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Thinking through Design is Creative and Inspiring: The Why and How

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The article by Karin Lindgaard and Heico Wesellius sheds a novel light on the psychology of design by applying theoretical perspectives of metaphor, embodied cognition, and visual thinking, to explicate why design thinking, or "thinking through design," is a embodied process to induce creative solutions. It highlights that our very fundamental human cognition is in part originated from sensory perception, bodily movement, and physical interaction with the external world. These embodied experiences aid understanding of abstract concepts, sense making of complex situations, and generation of meaning and insight. Design thinking engages individuals in activities such as sketching or prototyping to make ideas visible and tangible. These strategies naturally embody abstract ideas in concrete artifacts through physically presenting, manipulating, and simulating ideas, thus making it easier to materialize solutions to design problems. Such an embodied process explains why design thinking affords the generation and actualization of creative ideations.

This perspective of applying embodied cognition and metaphor to understand design thinking is enlightening. In this commentary, we would like to add onto the discussion in hopes of further enriching both the theory and application. We argue that design thinking is a potent source of *inspiration*, which is believed to play a critical role in the composition of many creative works and productions to date. To empirically study inspiration, Thrash and Elliot conceptualized the notion of inspiration-to-create as a composite of three core characteristics, namely evocation, transcendence, and approach motivation.[1, 2, 3] Inspiration tends to be a passive state, being *evoked* by an idea, a person, or a behavior that illuminates possibilities previously unknown. It follows that inspiration has the capability to *transcend* previously known ideas to better ones, as awareness or reflection of new opportunities dawns on people. This resonates well with the argument of Lindgaard and Wesellius that "the discourse of 'design and designerly thinking as a reflective practice'" (p. 3). Inspiration is also energizing, giving people an *approach motivation* to express, materialize, or transmit the

transcendent idea being evoked. This matches well with the motivational state in design thinking, which propels the materialization and transmission of creative ideas. Indeed, it is interesting to know that the first dictionary definition gives a hint of embodiment in understanding inspiration as an act of breathing in illuminating ideas: "A breathing in or infusion or some idea, purpose, etc. into the mind; the suggestion, awakening, or creation of some feeling or impulse, especially of an exalted kind (p. 1036, *Oxford English Dictionary*).[4] In addition, the metaphor of "gaining vision" is widely used to describe creative inspiration.[2] In this light, we posit that design thinking serves as a compelling source for inspiration, which is also in part an experiential and perceptual process readily to be evoked through physical sensations and movements.

One defining feature of inspiration is the generation of feelings. Lindgaard and Wesellius conjectured the fundamental role of feelings in deriving a "sense of fit" in design thinking, with the feeling "emerges as the gestalt experience of simulating past relevant situations in the present" (p. 8). The emergence of feelings suggests that design thinking and inspiration are tightly linked. On the one hand, inspiration was found to generate an elevated sense of feelings in inspired people,[5] and presumably these feelings could give people a "sense of fit." On the other hand, through embodiment design thinking gives rise to a feeling of fit, which is likely to coincide with other feelings such as connection, openness, clarity, and energy commonly characterize an inspired state. [1, 5] Therefore, design thinking is inspiring when it produces a sense of feeling fit that is likely to be revealing and insightful.

Whilst Lindgaard and Wesellius's article has deepened our understanding of the theoretical basis of *why* design thinking can lead to greater creativity and inspirational discovery, it is also critical to know *how* embodied cognition and metaphor can be applied to design thinking in practice. Research has shown that acting out metaphors for creativity can activate cognitive processes that facilitate the generation of new ideas and connections.[6] For

example, participants gesturing with the left hand, then the right hand (vs. with only one hand) during idea presentation to enact the metaphor “on one hand, then on the other hand”, or walking freely (vs. sitting or walking along a fixed rectangular path) to enact the metaphor “think outside the box”, were found to perform more adeptly in divergent thinking tasks that entail the generation of many new solutions to a creative problem. Further, participants who were told to physically pull together one object from the left and another object from the right to enact the metaphor “put two and two together" outperformed those who physically pulled objects from the same side in convergent thinking tasks that entail conceptual recombination of distant ideas to come up with creative solutions. For another example, research showed that embodiment through eye movements helped participants solve the classic Duncker’s radiation problem.[7] This creative insight problem asked: Given a human being with an inoperable stomach tumor, and lasers which destroy organic tissue at sufficient intensity, how can one cure the person with these lasers and, at the same time, avoid harming the healthy tissue that surrounds the tumor? The correct solution involves firing from different locations multiple low-intensity laser beams that target at the tumor. Studies found that when participants were provided embodied guidance, with their eye movement trajectories being directed to move in a pattern related to the solution of the problem (i.e., making in-and-out eye movements crossing from the outside area to the tumor on the diagram), they were more likely to successfully solve the problem relative to those who moved their eyes in unrelated patterns.[8, 9] This example also demonstrates visual thinking, a design thinking strategy discussed by Lindgaard and Wesellius that aids visual-spatial understanding.

These findings suggest that bodily movement, physical interaction with artifacts, and enactment of metaphors can be practiced during the design process to bring about creative benefits, thus transiting from the stage of “seeing as” to “seeing that.”[10] Different embodiment strategies could be applied in different design stages to facilitate creativity. For instance, at

the idea generation stage, conducting open-ended user interviews in a large and open space as opposed to a confined room or narrow cubicle could be highly conducive for contemplating ideas. Notably, the current practice often conducts third-person observation when collecting user experience data either during the initial user study stage or the prototype testing stage. However, it would be helpful if designers could personally embody the role of a target user to gain first-hand feelings and experiential encounters with the design interface. In a team setting where members need to generate design ideas, they could be encouraged to move freely in an open space to brainstorm ideas and work on their sketches or prototypes in a non-restricted manner. When the team is ready to reconvene for idea combination or selection of the final solution, members could present their design ideas by means of tangible artifacts instead of showing them on a computer. They could place these ideas in a central place next to each other, so that ideas can be freely manipulated, played around, torn apart, recombined, analogized, and so on. These strategies afford actual simulation of bodily experiences, visual thinking, and the feeling of fit, which could be harnessed to foster creativity and inspiration in design thinking.

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