

Who am AI? – Mapping Generative AI Impact and Transformative Potential in Creative Ecosystems

Mattia Thibault
Tampere University
Tampere, Finland
mattia.thibault@tuni.fi

Timo Kivikangas
Tampere University of Applied
Sciences
Tampere, Finland
timo.kivikangas@tuni.fi

Riku Roihankorpi
Tampere University
Tampere, Finland
riku.roihankorpi@tuni.fi

Petri Pohjola
Tampere University of Applied
Sciences
Tampere, Finland
petri.pohjola@tuni.fi

Markus Aho
Tampere University of Applied
Sciences
Tampere, Finland
markus.aho@tuni.fi



Figure 1: AI generated visualisation of the Creative Industries

ABSTRACT

Generative AI's emergence reshapes creative ecosystems, presenting diverse prospects and trials. As these systems adjust to AI's inclusion, equilibrium is disrupted, influencing workers and society. A proactive cross-sectoral approach becomes crucial in navigating this transformation, harnessing AI's potential for sustainable growth. This poster proposes two dimensions relevant to map the possible impacts of AI on the creative sector: the impact of AI on the Industry from a perspective of labour, professionalisation, and management and the Actor Network status of AI in creative efforts. This marks an initial step in a cross-disciplinary endeavor to comprehend and guide the evolution of creative ecosystems, underlining the necessity for comprehensive data engagement and broad academic collaboration.

CCS CONCEPTS

• **Applied computing** → **Arts and humanities**; • **Computing methodologies** → **Artificial intelligence**; • **Human-centered computing** → *Human computer interaction (HCI)*.

KEYWORDS

Artificial Intelligence, GPT, Large Language Models, Creative Industries, Cultural Production

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1 INTRODUCTION

The cultural and creative industries do not operate in a vacuum, but are part of "creative ecosystems" that are constantly affected by and engaged in other sectors. Technology, manufacturing, service production, and public and private management all play an important part in defining such ecosystems. Their cross-sector nature is ripe with opportunities for growth, new innovations, and sustainable solutions that include and address the global transitions of ecology,

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digitality, and social sustainability. At the same time, the complex interaction between their elements make innovations difficult to predict, and the ecosystems more complex to manage.

Currently, the discussions on the creative sector's upcoming challenges and options focus strongly on the development of generative AI. This technology makes use, for example, of Large Language Models, Transformer Models, and Stable Diffusion to generate images, videos, audio, text, and 3D models, based on a pre-existing body of data that is used to train the AI to recognize and mimic patterns based on statistical relations. Different Generative AI products, such as Chat GPT and Bard (for textual creation), Dall-E and Midjourney (for image creation) and Google Translate and DeepL (for translation) have become part of the daily lives and professional toolboxes of millions of people around the world.

Generative AI brings along concerns related to copyright, fair and ethical treatment of materials and sources as well as the future of the sector's diverse professions, social agency, and income logics[14]. These are decisive topics also for the technology sector, as many digital production tools and methods are already used cross-sectorally, e.g. in game design, 3D modelling and printing, digital twins, UX, XR, and AI design, smart city development, education and so forth.

We currently witness a "summer" season of AI[8], with increasing hype, and investments. While we do not know how long it will last, during this period of enthusiasm a series of tools is being developed and increasingly put in use, promising a strong impact on the creative ecosystems when it comes to generation, management, and use of media, established professional and working life structures, educational settings, and many more. Many of these tools promise to revolutionize the ways in which we work, generate meaning and commodities, and thrive across industries. They offer new ways to simplify one's tasks, to support creative thinking and to illustrate ideas, but they also open up many questions related to their impact on existing careers and industries, the technical needs and limitations of the technologies, and the ethical dimensions of their use.

The impact of generative AI on the creative industries is already noteworthy, and current developments suggests it will be even more so in the future. In this poster we aim to propose some avenues for mapping and understanding such impact, in the belief that scholars and professionals need to take on a proactive role in managing and directing the transformations that are running through the cultural and creative sector.

