THE UNIVERSITY of EDINBURGH

From Philosophy to Design Concepts and Practices

Dr Caterina Moruzzi

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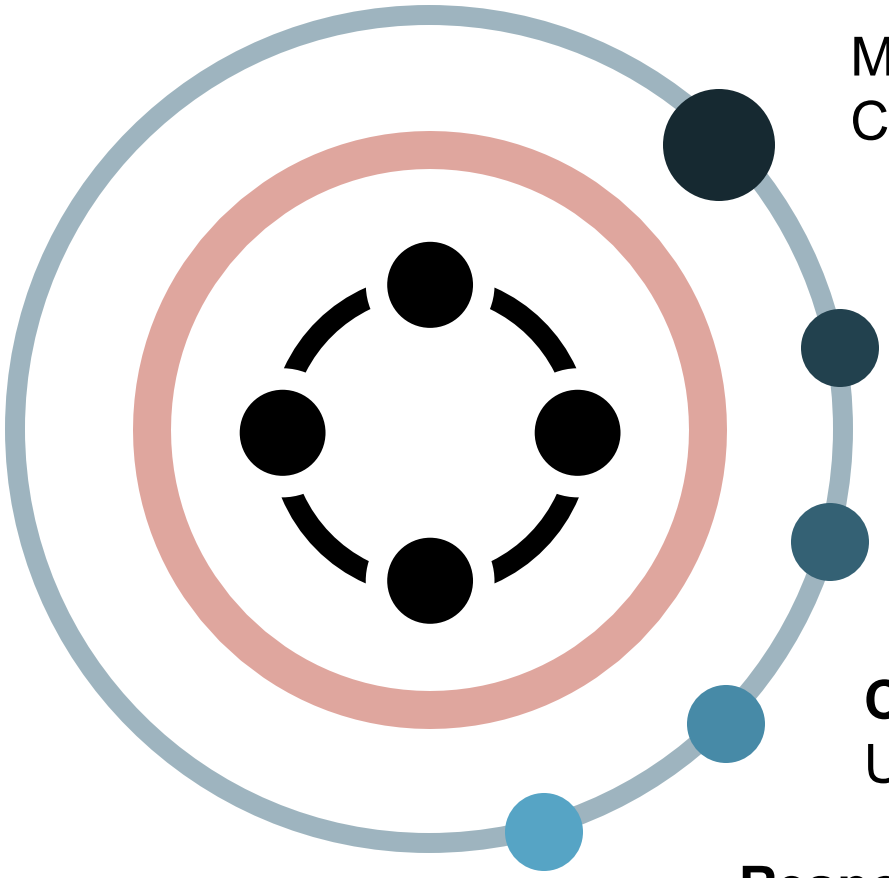


Music diploma (2014) in **piano** performance from the Conservatorio G.B. Martini, Bologna (Italy)

MA (2014) and Ph.D. (2018) in **Philosophy** (University of Bologna, Italy / University of Nottingham, U.K.)

Started working on **creativity and AI** in 2016

Chancellor's Fellow in Design Informatics/School of Design, University of Edinburgh since 2023

Responsible application of AI in creative processes

Engineering and Physical Sciences Research Council

DECaDE

CoSTAR
THE UK R&D NETWORK FOR CREATIVE TECHNOLOGY

BRAID
Bridging Responsible AI Divides

Arts and Humanities Research Council


Philosophy, music, and conceptual analysis
Theory grounded on empirical research
Interdisciplinary collaborations
Exhibit-based and participatory research
Intersectoral collaborations

Where it started…

As a pianist, playing Bach's works on period instruments made me reflect on what counts as an authentic performance.

At the same time, I was studying philosophy.
Specialisation: philosophy of language and philosophy of art.
Focus on questions of interpretation.

Musical practice raised questions about authenticity.
Philosophical training provided tools to analyse them.

MUSICAL STAGE THEORY: A NOVEL ACCOUNT FOR THE ONTOLOGY OF MUSICAL WORKS AND THE AUTHENTICITY OF MUSIC (PhD thesis, University of Nottingham, 2018)

Listening to music is one of the most common human activities. Yet, answering the question 'What is a musical work?' has kept many scholars busy. In this thesis, I present a novel account for the ontology of musical works: Musical Stage Theory. […] The original contribution brought by Musical Stage Theory is twofold: first, it gives promising prominence to the sonic/performative dimension which, in a sense, has remained as an afterthought in alternative theories. Second, it promotes an active collaboration between the disciplines of music and philosophy, supporting philosophical investigations with musicological considerations and case studies.

