Unpacking the Relationship between Creativity and GenAI: The Role of Knowledge and Expertise

Research-in-progress

Petros Chamakiotis
Department of Management
ESCP Business School
Madrid, Spain
Email: pchamakiotis@escp.eu

Niki Panteli
Department of Management Science
Lancaster University Management School
Lancaster University
Lancaster, UK
Email: n.panteli1@lancaster.ac.uk

Abstract

GenAI constitutes one of the biggest technological innovations of our time and there is agreement in the emerging literature on this topic about its positive impacts on efficiency and the benefits for organisations. However, there is ongoing debate about its impacts on creativity; although creativity has been traditionally seen as a unique human capability and one of our principal differentiators from computers, there is growing evidence that GenAI technologies can generate creative outputs. To understand the ways in which this happens, we present preliminary findings from our ongoing study which draws on interviews with professionals from a number of industries whose work requires creativity and is affected by GenAI. Our findings so far reveal that GenAI can be an *enabler* of human creativity, an *enhancer* of human creativity, or a *future threat* to human creativity, depending on the user's level of knowledge and expertise in their area of work. Discussed last are our study's implications and our next steps.

Keywords Creativity, GenAI, expertise, interviews, knowledge, qualitative.

1 Introduction

Generative Artificial Intelligence — or GenAI as it is commonly called — is seen as the biggest technological advancement so far according to McKinsey's Singla et al. (2024) that is attracting a lot of interest among the business community, with 90% of organisational leaders already expressing an interest in adopting it. It is seen as revolutionary, with creativity being an embedded characteristic of this type of Artificial Intelligence (AI). It is therefore increasingly important and immensely relevant to begin raising questions about the impact of GenAI technologies, such as Microsoft Copilot, Claude and ChatGPT, on creativity in organisations. Though a new and emerging type of technology, GenAI has received polarised opinions, with some expressing excitement and anticipation, and others showing scepticism and anxiety. Despite a cross-disciplinary interest in the impacts of GenAI on creativity, studies so far have remained at an experimental level (Doshi and Hauser 2023; Hubert et al. 2024). In this paper, we add to this limited literature by presenting an exploratory qualitative study that aims to address the following research question (RQ) is: *What are the different ways in which GenAI can influence human creativity?*

In what follows, we start by presenting relevant literature on creativity, including how it has been defined and studied in different disciplines and how technology has been found to influence it in earlier literature. Following, we present GenAI as a new technology that may influence creativity. We start with its key characteristics, its significance to organisations, but also concerns that have been reported in the academic and popular literature. We then continue with our research design and the methodological choices we adopted to address our RQ and present preliminary findings, our envisaged contributions and our next steps.

2 The Concept of Creativity and its Significance

The word and concept of demiurge derives from the Greek δημιουργός (demiourgos), or else public worker (etymology: δήμος [demos] + ἐργο [ergon] or labour), and, though it was first associated with the creator of the universe (in Plato's Timaeus), it has also been treated as synonymous to a craftsman or an artisan. An outgrowth of demiurge is δημιουργικότητα (demiourgikotita) — the ability to create something new and the equivalent of creativity in ancient and Modern Greek. The term creativity itself finds its routes in Latin and, similarly to demiurge, it originally meant the *ex nihilo* act of God — thus creation from nothing — while, with the passage of time, its meaning progressed further.

While the Greek origin highlights the association between labour and its usefulness, thus implying that something creative has to be of value to the public, the Latin one underlines the absence of precedent to something creative. This, however, is not always relevant in practice, as, for instance, several resources (including digital technologies) and methods are now available. Creativity has been studied in different disciplines, including management, marketing, organisational studies, economic science, psychology, cognitive science, philosophy, engineering (industrial, software and architecture), education, the arts, music, theology, biology, linguistics, and sociology. In Table 1 below we provide some of the definitions found in different disciplines (after Chamakiotis 2014, p. 51).