2 STATE OF THE ART

The latest innovations in AI have sparked lively public debates on the topic. Reactions to Generative AI vary from the apocalyptic to the enthusiastic[6]. The first side focuses on the risks connected to AI use, starting from legitimate ethical concerns[29] and fears on effects on labor[11] to possible existential threats to humanity[26]. Enthusiasts, instead, focus on the possibilities opened by AI, in fields such as medicine[16], education[32], architecture[30] and more.

It is probably impossible to forecast or assess the future impact of Generative AI on the creative ecosystems. Predictive models seem to suggest that it will affect a large array of occupations (more

than robotics and software development have in the part) and that high-skill occupations will be the ones most exposed to artificial intelligence[31]. A literature review by OECD focusing on the last ten years of AI development suggests that adoption of the technology seemingly did not provoke an overall decline in employment and wages in exposed professions[17]. The review claims AI generally causes a reorganization of tasks in an occupation instead, changing the content, environment and design of jobs (ibid.). More creative approaches to future making, such as speculative design, have also been used to explore the possible impact of AI. Such design fictions argue that AI might lead, for example, to a "tokenisation" of human agency - a scenario in which human behaviour and choices can be reduced to token that are predictable by AI, enhancing possibilities of collaboration with artificial teammates, but also advancing the possibility of replacing human workers and decision makers[22].

Outside of academia, the ability to create and edit audiovisual (AV) and media content with high-quality results using only natural language text prompts is saluted as a game-changer. Advanced generative AI tools are often accessible globally. Consequently, the potential user base for this technology is vast. While many reports choose to focus on the potential benefits related to economic growth[11], AI seems to offer new challenges, as it expands the kinds of tasks that can be automated (beyond non-cognitive tasks), it is general purpose, and therefore affect every sector, and is developing at unprecedented speed[24].

Rapid automation obviously rises concerns related to job loss. A report made for the UK government, for example, estimates the job loss at 7% between 2021-2026, increasing to 30% by 2041. The same research, however, claims that AI development will also contribute to job creation. Some professions in particular might be more susceptible to these changes. Music production is one of such fields, with 73% of professionals believing that their jobs will be lost to AI[27].

While the future is uncertain, there are attempts to program it, for example by including generative AI in models of industrial development in the Industry 5.0 framework. While Industry 4.0 (or "fourth industrial revolution") focused on the digital transformation of manufacturing and production and their impact on the value creation process¹, the Fifth industrial revolutions explores the potential of AI and smart machines. Industry 4.0 refers to the intelligent networking of machines and processes for industry with the help of information and communication technology. It represents a new stage in the organization and control of the industrial value chain whose key driver is "Profit", with main drivers of optimization of productivity, product quality assurance and predictability of maintenance.

As a continuation, Industry 5.0 innovates both the tools at disposal of the industry - to include AI and smart machines - and the key drivers - focusing also on "People" and "Planet". It thus acknowledges and attempt to respond to the ongoing green, digital, and social sustainability transitions especially relevant to the creative ecosystems.

¹Industry 4.0 and the fourth industrial revolution are explained at i-scoop.eu

3 MAPPING TRANSFORMATIVE DIMENSIONS

The impacts of generative AI on the creative ecosystems promise to be multifaceted, complex and ambiguous, with both great opportunities and challenges for all the industries and professions involved. If anticipating such changes might be impossible, we argue for the necessity of continuous monitoring of its evolution as well as for a proactive role of academics and professionals to guide such impact towards the most desirable outcomes.

To contribute to this effort, we propose here some possible maps of the transformative dimensions of generative AI, based on previous studies and on the Industry 5.0 model. In order to create the basis for an holistic perspective on the future of AI in the creative ecosystems, we focus on two key dimensions: the impact of AI on the Industry from a perspective of labour, professionalisation, and management and the Actor Network status of AI in creative efforts.