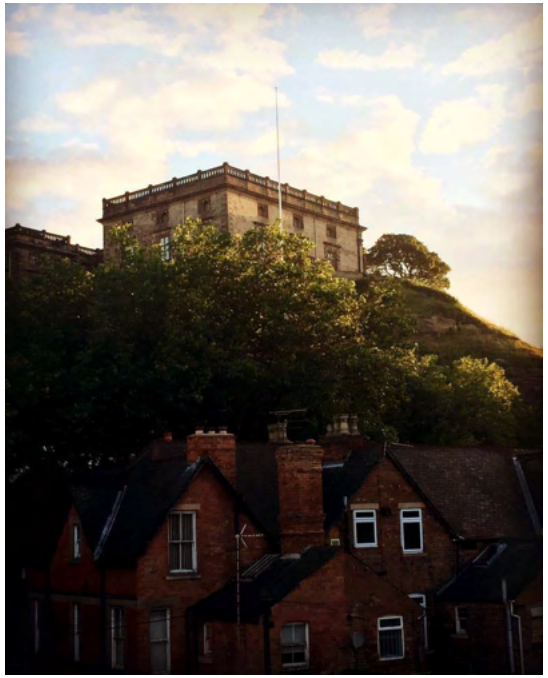
In order to achieve this second goal, in the thesis I adopt a multivalent methodology. In addition to a more traditional philosophical approach, I support conceptual analysis with the results obtained from interviews conducted with musicians and theorists on their understanding of musical authenticity. After presenting the benefits of Musical Stage Theory against more traditional theories in the ontology of music, I apply its theoretical framework to actual musical phenomena and case studies, showing how Musical Stage Theory can change the way in which we approach the study and perception of music. I conclude with the proposal of a contextualist interpretation of the notion of authenticity in musical performance, justifying it on the basis of the nature of musical works as defended by Musical Stage Theory.

Goal: formulating a new ontological theory of musical works.

Contribution: foregrounding the relevance of the performative dimensions of music, promoting interdisciplinary dialogue.

Methodology: conceptual analysis complemented by qualitative, interview-based inquiry.

Goal: new interpretation of the notion of authenticity.

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Conceptual Analysis / Conceptual Engineering

Conceptual analysis is a method in philosophy that examines how we currently use and understand concepts, making their structure and assumptions explicit.

Conceptual engineering goes a step further: it aims not only to analyse but also to improve or reshape concepts, so they work better for theoretical or practical purposes.

Inter- and intra-discipline approach

Integrating musicological analysis into a philosophical framework.

Within philosophy, using concepts and approaches from the philosophy of time to address issues in ontology, aesthetics, and philosophy of art.

Empirical qualitative research

Empirically informed conceptual analysis to enrich the conceptual framework.

Integrating interviews into the thesis

Method

- Qualitative research: interviews
- 15 interviews conducted (musicians & scholars)
- Questions explored
    - What counts as an “authentic” performance?
    - Influence of score, period, audience, instruments, traditions, composer’s intentions
    - Is there authenticity in modern contexts (e.g., Bach on piano)?

High-level findings

- No single definition of authenticity dominates
- Authenticity is context-dependent → “authentic to something”
- Debate remains unresolved, echoing 1990s discussions

Implication for thesis

→ Supports need for an alternative account of authenticity (beyond traditional criteria)

Visiting research period at McGill, Montreal (2016)

Visiting research period at McGill, Montreal (2016)

Katherine Hawley

Ted Sider

Les 3 Brasseurs, Montreal

Generative Adversarial Nets

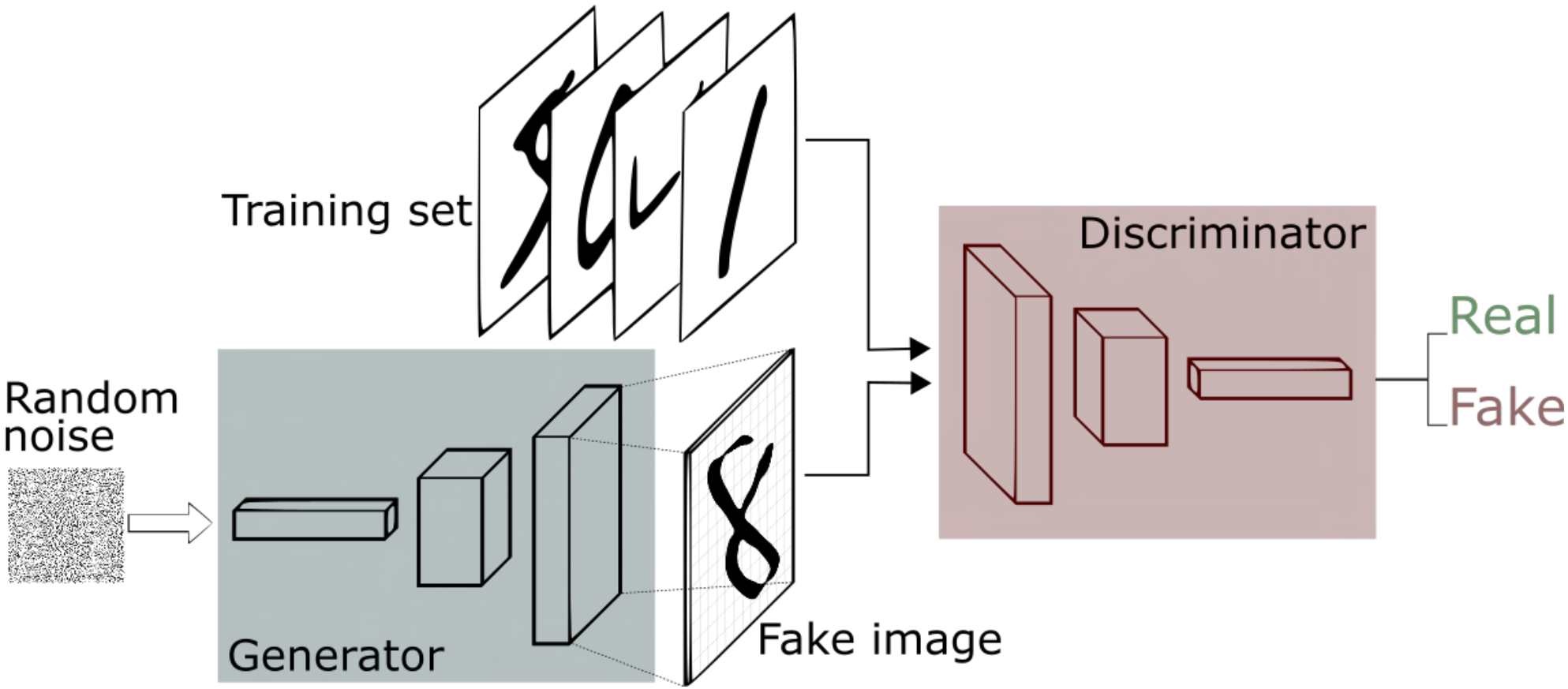
Ian J. Goodfellow, Jean Pouget-Abadie*, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair†, Aaron Courville, Yoshua Bengio‡
Département d'informatique et de recherche opérationnelle
Université de Montréal
Montréal, QC H3C 3J7

