this paper, emphasizes the view of creativity as an innate potential of ordinary people. It encourages personal growth, allows people to deal with problems in a more resilient and creative way and adapt to the evolving social environment, thus promoting people's all-round development and physical and mental health (Richards, 2010; Villanova and Cunha, 2021). However, current research on everyday

creativity is still insufficient in specific areas and lacks attention to the characteristics of the current era. This study is based on craft activities, one of the core areas of everyday creativity (Benedek, Bruckdorfer and Jauk, 2020), and actively responds to the modernization of DIY crafts in the context of technological development, in order to explore a more contemporary perception of everyday creativity. The combination of “DIY” and “craft” aims to highlight the attention to the process of making rather than the results (Tanenbaum et al., 2013). Drawing on postphenomenological theory, the authors check how technological objects affect human perceptual and behavioral patterns in specific situations, exploring how the use of new tools can stimulate or inhibit the possibility of creativity.

RELATEAD WORKS

Everyday Creativity

Everyday creativity is often considered as a potential shared by human beings, helping to clear the misunderstanding that creativity belongs to only a few individuals (Zielińska, 2020). Furthermore, Kaufman and Beghetto (2009) proposed the Four C Model of Creativity, pointing to a potential developmental track of creativity. Conceptually, everyday creativity is “a phenomenon in which a person habitually responds to daily tasks in an original and meaningful way”, and the outcome can be a creative product or personal experience (Villanova and Cunha, 2021). A recent study of home-based arts identified everyday creativity as “(i) self-actualization; (ii) time, process and immersion; (iii) relationship building and connection; (iv) learning and development” (Mansfield et al., 2022). These views reflect a materialization turn in creativity research that distinguishes it from the traditional cognitivist perception of creativity, and hold that creativity comes from the concrete processes of practices (Tanggaard, 2013). Developments of cognitive science provide the theoretical basis for this claim, such as embodied cognition, which believes that mental processes are actually “distributed between brain and body, person and environment” (Glaveanu, 2013b; Malinin, 2019). The Five A’s framework of creativity, based on these opinions, integrates the dynamic relationships between the components of creativity, highlighting the distributed nature of creativity and its expression in specific cultural contexts (Glaveanu, 2013b).

Technology, Tools and Creativity in DIY Craft

Rooted in the optimistic idea of reusing modern technology, benefiting from breakthroughs of manufacturing technology and the promotion of network technology, DIY culture embodies the pursuit of craft production methods and values (Tanenbaum et al., 2013) and has gradually developed into a way of life (Lu, 2017). In this process, new tools have influenced people’s behavior and expanded their understanding of craft (Posch and Fitzpatrick, 2021). Makers tend to regard the use of advanced tools as a symbol to reshape their self-identity (Song, 2022).

From a participatory perspective, technology democratizes design and production (Tanenbaum et al., 2013). First, new tools are more novice-friendly; second, standardized material resources, as represented by IKEA products, facilitate collaboration and sharing and serve as a starting point for many people to create, but reliance on standard components can also undermine creativity; and third, the Internet promotes community building and knowledge sharing. From a process perspective, the development of technology has helped people to continuously break through design and making limitations (Philpott, 2012; Zhong, 2021), opening up new spaces for creativity. But many studies in HCI have also noted the detrimental effects of high-tech tools on sensory experience and improvisation, and tried to compensate by drawing inspiration from traditional craft practices (Deshpande, Takahashi and Kim, 2021; Devendorf and Ryokai, 2015; Falin et al., 2021; Tokac et al., 2022). As “the workmanship of risk”, the creativity of craft is reflected in the unpredictability of its processes and the embodied participation that facilitates that unpredictability (March and Glaveanu, 2020). Thus, the concepts of embodiment, improvisation, serendipity, and reflection are integrated into the design of hybrid production systems (Devendorf and Ryokai, 2015; Tokac et al., 2022) to promote creativity in the process.