Discipline	Definition	Scholar(s)
Design	"the ability to develop new problem descriptions to enable new solutions"	(Akin 2008, p. 9)
Human-Computer Interaction (HCI)	"the generation of ideas, which are a combination of two or more matrices of thought, which are considered unusual or new to the mind in which they arose and are appropriate to the characteristics of a desired solution defined during the problem definition and preparation stages of the creative process"	(Warr and O'Neill 2005, p. 122)
Management	"the production of novel and useful ideas in any domain"	(Amabile et al. 1996, p. 1155)
Psychology	"the ability to produce work that is both novel and appropriate"	(Sternberg 1999, p. 3)

Table 1. Definitions of Creativity (after Chamakiotis 2014, p. 51)

Traditionally, creativity has been treated as a human capability which influences, and is influenced by, the individual, the team (Pirola-Merlo and Mann 2004), and the organisational (e.g., Andriopoulos 2001), with different factors found to influence it at each level: cognitive factors, personality traits, relevant knowledge, motivation and expertise at the *individual* level (e.g., Andriopoulos and Dawson 2009; Chamakiotis 2014); leadership, as well as group composition and diversity at the *team* level (e.g., Amabile et al. 1996); and organisational culture and climate at the *organisational* level (e.g., Andriopoulos 2001). With time, however, researchers have found that further to individual, team, and organisational factors that may influence creativity, technology has a role to play too. For example, Chamakiotis et al. (2013) explain how synchronous and asynchronous communication technologies may enhance or inhibit creativity in the context of technology-mediated (virtual) teams.

Given, therefore, that technology has been found to influence creativity in the pre-GenAI era, researchers recognise that GenAI may influence creativity in new ways that previous technology did not. For instance, Chamakiotis et al. (2024) encourage researchers to study whether GenAI is an enhancer of, or a threat to, creativity, while Grilli and Pedota (2024) present a multilevel typology of creativity and AI. They draw on cognitive, behavioural and psychological domains to identify propositions which show how AI may affect individual, team and organisational creativity. Their position is that developing expertise in AI across different levels would help in building complementarity between AI and human creativity. To better understand this relationship, and the ways in which GenAI may influence creativity, it is essential that we review GenAI and its various implications, which we do next.

3 Understanding GenAI and its Implications

Huang et al. (2024, p. 4) present GenAI as "a subset of [AI] that focuses on the creation of content. This content can range from images and music to written text and even more complex outputs like virtual environments. At its core, GenAI is driven by the goal of generating new, diverse and coherent data". These researchers have described the significance of GenAI as monumental, with opportunities that go beyond the replication and representation of business applications. GenAI has the potential to create human-like content (e.g., marketing campaigns, social media content, personalised emails), whilst deep learning models can be trained to generate creative content that "is indistinguishable from what humans might produce" (ibid, p.5). GenAI technologies have therefore begun to generate valuable creative works at scale (Abbott and Shubov 2023), enabling users to produce personalised ads, crafting targeted content, and optimising campaign strategies (Kshetri et al. 2024; Ramdurai and Adhithya 2023).

With the capabilities rendered by GenAI, there has been an increasing interest in how this new technology is used in organisations (e.g., Brown et al. 2024; Budhwar et al. 2023; Mukherjee and Chang 2023). Increasingly, organisations are using GenAI for conversational interfaces, such as chatbots and virtual assistants, as well as for content creation (Holmström and Carroll 2024). Despite the numerous opportunities that GenAI can potentially bring to the business world, it still has some limitations, raising scepticism among both researchers (e.g., Jackson and Panteli 2024) and practitioners (e.g., Mance 2024). Firstly, at the data level, the effectiveness of GenAI relies on a large amount of relevant data, which means that the wider a company's data collection channels are, the more accurate the generated content will be. Such a technical feature gives industry giants a monopoly advantage but is not conducive to conscientious competition within the industry. At the decision-making level, GenAI may generate biased and inaccurate results, such as the generation of discriminatory content based on users' gender or ethnicity. Technical instability and data incompleteness may also result in generated content that is irrelevant to the current situation, which directly affects the quality of decisions (Ooi et al. 2023). At the same time, there is a risk of GenAI being used to create false or deceptive content that could be used to disseminate misleading information or damage the reputation of others (Dwivedi et al. 2021). Finally, on a dehumanising level, as the technology matures, individuals and organisations may become overly reliant on GenAI to achieve operational efficiencies whilst unwittingly harming the quality of user service (Ooi et al. 2023), potentially and paradoxically making this more impersonal. Some but limited studies exist on the impact of GenAI on human creativity. For example, in an online experimental study of more than 250 participants, Doshi and Hauser (2023) examined the causal impact of GenAI on the production of a creative output in a writing task. They found that GenAI was used to provide ideas for story writing, and this contributed to better stories being written, especially among less able writers. Their findings also show that GenAI-enabled storied appear similar to each other than stories written by humans alone without GenAI input. Similarly, Hubert et al. (2024) in another experimental study reported that GenAI, and ChatGPT in particular, offers higher levels of creativity than humans, especially when it relates to tasks that need divergent thinking and as a way of generating multiple ideas and options.