Abstract

We propose a new framework for estimating generative models via an adversarial process, in which we simultaneously train two models: a generative model G that captures the data distribution, and a discriminative model D that estimates the probability that a sample came from the training data rather than G. The training procedure for G is to maximize the probability of D making a mistake. This framework corresponds to a minimax two-player game. In the space of arbitrary functions G and D, a unique solution exists, with G recovering the training data distribution and D equal to $\frac{1}{2}$ everywhere. In the case where G and D are defined by multilayer perceptrons, the entire system can be trained with backpropagation. There is no need for any Markov chains or unrolled approximate inference networks during either training or generation of samples. Experiments demonstrate the potential of the framework through qualitative and quantitative evaluation of the generated samples.

1 Introduction

The promise of deep learning is to discover rich, hierarchical models [2] that represent probability distributions over the kinds of data encountered in artificial intelligence applications, such as natural images, audio waveforms containing speech, and symbols in natural language corpora. So far, the most striking successes in deep learning have involved discriminative models, usually those that map a high-dimensional, rich sensory input to a class label [14, 22]. These striking successes have primarily been based on the backpropagation and dropout algorithms, using piecewise linear units [19, 9, 10] which have a particularly well-behaved gradient . Deep *generative* models have had less of an impact, due to the difficulty of approximating many intractable probabilistic computations that arise in maximum likelihood estimation and related strategies, and due to difficulty of leveraging the benefits of piecewise linear units in the generative context. We propose a new generative model estimation procedure that sidesteps these difficulties. [1]



Generative Adversarial Networks, Jiyu Xia and Man Hua 2021

magenta

FLOW MACHINES

Daddy's Car, https://www.youtube.com/watch?v=LSHZ_b05W7o

Short postdoctoral project, “Creativity in Generative Models of Music Composition”, University of Nottingham (AHRC), 2019

Exploring perceptions of AI-generated art and music, and attitudes toward AI creativity.

Method

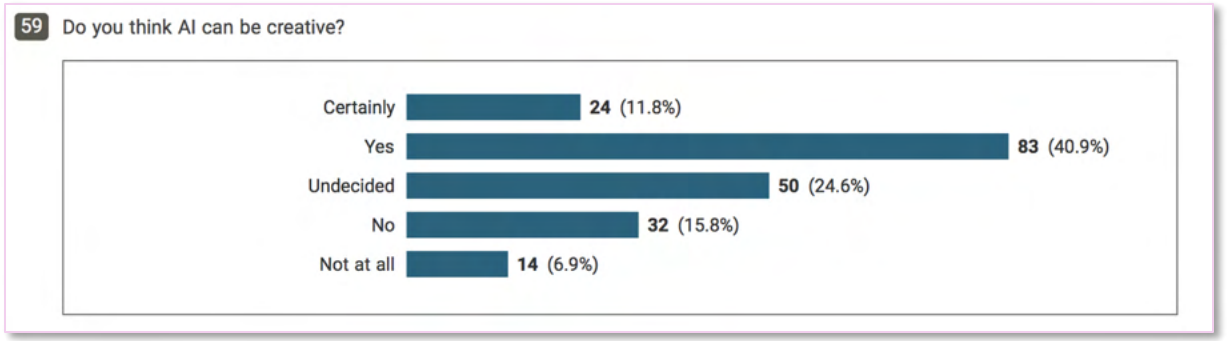
- Online survey.
- 203 participants.
- Participants:
  - Evaluated 2 paintings (1 human, 1 AI-generated via CANs) and 2 music clips (1 human, 1 AI-generated via RNN).
  - Rated creativity, pleasantness, novelty, and intentionality on Likert scales.
  - Asked to identify AI-generated works and indicate willingness to pay or engage with them.