Postphenomenological Theory

Design scholars have begun to apply post phenomenology as an effective way to understand technology and experience (Fallman, 2011) and reflect on design (Dongen et al., 2019; Secomandi and Snelders, 2013). One of the central arguments of postphenomenology, pioneered by Don Ihde, is that technology can form “intentionality” and actively mediate the relationship between people and the world. The concept of magnification/reduction has been used to describe the non-neutral feature of technology, i.e., the extension of technology to some human capacity or sensation is always accompanied by some simultaneously reduction (O’Brien, 2017). Therefore, when paying attention to the relationship between technological development and creativity, the dual impact of technology should be considered. And the impact of technology also requires us to have a forward-looking attitude at the design stage (Zhou and Dai, 2022).

Drawing on and developing Heidegger’s analysis of tools, Don Ihde (1990) distinguished four “human-technology-world relations”, structurally describing the various ways in which people interact with their environment through technology. The embodiment relation implies the incorporation of technology into our perceptual-body experience, such as crutches, glasses, etc., where technology becomes an extension of the body. In contrast, technology itself becomes the focus of perception in hermeneutic relation, such as a dashboard, and people can use technology to “read” the world. In the alterity relation, the technology-as-other deals with the user and the world becomes the context of interaction. Finally, technologies in background relation are out of people’s consciousness, such as refrigerators and air conditioners, and implicitly influence the way people experience the world (Don Ihde, 1990). The postphenomenological theory helps us to recognize the diversity

of human-technology relationships, where the “opacity” of the tool does not imply malfunctioning, but rather facilitates more diverse experiences (Secomandi and Snelders, 2013).

METHODOLOGY

Next, the paper explores the mediating intentions of technology in DIY crafts and how this relates to everyday creativity through a case study of tufting activities. Tufting was chosen because it emerged precisely due to the emergence of a new tool (the tufting gun - a handheld electric machine that shoots yarn into fabric at high speeds) in the mass-consumption sector (Stone, 2021), allowing us to observe and analyse the use of the tool and the transformation of people in depth. The maker usually projects the selected pattern onto the fabric and traces it with a marker, then fills it with a tufting gun, and finally seal the yarn with glue and leaves it to dry before removing and trimming it.

The study was conducted in three sessions (see Figure 1). Session 1 was located in a DIY experience store, where the first author participated as a novice and recorded the whole process. Session 2 did not directly involve a tufting gun, but instead used a rug hooking kit. The kit comes with a handheld needle-type tool that helps punch the yarn into the fabric, and the tufting gun is actually a mechanized version of it. The author invited three participants to use the toolkit and compared it with the first session, which helped to understand how changes in tools mediate the cognition and behavior of creators. Session 3 was held at the studio of a tufting enthusiast with more than a year of experience. The author hopes to learn about more skilled makers by observing the process of her free creation and explore whether the influence of tools differs between different types of participants.

The author’s personal experience follows a practice-led approach, where the researcher and the research subject are the same person, due to the fact that the study involves embodied cognition and personal experience that are more likely to be conducted through practice (Groth, 2016). When other participants are involved, ethnographic methods are mainly used to gain more information from the case (see Table 1). The data collected included the researcher’s reflective diary, observation and interview notes, as well as photographs and videos to help construct knowledge and repeatedly review the practice process (Aktaş and Mäkelä, 2019).



Figure 1: Settings of different sessions: (A) DIY experience store in Session 1 (B) All materials in the kit in Session 2 (C) The tufting enthusiast’s studio in Session 3.

Table 1. Study design: Three sessions.

Sessions	Observed participants	Methods of collecting data	Documentation
1. Tufting in a DIY experience store	Novice	Practice-led approach and ethnographic methods	Diary, photographs, videos, field notes
2. Using the embroidery punch toolkit	Novice	Practice-led approach and ethnographic methods	Diary, photographs, videos, field notes
3. Tufting at own studio	Skilled enthusiast	Ethnographic methods	Photographs, videos, field notes

HUMAN-TECHNOLOGY RELATIONS IN TUFTING ACTIVITIES

This article focuses on the “mediation role” of technology to understand emerging tools in DIY crafts. Using the four relationships between human and technology in postphenomenology — embodiment, hermeneutic, alterity and background — it helps the author to understand the various specific technical phenomena in tufting activities (see Table 2).

Table 2. Overview of the four human-technology relations in tufting activities.

