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Citation: Jones, S. & de Rooij, A. (2024). Augmenting Creative Practice in Professional Contexts with AI: Insights from Artists' Understanding of Agency and Appropriation. Paper presented at the Tacit Engagement in the Digital Age (TEDA) 2024, 19-20 Sep 2024, Cambridge, UK.

This is the accepted version of the paper.

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Title

Augmenting Creative Practice in Professional Contexts with AI: Insights from Artists' Understanding of Agency and Appropriation

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Abstract (966 words)

The potential of AI to augment human creativity is currently under debate. On the one hand, the potential of generative AI to produce seemingly limitless material is causing both excitement and fear in the creative industries. On the other hand, existing tools nudge professionals into generating outputs that are increasingly similar to ideals that algorithms have been programmed to favour, and so less and less diverse. How, then, can we develop our understanding of ways in which AI's new capabilities can be exploited to lead to more genuinely creative outcomes?

The influence of digital technologies on human behaviours of various kinds has long been a topic for research. In the context of organization science, Orlikowski (1992) developed a theoretical model that draws attention to the need for a 'dialectical understanding of the interaction between technology and organizations'. This builds on the work of Anthony Giddens (e.g., Giddens, 1984) in the field of sociology, that noted a reciprocal relationship between human actors and social structures, setting out a theory of 'structuration', recognizing that human actions are enabled and constrained by structures of various kinds – which we may now see as including digital technologies, or AI – but that these structures are themselves a result of previous actions. Orlikowski also notes how technology is regularly 'appropriated' in an organizational context, in ways that depend on social and economic forces 'beyond managerial intent'. This theme of appropriation has been further developed by Dourish (2003) in the field of computer-supported co-operative work.

The field of human-computer interaction, focusing more on individual than social perspectives, has viewed the relationship between digital technologies and their users in a similar way. For example, the 'task-artifact cycle' (Carroll and Rosson, 1992) aims to capture the idea that human tasks and the artefacts used to carry them out co-evolve. The task-artefact cycle can be seen as an iterative process of continuous, mutually dependent development between task and artefact. An important part of this process is that software is regularly 'appropriated' by its users (Salovaara, 2008) meaning that it is adopted and used for purposes other than those for which it was originally designed.

In each of these cases, appropriation is seen as an important potential source of innovation, resulting from human interventions that lead to technologies being used in new ways – or in other words, from humans demonstrating agency in the context of the reciprocal relationship between human and technology. But how should we see this relationship now, in a context where the technology of AI is also, increasingly, being attributed with some level of agency,

due to its increasing ability to perform tasks traditionally associated with human intelligence, e.g., by creating text, images and sound? The recent emergence of powerful yet widely accessible AI tools, such as large language models and generative visual AI, has implications for the creative practice of professionals across disciplines (Bouschery et al., 2023).

One context where the agency of the materials with which humans work has been explicitly acknowledged for some time is that of the arts and crafts. Potters, for example, understand that clay has limitations that must be understood and worked with. Here any form of creative agency should be considered a co-agency between maker and environment (Malafouris, 2023). Artists have been experimenting with AI since the 1970s (Miller, 2019). Already in 1973, for instance, Harold Cohen developed AARON, one of the first AI programs capable of producing original artworks autonomously (Garcia, 2016). Artists are now discovering the creative affordances of AI by exploiting and intervening in its learning process (Nordström et al., 2023), for example by curating unique datasets for AI training. Refik Anadol's "Unsupervised," trained on MoMA's collection, can "hallucinate" abstract works that are non-existent but still aesthetic and creative (Anadol et al., 2021). AI can be trained to learn and adapt to the creative affordances of the artist as well, enhancing creative co-agency more proactively than other digital tools. Sougwen Chung, for example, trains AI on her own artistic work, which then controls a robot arm to collaboratively paint new pieces in real-time (Chung, 2022).

One crucial example of how AI technologies are appropriated by artists can be found in their subversion of AI to generate novelty. AI technologies are often developed to be accurate, provide certainty, and meet user expectations (Wingström et al., 2024). Artists, however, aim to uncover ways in which AI can be used for exploration and play (Lundman & Nordström, 2023; Nordström et al., 2023), introduce uncertainty in the creative process (Ashby et al., 2023; Chung, 2022), and generate novel insights and ideas (van den Broek et al., 2024; van der Burg, 2022). This can be achieved by pushing the boundaries of AI, leading the technology to produce "mistakes" in human terms and exploiting the strangeness of the "worldview" AI has when trained on character strings and pixels (van der Burg et al., 2022). These practices enable artists to escape the knowledge they already have, helping them arrive at something new and worthwhile. Such co-creative agency between artist and AI points to new ways in which creativity and innovation can be enhanced in the arts and beyond.

Since art is an inherently creative process, unconstrained by organisational contexts, where subversion and appropriation are explicitly encouraged, and the agency of materials is explicitly discussed, we propose that developing a deeper understanding of how artists use and appropriate AI can provide us with a way of developing hypotheses about how professionals in general may use AI to enhance their creative practice. We propose that further study of the long-standing development, subversion, and appropriation of AI in the arts, aimed at unlocking new expressive and creative potentials (Lundman and Nordström, 2023; Nordström et al., 2023), can offer valuable insights into how professionals across disciplines might similarly use these tools to support creativity and innovation.

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