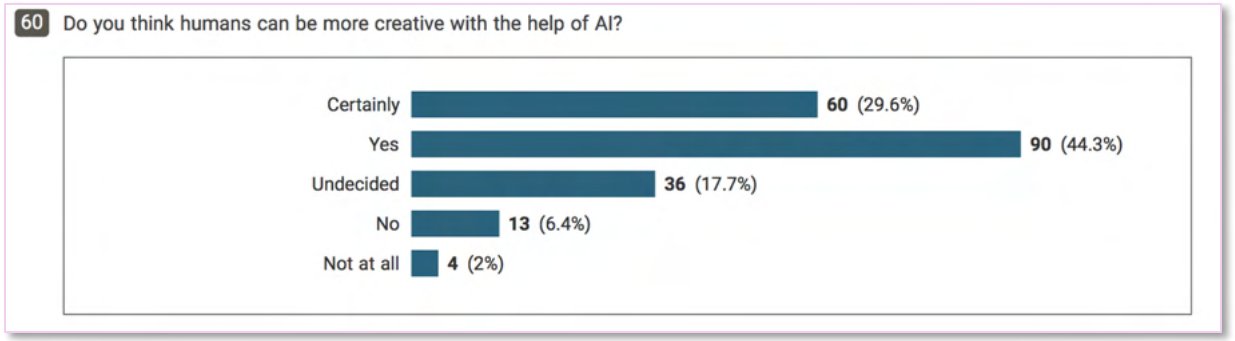
- In-person Focus Groups:
  - 2 groups of 10 participants each, mostly students and academics.
  - Discussed AI in arts, shown AI-generated works (Next Rembrandt, music-robot collaboration).
  - Explored biases toward AI and its perceived creativity.

High-level findings (survey and focus groups)

- Human-generated works consistently rated higher for creativity, novelty, and pleasantness.
- Participants could often correctly identify AI-generated works (58–62%).
- Majority acknowledged that AI can be creative (40.9% yes; 11.8% certainly).
- Stronger support for human-AI collaboration (44.3% yes; 29.6% certain).

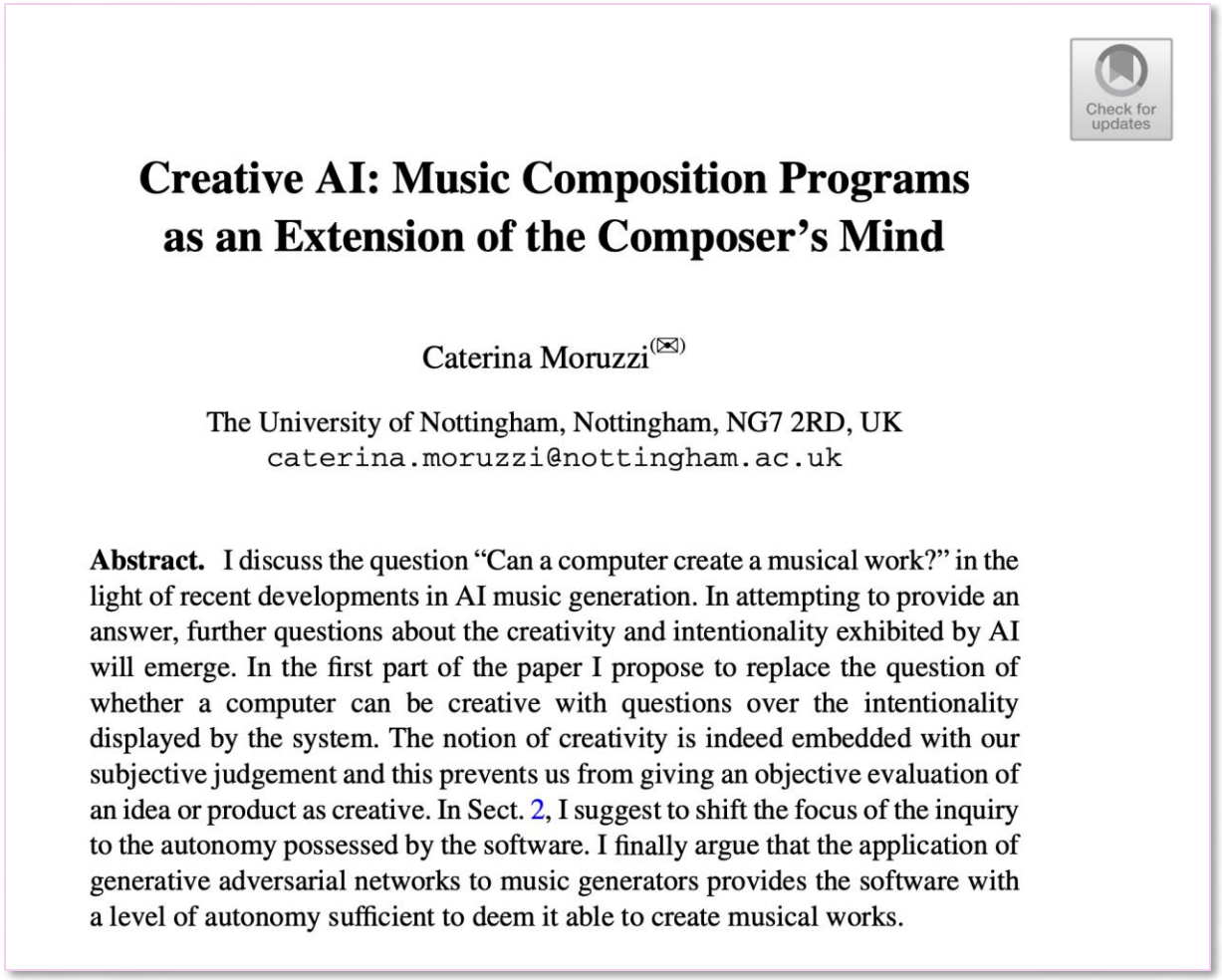
- Physical embodiment of AI (e.g., robotic arms) can increase perceived creativity.
- Scepticism toward AI creativity partly due to concerns of AI entering the creative sector.