3.1 AI's Industrial and Labour Impact

Generative AI is quickly finding many areas of application in different industries. Its adoption often proceeds in a bottom up way, as workers integrate it in their workload, or as a reaction to its effects on a specific field. In both cases, the adoption soon starts to impact working life, reshaping workloads, changing practices, requiring new skills and so forth. This, in turn, requires an effort of management to deal with this changes, by providing guidelines, educational pathways, opportunities of professional transition, restructuring of workloads etc. We can summarise these impacts as follows:

- (1) Areas of AI application in different industries
- (2) AI's impact on working life transformation
- (3) Management of AI in related social / professional transitions

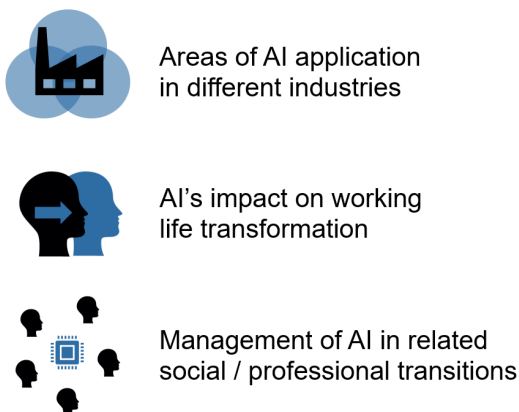


Figure 2: Three levels of industrial and labour impact of Generative AI

To explicate these points and test our mapping, we will now apply to one creative sectors that has been dealing with AI for decades: translation. Translation practice and translation studies have been assessing the impact on AI in their industries for a long time, as the first examples of computer-based translations date from

the half of the last century. Machine Translation (MT) has been one of the first applications of AI in the creative industries, and has deeply affected the tasks, perspectives, studies and practices of translation.

(1) Areas of AI application in different industries The progress of MT in the last decade made it an accepted tool not only for the translation of technical texts, but also for creative ones[25], a testament to the increasing quality of AI-translated texts. Nevertheless, the possibility of errors often makes human intervention necessary, distinguishing two main areas of application: one that can make use of unedited MT, and those requiring post-editing. Unedited MT is used in texts necessitating real-time communication (email support, live chat, social media posts, customer reviews) or to facilitate agile localization (websites in many languages, YouTube subtitles)[3]. Post-editing, instead, is used for high-quality content publication, as in the case of marketing, creative texts and the arts[9].

(2) AI's impact on working life transformation There is considerable research on the impact of MT on the professionals working in the translation industry. While the industry is being reshaped by several factors, such as the multiplication of digital labor platforms[7] or efforts of crowd-sourcing[2], MT has become one unavoidable dimension of the profession. The prevalence and increasing presence of MT in workflows have been recorded for almost a decade[9], but this does not make AI adoption an inevitability. There are several factors that contribute to the adoption of MT in translation projects, which are not limited to economic benefits and opportunity[15]. Ergonomic factors related to a human translators' needs, skills, limitations, and overall well-being have been found decisive in the adoption of MT[4].

(3) Management of AI in related social / professional transitions The impact of MT goes beyond the mere professional practices of translators. Machine translated texts are produced, in large quantities, by non-professionals making use of Google Translate in their businesses or daily life. This naive use of MT has been reported as problematic, especially in cases from the legal and medical fields. A literature review on use cases in these areas has underlined the need for a broad societal level of awareness on the strengths and, more importantly, limitations of MT. The current use and understanding of MT, the study argues, exacerbates social inequalities and poses grave risks for vulnerable communities[28].

The impact of AI on the translation industry, briefly showcased here within the frame of our mapping, highlights an important shortcoming of the current, *reactive*, model. The adoption of AI technologies is made inevitable by market pressures that push for speed and efficiency, and the consequences are dealt with at a later point. The results are not necessarily catastrophic, but they can still be damaging, especially for vulnerable professionals and communities. We argue, therefore, that the three steps outlined in our mapping should be programmatically re-ordered, with the third, related to management being moved to the very beginning. The adoption of generative AI in creative ecosystems should be guided by clear objectives. This guidance, however, cannot be pursued in a purely top down way, which brings us to the second dimension of our mapping efforts.