Human-technology relation	Main technology	Possible impacts on human relation
Embodiment relation	Tufting gun	Bodily ability, sensory experience
Hermeneutic relation	Tufting gun, internet	Material experience, identification
Alterity relation	Tufting gun, projector, internet	Thinking and acting ways
Background relation	Internet, industrial infrastructures	Action resources, inspiration sources

Embodiment Relation

In terms of embodiment relationship, the physical nature of the tufting gun requires us to hold it with both hands and to control its movement by adjusting our posture. After constant practice, the tufting gun is gradually integrated into our bodily experience, in what Heidegger describes as the “ready-to-hand” state. At this point, our physical sensations extend to the surface of the gun, feeling the yarn through vibration and resistance as it penetrates the fabric. Since this requires people to adapt to the new machine, it is richer than the senses that need to be mobilized when using a poking needle, and eventually such embodied experience will be transformed into the tacit knowledge of the participants. Meanwhile, the weight of the tufting gun can be strenuous for the user, and the high speed of the gun is dangerous, which means that it can never be completely “transparent” and always remains at the edge of our attention.

Hermeneutic Relation

Understood through hermeneutic relation, the tufting gun becomes a direct perceptual object of tufting activities. In online communication, communicators often use the onomatopoeic word that mimic the operation of the gun to refer to this activity, showing its fun nature. In production, the translation and rotation of the machine replaces the more direct touch and control of the material. What people get here is an indirect experience. This to some extent hides the interactions among yarn, fabric and needle, making them invisible to the user and leading to a partial loss of material experience. As observed in the study, Wang emphasizes her dedication to detail when using the needle by showing how she tries to align the stitches, while Qian who use the gun pay more attention to the overall effect. The user is invisibly manipulated by the design of the tool, but accordingly, the activity becomes fun and simple to engage the public. The transformation of perception also reinterprets the aura of craft. Zheng (the tufting enthusiast in Session 3) posted her works on social platforms and was happy to be called an “artist”, demonstrating her self-identity and social identity.



Alterity Relation

The alterity relation emphasizes the tool-as-other prompting one to adapt to its prescribed ways of thinking and acting. For example, participants formed different habits when trying to solve the problem of yarn always falling out of the gun: Qian (a DIY experience store consumer in Session 1) would pull out more threads in advance; the author found that using thicker threads or combining multiple strands of thin threads would reduce the frequency of falling out; and Zheng embedded a metal ring on the side of the wooden frame through which the yarn could pass to reduce the tension of gravity on the yarn. Although the influence of technology is irresistible, people do not react in the same way. Another example is that Web search and projector assistance can help participants with inadequate drawing skills take the first step toward participating in tufting, but at the same time weaken their pictorial re-creation of their own lived experiences and implicitly created a design-before-make logic that limited ongoing creative thinking.

Background Relation

Turning to technology in the background, the Internet and industrial production facilities (Zhong, 2021) expand people’s resources for communication and action, and contribute to collective creativity. Moreover, people’s creative inspirations are no longer limited to embodied experiences or national knowledge (Chen, 2022), but are increasingly influenced by online pop culture, as evidenced by the proliferation of virtual IP images and brand logos in tufting patterns, reflecting the construction of people by absent technologies.

Table 3. Two making modes of the participant.

	Mode1	Mode2
Making mode	Conceptualize → Trace → Filling pattern with tufting gun	Using tufting gun Conceptualize
Process and product		
Maker	Novice in the DIY experience store	Skilled enthusiast
Feature	Active creation is mainly concentrated in the early stage, being more relaxed	Non-linear process, keeping active during the whole process

TWO MAKING MODES

In the studio of Zheng, a tufting enthusiast, the author observed that her making mode is completely different from that of a novice in a DIY experience store (see Table 3). Instead of following the steps of conceptualizing, tracing, filling, and adjusting, she experimented randomly first, then considered the style, and readily adjusted based on her subjective experience of the stability and harmony of the image. Such mode embodies Ingold's view of making to the extreme, where the creator gives herself over to the correspondence with the "active material". It is shaped both by the tufting gun's affordance to quickly realize ideas and by Zheng's ability as a skilled user to control the direction of the tool and as an experienced creator to find harmonious forms in the initial chaos. Zheng enjoys this kind of "brainstorming" process that requires constant active adjustment, and the tools are fully integrated into her body and consciousness. In contrast, the making mode in the DIY store maximizes the technical advantages of the new tools, especially for novices to create their own desired products. Qian describes the process as a "mindless, self-relieving experience," where participants are shaped by the tools. These two modes present the differentiated demands of participants with different motivations, skill levels and creative abilities.