Moruzzi, Caterina. 2020. “Should Human Artists Fear AI? A Report on the Perception of Creative AI", Proceedings of Conference on Computation, Communication, Aesthetics & X (xCoAx2020), pp. 170-185.

Empirical data helped answering theoretical questions.



Creative AI: Music Composition Programs as an Extension of the Composer's Mind

Caterina Moruzzi(✉)

The University of Nottingham, Nottingham, NG7 2RD, UK
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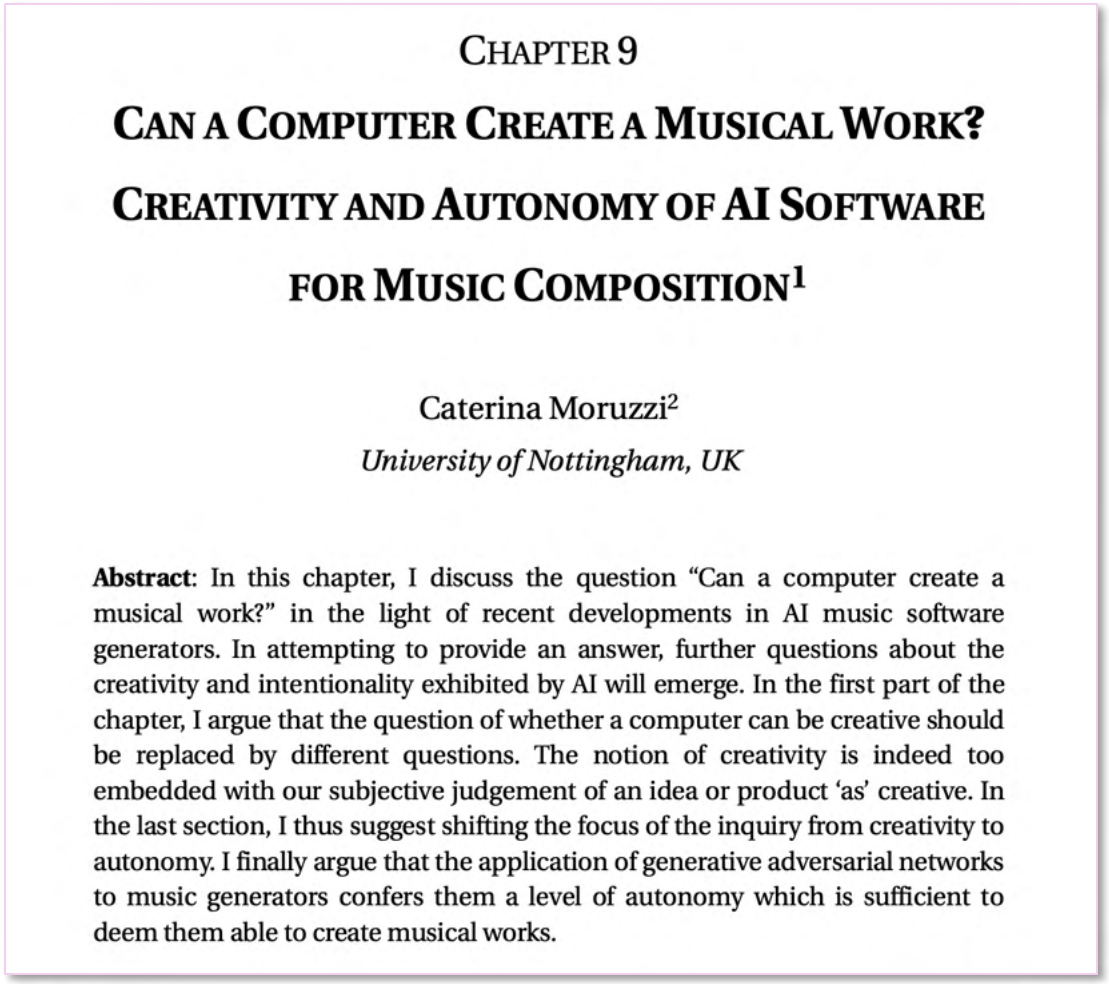
Abstract. I discuss the question "Can a computer create a musical work?" in the light of recent developments in AI music generation. In attempting to provide an answer, further questions about the creativity and intentionality exhibited by AI will emerge. In the first part of the paper I propose to replace the question of whether a computer can be creative with questions over the intentionality displayed by the system. The notion of creativity is indeed embedded with our subjective judgement and this prevents us from giving an objective evaluation of an idea or product as creative. In Sect. 2, I suggest to shift the focus of the inquiry to the autonomy possessed by the software. I finally argue that the application of generative adversarial networks to music generators provides the software with a level of autonomy sufficient to deem it able to create musical works.