3.2 AI's Actor Network Status

According to Actor Network Theory[19] machines are nodes of social relations non dissimilar from human beings. If a door[20] can be an *agent* in an actor network, the agency of generative AI seems to present significant overlaps with that of human beings. Due to this, we can articulate the status of AI in Actor Networks, according to their relation with human agency, according to four main types:

- Expanding Human Agency
- Replacing Human Agency
- Cloning Human Agency
- Surpassing Human Agency

Generative AI *expands human agency* when it is used as a tool, or "companion", that allows human workers to do things better or faster. Tools that expand human agency might accomplish some of the tasks in place of a human being, but they are only part of the overall workflow. For example, MT needing post-editing would fall into this category. These tools are used in many creative ecosystems. For example, in the music industry many artists use AI as a mean to discover novel musical elements, like new sounds and rhythms [12]. Game designers have also been using generative AI to generate new characters design or visual styles, or to transform 2D renderings into 3D models². Beyond games, AI 3D object generators make the process of creating such models more efficient, accurate, and accessible to everyone. The list of uses could easily go on, and the existence of many lists of AI tools for art generation, text-to-music, game development, coding and more³ is a testament of the widespread use of generative AI to expand human agency.

AI *replaces human agency* when it can do the same work a human would do, without requiring the presence of a human. When enough tasks of a work can be delegated to AI, or when the final quality does not necessarily need human supervision (as in automatic generated translated subtitles), AI can replace human agents. In some field such as architecture it allows to automate an entire design package, from initial options to construction[21]. The Harvard Business Review claims that a GPT text creator named Jesper can replace humans entirely in producing autonomously social media posts, blog entries and other types of customer-facing content[5]. Forbes reports that several educational tasks can be completely delegated to AI, such as generating tests, study plans and personalised feedback[1]. Human actors can also be simulated through AI. The "Digital People Platform", for example, allows to create talking avatars to interact with⁴. The risk of AI replacing media professionals was among the concerns behind the strikes of the SAG-AFTRA and the Writers Guild of America in 2023, both asking for regulations concerning consent and ownership over ones voice, appearance and work.

Generative AI *clones human agency* when it does not replace a generic human agent, but a specific one. Deepfakes, allowing to reproduce to looks and voices of existing individuals and to create new materials with them. The phenomenon started often as

a meme-generating activity, and as unauthorised use of celebrities voices to generate new songs featuring famous artists, or to change the lyrics of classic songs[10]. Now, however, it is making a strong entry in the entertainment business, with Alphabet and Universal Music negotiating a deal over the use of AI deepfakes[23]. The possibility to "clone" artists has also been labeled as the creation of "digital twins", trained on actors' archives of film, to simulate their voice, inflections, movement and expressions at any stage of their life and career [18].

AI *surpasses human agency* when it accomplishes a task that would be impossible for a human agent to do. AI can sometimes go beyond being faster and more efficient, but also able to do things that human agents can't. In architecture AI has been claimed to be beyond humans in terms of strategic thinking and real-time analysis[28]. AI agents can also be embedded in software, something human agents cannot to. For example, in game design it is possible to use generative AI to animate non-player characters, allow them to respond more naturally to customised players' input [13].

With this - unexhaustive - list we wanted to showcase the variety of positions that AI agents can hold in the Actor Networks of the creative ecosystems. Different positions, in turn, will have different level and forms of impact on the industries related to these ecosystems, and on the workflows, jobs, and practices in the field. These positions also open a variety of ethical issues, related to the right of autonomy, the ownership of one voice or looks, the automation of human jobs, and so on. As with the other dimension mapped in this poster, the need for a proactive approach to the positioning of AI agents in different industries appear to be crucial for the thriving of the different elements of the creative ecosystems.

4 CONCLUSIONS

Ecosystems are complex environments, characterised by a dynamic equilibrium in which the ecosystem responds to external changes by evolving until finding a new balance. The same can be said about the creative ecosystems facing the innovations brought about by the success of generative AI. In the next years, these industrial and human environments will be thrown increasingly out of balance by the adoption of AI agents in different positions of their Actor Networks. This unbalance will affect workers in the industries, but also society at large through rippling effects.