Such studies are useful in helping us to begin to understand the impact of GenAI on human creativity. However, beyond experimental studies, the field requires the adoption of qualitative research to better capture users' actual experiences with GenAI in their day-to-day tasks. This approach will also help us to examine the different ways that GenAI impacts human creativity. In what follows, we present the research design and qualitative methodology adopted in order to address this problem and our RQ.

4 Research Design and Methodology

Due to the exploratory nature of the study, we considered that an interpretive qualitative approach would be appropriate for making sense of the various impacts of GenAI on creativity, given the newness of the topic, and the "subjective" nature of the topic in question, given that there is no consensus about how to "measure" creativity. In order therefore to gain a broad understanding of creativity in the GenAI context, we targeted professionals from numerous industries, whose work relates to creativity and is affected by, or is directly linked to, GenAI technologies. We used our own professional and personal networks to identify suitable participants, and we also followed the snowballing technique, asking participants to recommend suitable contacts of theirs. We started interviewing professionals in Silicon Valley in California, USA as we first wanted to make sense of GenAI and its impacts at the centre of global innovation. In Silicon Valley, we spoke primarily to professionals in technical (development) and advisory roles. We then expanded the study by recruiting participants from European countries too. Some of the interviews took place in person, whereas others online. Overall, our participants came from numerous industries, including software development, consulting, higher education and audiovisual. Our interviews started with broader questions about our participants' background and jobs and then included questions about their own (existing) experiences with, and perceptions of, GenAI tools and their influence with creativity. We also encouraged participants to share concrete examples and stories about the points they made. At the time of writing, we have completed 15 interviews (see Table 2 for participants' characteristics) and our plan is to continue interviewing until we reach saturation (Braun and Clarke 2019). Participants in Table 2 are presented in a chronological order and referred to either by their real first name or by a given pseudonym in line with their preference in their signed consent form. So far, we have adopted a thematic analysis approach to analysing our data, which consists of a set of semantic and latent coding cycles (Braun and Clarke 2021). In what follows, although our data collection and analysis are still underway, we present four dominant themes that have emerged so far.

Name/ Pseudonym	Gender	Age Group	Industry	Employer's Reach	Location
Amy	Female	45–64	Training/Consulting	Local	USA
Laurent	Male	25–34	Software	Global	USA
Mick	Male	35–44	Software	Global	USA
Gauthier	Male	55–64	Training/Consulting	Local	USA
Gary	Male	65–74	Training/Consulting	Local	USA
Héctor	Male	45–54	Higher Education	Local	Spain
Isabel	Female	55–64	Higher Education	Local	UK
David	Male	25–34	Software	Global	Germany
Amir	Male	55–64	Technology Venture	Global	USA
Christelle	Female	35–44	Software	Global	USA
Fran	Male	35–44	Software	Global	Spain
Marta	Female	45–54	Audiovisual	Global	Spain
Konstantinos	Male	35–44	Higher Education	Global	UK
Alicia	Female	25–34	Audiovisual	Global	Spain
Manos	Male	35–44	Software	Global	USA

Table 2. Presentation of Research Participants

5 Emergent Themes

All participants in the study had direct experience in the use of GenAI for work purposes. There was a general agreement among the study participants that GenAI has an impact on human creativity.

5.1 Evidence of GenAI Creativity

In our first extract, by providing GenAI with a prompt, Manos was able to generate numerous creative ideas much quicker than a human could do. The prompt he provided was unusual, and yet, the output unexpectedly creative, exceeding human capabilities both in terms of novelty and speed.

> *"Give me a name for a soccer team of [...] software engineers who like drinking frappé and they're not very good at soccer. And so, it quickly generated 10 names, 10 different names for this random thing, right? Which is not something, okay, how many soccer names of people who like frappé and they're software engineers have you seen on the Internet, right? And they generated so many creative names way faster than I could have done it myself."* (Manos)

Having seen clear evidence of GenAI creativity, we now move on to present the different relationships we identified in our preliminary analysis between GenAI and human creativity.