Philosophy and Theory of Artificial Intelligence, Vincent C. Müller (ed.), SAPERE; Berlin: Springer, 2017.



CHAPTER 9

CAN A COMPUTER CREATE A MUSICAL WORK? CREATIVITY AND AUTONOMY OF AI SOFTWARE FOR MUSIC COMPOSITION[1]

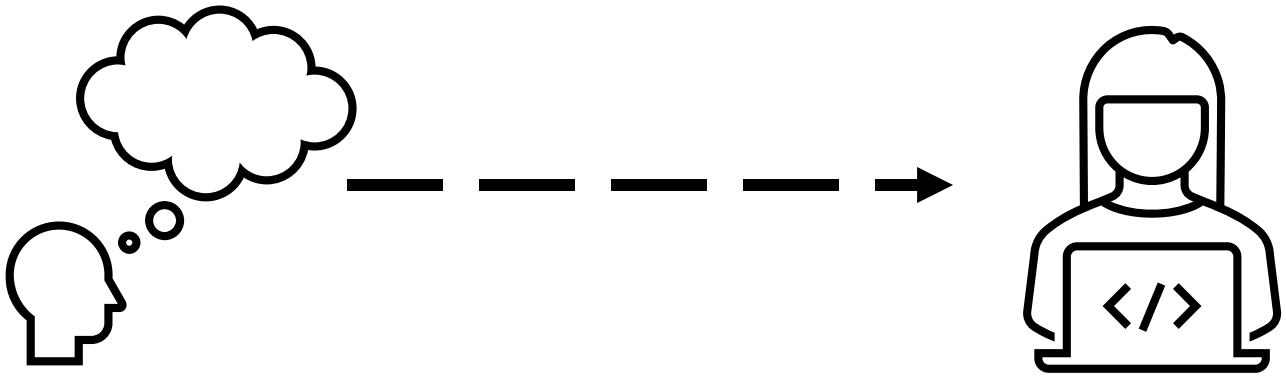
Caterina Moruzzi[2]

University of Nottingham, UK

Abstract: In this chapter, I discuss the question "Can a computer create a musical work?" in the light of recent developments in AI music software generators. In attempting to provide an answer, further questions about the creativity and intentionality exhibited by AI will emerge. In the first part of the chapter, I argue that the question of whether a computer can be creative should be replaced by different questions. The notion of creativity is indeed too embedded with our subjective judgement of an idea or product 'as' creative. In the last section, I thus suggest shifting the focus of the inquiry from creativity to autonomy. I finally argue that the application of generative adversarial networks to music generators confers them a level of autonomy which is sufficient to deem them able to create musical works.

The Age of Artificial Intelligence: An Exploration, Steven Gouveia (ed.), Vernon Press, 2020.

Challenge: philosopher entering a technical context.



Solution: more collaboration and interaction with technologists to gain more knowledge about the underlying mechanisms.

Prediction: An Algorithmic Principle Meeting Neuroscience and Machine Learning Halfway

Younes Bouhadjar[1,†], Caterina Moruzzi[2,*,†] and Melika Payvand[3,†]

[1] *Institute of Neuroscience and Medicine (INM-6), & Institute for Advanced Simulation (IAS-6), & JARA BRAIN Institute Structure-Function Relationships (INM-10), & Peter Grünberg Institute (PGI-7), Jülich Research Centre and JARA, Jülich, Germany*

[2] *Department of Philosophy, University of Konstanz, Universitätsstraße 10, 78464 Konstanz, Germany*

[3] *Institute of Neuroinformatics, University of Zurich and ETH Zurich, Winterthurerstrasse 190, 8057 Zurich, Switzerland*

Abstract

In this paper, we support the relevance of the collaboration and mutual inspiration between Artificial Intelligence (AI) and neuroscience to create truly intelligent and efficient systems. In contrast to the traditional top-down and bottom-up strategies designed to study and emulate the brain, we propose an alternative approach where these two strategies are met half-way defining a set of algorithmic principles. We present *prediction* as a core algorithmic principle and advocate for applying the same approach to identify other neural principles which can constitute core mechanisms of new Machine Learning frameworks.