Shadow (2020/2022), a recent film adaptation from the stage by the Australian theatre group Back to Back Theatre, suggests that the future of AI will blatantly teach those of us without disability diagnoses to avow the default shortcomings inherent in the so called normal human capacities. AI's new normal will be about negotiating the status and value of human-generated information, creativity, and content across the media, and about deciding how to evaluate, employ and benefit from those generated by AI. The task will not be easy. Generative AI's tendency to map out, choose and exploit normative features and patterns of human media to come up with significantly quirky and avant-garde content presents us with fundamental questions about how creative capacities and intents actually function, and for whom. This problematic also colours the current discussion on AI's further cross-sectoral impact, as operators of the cultural and creative industries are chiefly concerned

²Adrien Logut, "Introduction to Procedural Generation plugin in UE5.2" series of videos aimed to kick-start people using the Procedural Content Generation plugin, Epic Games Dev Community, June 18, 2023.

³Respectively at: <https://bit.ly/AIArtGn>, <https://bit.ly/AIxtxt2Mus>, <https://bit.ly/AIGameDev>, and <https://bit.ly/AICodeTool>

⁴<https://www.d-id.com/>

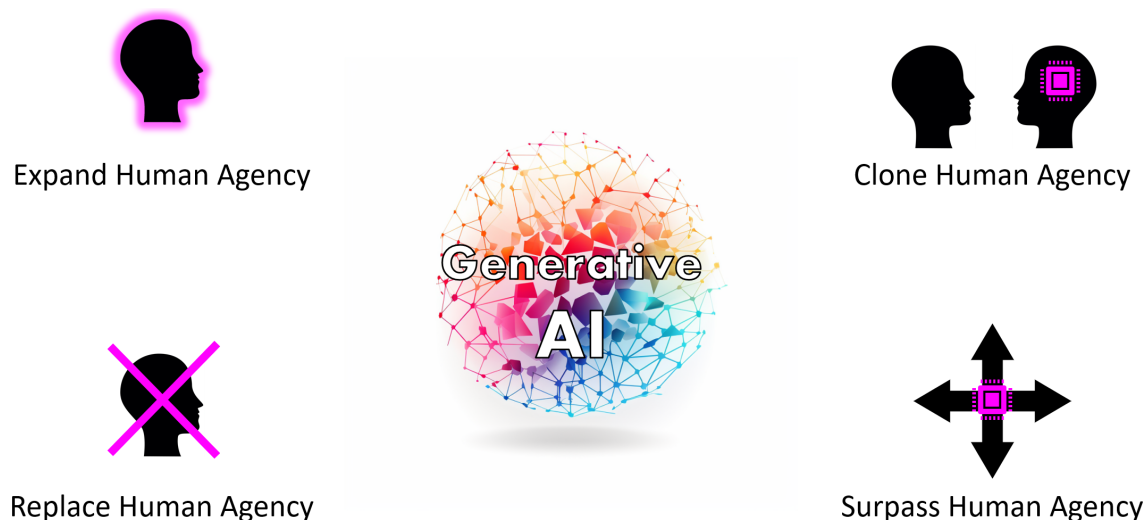


Figure 3: AI's Actor Network Status

about the ethical reaches of allowing AI models to process human-generated creative content without a comprehensive view of what social and economical repercussions follow.

In the search for a new equilibrium for the creative ecosystems, we argue firmly for the necessity of a proactive approach. By operating cross-sectorally and employing joint forces across the ecosystems to tackle and the properties of generative AI (each field learning from the others), there is a chance to add value for the creative sector and those collaborating with it. The sheer number of AI-powered technology in the service and experience economies in the future indicates the importance of urgent, holistic charting of emerging AI territories with view to enhancing communication, synchronization, and learning between the industries at large. When we move from one phase of the industrial evolution to another, and from profit to sustainable profit for all ecosystems, the role of properly researched, proactive, and creative AI may prove to be decisive.

Our poster is but a first step in the effort to map out the present situation from speculative, cross-disciplinary, and holistic viewpoints. Other dimensions, deeper engagements with the data symptomatic of AI adoption, and, crucially, a larger engagement of academics with different backgrounds are all needed if we want to be able to monitor, direct, and guide the evolution of the creative ecosystems.

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