DISCUSSION

The Mediating Role of New Tools

With the help of postphenomenology, this study recognizes the different relationships of the participants with the tufting tool. Their physical abilities are expanded and they interpret the indirect experiences provided by the tool. Their behavior and way of thinking are shaped by tools, not only in their interaction with tools, but also because the world of influenced by technology is the background of the activities. The entire creative process is dynamically constituted by these relationships, and participants with different skill levels and motivations are able to develop their own modes of making. The concept of mediation also leads us to consider the capabilities

and limitations of technology. The diversified sensory experiences in tufting helps people to understand and adapt to the speed and operation of machines, while expanding their bodily abilities, transcending the limits of their skills, and broadening their sources of inspiration, thus encouraging mass participation and free expression, and inspiring their creative expression. With this comes limitations in usage, neglect of details, lack of experience with direct materials, etc. Participants cannot reach higher levels of skill, and this simplistic tendency circumvents some of the serendipities and risks, thus inhibiting creativity (see Figure 2).

Design Reflection

Today, DIY craft activities are being redefined by the renewal of tools, and technology has made possible the sharing of knowledge and the revival of crafts (Luckman and Phillipov, 2020), providing new contexts to stimulate creativity. Therefore, designers need to rethink the use of technology to define more valuable craft experiences. First of all, considering design in terms of variability and diversity of relationships provides a more engaging experience, and different making modes allow creativity to emerge at any time during the process. Sacrificing the “invisibility” of some technology can make the experience more interesting (Don Ihde, 1990; Verbeek, 2005). This can be achieved by keeping or setting up some obstacles that draw the user’s attention to the tool as a physical entity and lead them to creatively solve the problems that may occur. It is also in line with the characteristics of everyday creativity, which has no set criteria for evaluation but is generated in the process. Second, we need to balance the ability of the body and the tools through design, so as to stimulate people’s initiative while allowing technology to transform people to some extent. This requires placing the active contact between people and materials at the core and configuring diverse forms of contact through technological tools. We should attach importance to the development of technology and the value of manual forms at the same time, which not only encourages the creative participation of the public and promotes the wide dissemination of creative practice, but also stimulates the emergence of creativity in the process, showing rich characteristics among participants at different levels.

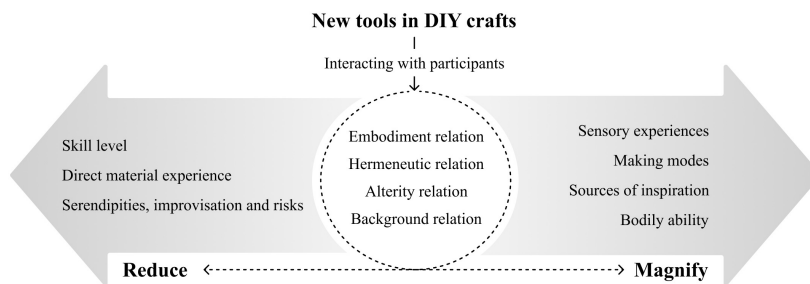


Figure 2: The way new tools mediate creativity in DIY craft.

CONCLUSION

Taking tufting activity as a case, this paper discusses the mediating role of new tools in DIY crafts with the help of postphenomenological theory, paying special attention to the impact on everyday creativity. By identifying the multiple relationships between new tools and people and comparing them with traditional tools, the study illustrates their impact on participants' behavior and experience, summarizes the ways in which they stimulate creativity as well as possible negative effects, and reflects on the role of design. The field of craft serves as a connection point between tradition and the future, where there is a great tension between the body and technology. This paper contributes to the exploration of how people's free creativity can be achieved while utilizing technology, and helps designers to imagine and build more creative lifestyles for people.

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