Posthumanizing Creativity and Material Histories

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Abstract: With this article, we attempt to shift the conceptualization of creativity from a human centered perspective to a wider perspective of posthumanism. We use the scenario of collaborative making context, and illustrate how material history evolved rooting on the posthumanist standpoint. We see that the humans and nonhuman entities are enmeshed in creative acts where agency is spread across the various actors leading to learning opportunities and innovative outcomes.

Keywords: Creativity, Constructionism, Posthumanism, Materiality

1. Introduction

Posthumanism looks at decentralizing humans from the sole source and center of actions and unsettling the concepts related to material neutrality (Barad, 2003, 2007; Pickering, 1993). It can bring the vitality of the matter, unpredictability, unfolding ontology, and signifies material turns as humans encounter non-human matter (Barad, 2003; Haraway, 1985). The approach shifts the attention from *who* to *how* all the agents are entangled in the creative phenomemon. Here, agency is neither rested solely on human nor nonhuman elements but through becoming of emergent manifestations, effects through certain configurations of situated entities (Suchman, 1987), and unfolds in practice (Pickering, 1993). To bring in meaning to this standpoint, we consider the practice of "making", which is a materially grounded chain of actions where makers create personally meaningful and creative outcomes. Making is featured by iterative nature, encountering failures, gathering feedback from fellow makers and experts resulting in unexpected outcomes. While engaging in design which is an inherent part of making, makers engages with humans and non-human entities like material. Collaborative making involves the coming together of makers, sharing resources in the situated environment, influencing each other's ideas and design processes. Creativity has been conceived as an individual entity, with less connections to social networks or material, technological association (Glăveanu, 2014). This ideology neglects the influence of other individuals, tools, technologies and other non-human entities while analyzing the creative processes.

Based on these prior literature, we look to posthumanize creative actions emerging out of collaborative making where novice makers engage in design problem solving and understand how material histories are generated as material qualities evolve. We position the creative aspects of the making process as emergent (Sawyer & Dezutter, 2009; Tangaard, 2013).

2. Methods

For addressing the research goal of the article we look into a maker activity-centered workshop which was part of a maker workshop series organized at a leading engineering institute in India. The participants of were eight second-year mechanical engineering undergraduate students who completed a maker workshop based on Lego Mindstorms EV3 robotic kit and responded to an open invitation. A total of four teams were formed in the order of their response, with each team consisting of two members. After the introductory session on digital

fabrication, participants were given a design challenge: *Conceptualize an assembly line/production line that is semi-automated with static and dynamic robots. Model and build the setup with resources available in the makerspace.* The making sessions lasted for a total We followed the making activities of teams- Team P which consisted of one female student (G1) and one male student (B1). A facilitator was present during the making sessions to support the teams.

We conducted the analysis with the data sources as video, photographs, design artifacts, field notes, and observations during making. We followed theories of new materialism and adopted the methodological process of thinking with theory (Jackson & Mazzei, 2012) to illuminate the creative entanglements. We viewed the assemblage of data sources simultaneously and iteratively. Here, we see ourselves entangled and becoming with the unfurling of research course. The research entanglement involved the encounter with data sources as video, photographs, design artifacts, field notes, and observations during making.

3. Findings

We find that the makers, materials and the facilitator are constitutively entangled in the making sessions leading to creative outcomes.

The team started with the idea of parallel robot, with the rope and pulley mechanism for functioning the fork. Here the makers use a variety of materials including, Lego motors, leg kit parts, chopsticks, earphone wires, play-doh, and tapes. The following excerpt shows how makers and materials come together and open up spots for creative actions.

Maker B1:	Do we have strings?.. can we use those filaments as strings? [referring to 3D printing filaments]
Facilitator:	Yeah.. you can try. There are some rope pieces in that box [pointing to the box with discarded items]
Maker G1:	[Checks the box] there are some wires too..
Maker B1:	Aah.. we can use it.. but might slide over.
Maker G1:	Or maybe we can cut the ropes.
Maker B1:	This earphone .. can we take that.
Facilitator:	Yes, those are junk ones.
Maker G1:	[Untangles the earphones]
Maker B1:	[Checks the earphones] the lower part looks ok, we can cut that.

In the prototyping session, we observed that the makers trying to blend the Lego robotic kit components with mundane materials like chopsticks, earphone wires, play-doh, tapes, etc. The team members start by building the rope and pulley mechanism for the fork. The makers asked for strings to build the mechanism. The makers and facilitator checks the space for the same, but could not find the required kind of thread. But they found a box consisting of used cables, ropes, wires, paper, defective electronic devices like calculators, and earphones, and the facilitator suggested using the rope for the purpose. One of the makers identifies the possibility of using a defective earphone for the same and which is then cut and joined with Lego rods for making the pulley assembly as seen in Figure 1. Here we see that the makers encounter a wide variety of materials to address the problem in hand. Considering the encounter of the defective earphone and maker, maker-material relation changed and the history evolved. The meaning of the earphone was that of a connecting component as it had the history of being defect, and hence the maker approached the material. The maker and material enter into transforming states as defective earphone is modified to form "rope" undergoing changes in the moment to moment maker-material histories. From an earphone to defective earphone to rope and then to be part of rope and pulley mechanism in relation with makers and constituting materials, the material history evolved.

Figure 1. The earphone wire – lego components combination for supporting the gripper movement.

4. Discussion & Conclusion

In this article, we have presented a posthumainst view of creativity by looking into a representative episode form a collaborative making context. The findings point to the relational dynamics among humans and non-human elements of the situated making context. The material histories evolved over time with dynamic changes and shifts in emergent quality. We see that the constructivist and cognitivist approach as reductionist research approach where materials are seen as only means to explore problem and solution space of the making-with human exceptionalism. Posthumanism opens ways to disrupt linear ways of knowing, and challenge anthropocentric analysis of maker-material encounters. It can be operationalized to find further meanings of collaboration and emergent creativity coming out of it. This flattened and relational ontological view can reveal how makers and materials shape and create opportunities for learning and creative movements.

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References

Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. *Signs: Journal of women in culture and society*, *28*(3), 801-831.

Barad, K. (2007). *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning*. duke university Press.

Glăveanu, V. P. (2014). *Distributed creativity: Thinking outside the box of the creative individual*. Cham/Heidelberger: Springer International Publishing.

Haraway, D. (1985). A Manifesto for Cyborgs: Science, Technology, and socialist feminism in the 1980s. *Socialist Review*, *80*(1985), 65–108 .
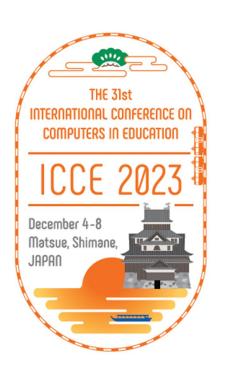
Jackson, A. Y., & Mazzei, L. A. (2012). Thinking with theory in qualitative research: Viewing data across multiple perspectives/Youngblood. *Imprint Abingdon*.

Pickering, A. (1993). The mangle of practice: Agency and emergence in the sociology of science. *American journal of sociology*, *99*(3), 559-589.

Sawyer, R. K., & DeZutter, S. (2009). Distributed creativity: How collective creations emerge from collaboration. *Psychology of aesthetics, creativity, and the arts, 3*(2), 81.

Suchman, L. A. (1987). *Plans and situated actions: The problem of human-machine communication*. Cambridge university press.

Tanggaard, L. (2013). The sociomateriality of creativity in everyday life. *Culture & Psychology*, *19*(1), 20-32.

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