Keywords

Prediction, Neuroscience, Reasoning, Algorithmic Principles, Computation, Bottom-up, Top-down

Proceedings of the 3rd International Workshop on Human-Like Computing at the 2nd International Joint Conference on Learning & Reasoning, 2022.

RIFL (2020) Vol. 14, n. 2: 35-46
DOI: 10.4396/AISB201904

Learning through creativity: how creativity can help machine learning achieving deeper understanding

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Abstract In this paper, I address the difficult task of analysing the nature of creativity by suggesting a more objective way of defining it. In particular, I propose a minimal account of creativity as autonomous problem-solving process. This definition is aimed at providing a baseline that researchers working in different fields can agree on and that can then be refined on a case by case basis. Developing our insight on the nature of creativity is increasingly necessary in the light of recent developments in the field of Artificial Intelligence. In the second part of the paper, I discuss how an investigation on the main features of human creativity can support the advancement of machine learning models in their current areas of weakness, such as intuition, originality, innovation, and flexibility. I suggest how methods such as modelling the human brain or simulation can be useful to extract the main mechanisms underlying creative processes and to translate them to machine learning applications. This can eventually aid both the development of machine learning systems that achieve a deeper and more intuitive understanding and our exploration of human creativity.

Rivista Italiana di Filosofia del Linguaggio 14.2 2020.

Toward Out-of-Distribution Generalization Through Inductive Biases

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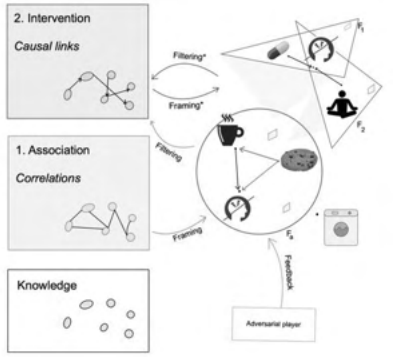
Keywords: inductive biases, generalization, decision making, causality, hybrid AI

Abstract State-of-the-art Machine Learning systems are able to process and analyze a large amount of data but they still struggle to generalize to out-of-distribution scenarios. To use Judea Pearl's words, "Data are profoundly dumb" (Pearl & Mackenzie, 2018); possessing a model of the world, a representation through which to frame reality is a necessary requirement in order to discriminate between relevant and irrelevant information and to deal with unknown scenarios. The aim of this paper is to address the crucial challenge of out-of-distribution generalization in automated systems by developing an understanding of how human agents build models to act in a dynamic environment. The steps needed to reach this goal are described by Pearl through the metaphor of the Ladder of Causation. In this paper, I support the relevance of inductive biases in order for an agent to reach the second rung on the Ladder: that of actively interacting with the environment.



Philosophy and Theory of Artificial Intelligence, Vincent C. Müller (ed.), Studies in Applied Philosophy, Epistemology and Rational Ethics. Springer, Cham, 2021.

Which in turn led to more comprehensive and informed theoretical accounts.

ARTIFICIAL CREATIVITY AND GENERAL INTELLIGENCE

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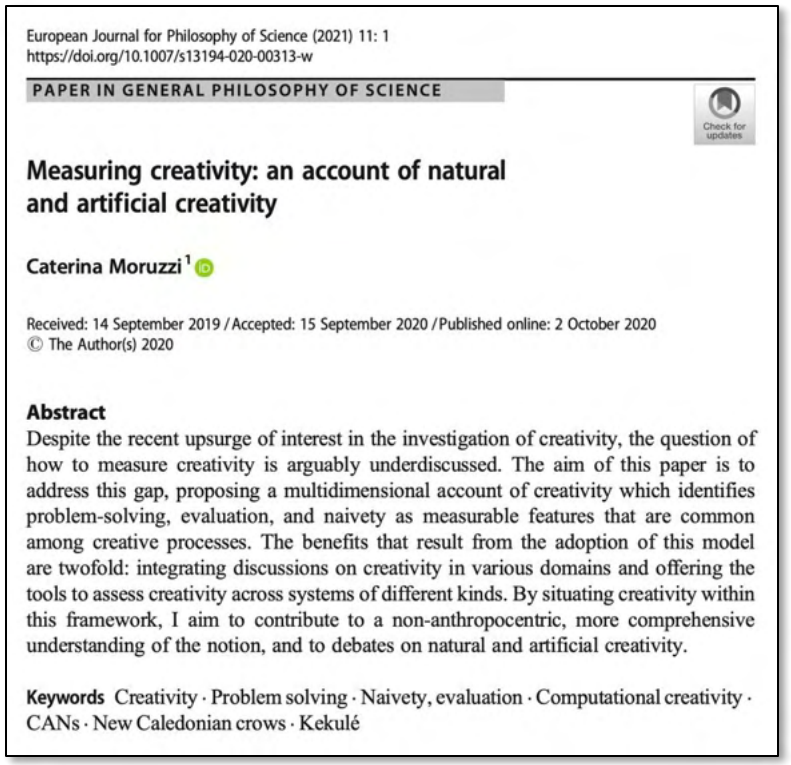
Journal of Science and Technology of the Arts, Vol. 12, n. 3 (2020), pp. 84-99 https://doi.org/10.34626/jsta.2020.9401