5.2 GenAI as an *Enabler* of Human Creativity

GenAI was found to *enable* human creativity, especially when human individuals lacked natural talent or relevant knowledge for specific tasks. For instance, Gauthier does not consider himself a creative person and — in the extract below — he is thrilled to have been able to produce a creative output with GenAI:

> *"I wouldn't know how to paint and yet I have designed several posters for my centre based out of collages from GenAI produced images and people loved them. People said 'wow, this is so great' and without GenAI I'm not even sure I would have been able to convey the creativity in me. It would have had to be funnelled through an artist which I still work with. I mean I love working with artists but for the first time in my life, I was able to produce what I had in my mind thanks to GenAI."* (Gauthier)

5.3 GenAI as an *Enhancer* of Human Creativity

While above we saw GenAI as an enabler of creativity for those who would not be creative without it, GenAI was also found to be an *enhancer* of creativity. Participants saw GenAI largely as a tool that can be used to complement human creativity. There was consensus in the data that GenAI is "not there yet" and therefore the human is still the decision maker when it comes to creativity-related decisions, but its input is paramount in terms of assisting with specific aspects and stages of the creative process. As Marta put it, GenAI cannot be "the creative engine of anything", but it can provide support and assistance:

> *"I think it is a support tool for creatives, evidently, it has more and more capabilities and especially with the last one in which language, image, and video are going to be progressively integrated, but I don't think it's going to be the creative engine of anything, the creative engine are the people."* (Marta)

5.4 GenAI as a *Future Threat* to Human Creativity

While our previous themes show how GenAI may assist humans to be creative, either by enabling their creative potential, or by enhancing it, there were also fears that as technology advances, GenAI technologies will outperform humans in terms of creativity. In other words, participants agreed that GenAI creativity "is not there yet", but it is likely to *threaten* human creativity in the future, simply because it has the technical capability to be better-trained than us:

> *"If you don't come from a marketing background and you're supposed to write an ad copy, but you don't know how to do it because you have [...] no way of discerning if something is better or wrong — AI would outperform you. And, and that will happen to every one of us in many different tasks [...] we see GenAI as a risk because we feel that it's better than us, but it is better than us because it is trained on many, many, many things that we don't have expertise in."* (Andrea)

6 Discussion, Implications and Next Steps

With our study we hope to make a first step towards unpacking the relationship between creativity and GenAI technologies from a qualitative perspective. In doing so, we contribute to this emerging literature which explicitly calls researchers to advance understanding in this area (Chamakiotis et al. 2024; Grilli and Pedota 2024; Rai et al. 2019) by going beyond findings based on controlled experiments and considering the real-life experiences of a number of professionals from different industries on the ground, whose work requires creativity and is affected by GenAI. While still underway, our preliminary findings presented above have revealed a clear relationship between GenAI creativity and human knowledge and level of expertise. Whether it be an enabler, an enhancer or a future threat, GenAI was found to influence creativity in different ways, depending on the user's relevant knowledge and expertise. The traditional creativity literature explicitly mentions knowledge and expertise as factors that influence creativity at the individual level. As stated by Von Stamm (2003, p. 2),

> *"[c]reativity is not something where someone who has never worked in that field suddenly gets this marvellous idea. Creativity is relating a concept to a particular body of knowledge. The existing body of knowledge is as vital as the novel idea and really creative people spend years and years acquiring and refining their knowledge base—be it music, mathematics, arts, sculpture or design."*

Our study suggests that in cases of limited or no knowledge in the area of the task at hand, GenAI was found to be an *enabler* of human creativity. This was the case with Gauthier, for example, who enthusiastically stated "*for the first time in my life, I was able to produce what I had in my mind thanks to GenAI"*, positing a catalytic role of GenAI for creativity. Our software engineer participants, on the other hand, often spoke about the interns on their teams who, although knowledgeable in their area of work, lacked expertise. For them, GenAI was found to be an *enhancer*. Our findings have revealed several ways in which GenAI was an enhancer: by doing the "research", by providing a basis to work on, generating more options to problems, adding new perspectives and ideas not previously considered, and doing things more quickly. And finally, although a common response across the interviewees as to whether GenAI poses any threats to human creativity was *"we are not there yet"*, there was agreement that — as technology advances and AI systems improve — GenAI is expected to eventually outperform humans in terms of knowledge acquisition, and this could ultimately be a *threat* to human creativity. Our participants suggested that this is not a present, but a future, concern, as existing GenAI systems may be productive and efficient, but present important weaknesses — such as inability to see the "bigger picture", bias and hallucinations — which limit their creative potential.

At the time of the conference, we should be able to present our fuller analysis based on a larger sample of participants in order to get feedback on how to further improve our work. We also intend to provide a clearer differentiation between GenAI's enabling and enhancing roles for creativity and to propose a theoretical framework that captures our findings. Although a clear relationship has emerged in our analysis so far in terms of knowledge, expertise and GenAI creativity, we still need to explore what are some of our theoretical contributions and what are some of the organisational and societal implications. For example, the literature identifies different types of knowledge — tacit and explicit (e.g., Smith 2001) — and it is worthwhile to explore how our findings influence our understanding in this area and what this means for the future of human creativity.

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