ABSTRACT

It is hard to deny that the notions of creativity and intelligence are inherently connected. But what does this correlation amount to? Is creativity a necessary desideratum of intelligence? On the other hand, does the fact of being intelligent necessarily imply being creative as well? The aim of this paper is to explore these questions and to contribute to the discussion regarding the connections between the notions of creativity and intelligence. In order to do so, I draw on the results obtained from a study on the public perceptions and attitudes in relation to the use of AI in the creative sector conducted at the University of Nottingham. Through this discussion I aim to test the hypothesis that the key features of creativity correspond to aspects that are essential for the realization of Artificial General Intelligence, e.g. flexibility, domain knowledge, and common-sense. After having illustrated the parallels between the two concepts, I contend that while creativity is a crucial component of general intelligence, the constituents needed to build an AGI may not be sufficient to design creative artificial systems. I close the paper by tentatively suggesting how the motivations behind the discontent expressed by the participants against creative AI can be explained through the uncanny valley phenomenon.

Keywords: Computational creativity; Artificial general intelligence; Human-subject study.

Journal of Science and Technology in the Arts 12(3): 84-99, 2020.



European Journal for Philosophy of Science (2021) 11: 1
https://doi.org/10.1007/s13194-020-00313-w

PAPER IN GENERAL PHILOSOPHY OF SCIENCE

Check for updates

Measuring creativity: an account of natural and artificial creativity

Caterina Moruzzi[1]

Received: 14 September 2019 / Accepted: 15 September 2020 / Published online: 2 October 2020

Abstract
Despite the recent upsurge of interest in the investigation of creativity, the question of how to measure creativity is arguably underdiscussed. The aim of this paper is to address this gap, proposing a multidimensional account of creativity which identifies problem-solving, evaluation, and naivety as measurable features that are common among creative processes. The benefits that result from the adoption of this model are twofold: integrating discussions on creativity in various domains and offering the tools to assess creativity across systems of different kinds. By situating creativity within this framework, I aim to contribute to a non-anthropocentric, more comprehensive understanding of the notion, and to debates on natural and artificial creativity.

Keywords Creativity · Problem solving · Naivety, evaluation · Computational creativity · CANs · New Caledonian crows · Kekulé

European Journal for Philosophy of Science 11(1), 2020.

Survey on Creativity and Agency in Human and AI, University of Konstanz, 2021

Explored how people attribute creativity and agency to human, AI, and hybrid actors in artistic and scientific contexts.

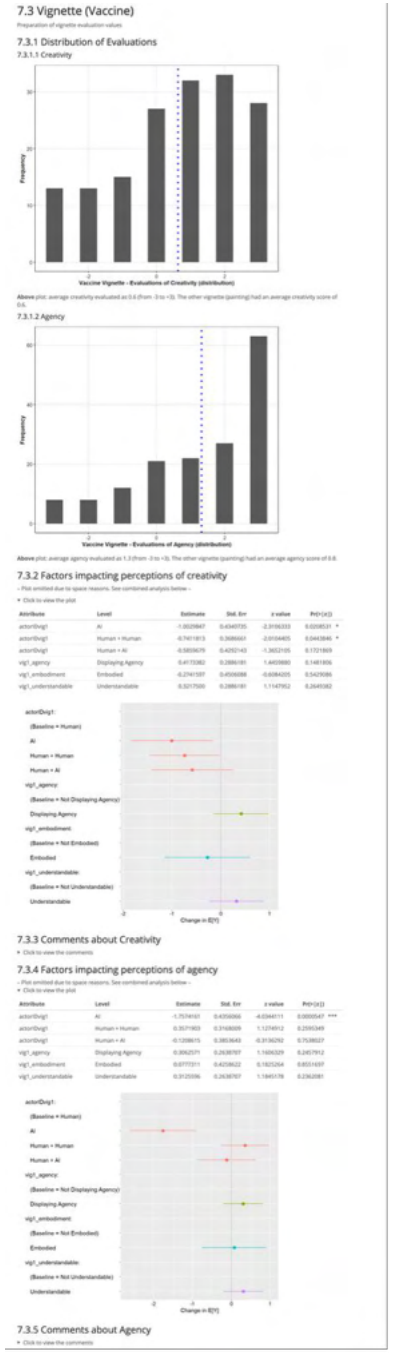
Method

- 161 participants.
- Online questionnaire.
- Factorial survey experiment: Participants evaluated 8 vignettes describing hypothetical scenarios (painting a canvas / developing a vaccine).
- Dimensions manipulated: Actor (Human, AI, Human+Human, Human+AI), Agency, Embodiment, Explainability.
- Participants rated perceived creativity and agency in each scenario.
- Regression analysis.

Table 1. Distribution of dimensions in vignettes.

Vig.	Identity				Agency		Embodiment		Explainability	
	Human	AI	Human+Human	Human+AI	Yes	No	Yes	No	Yes	No
1	x				x		x		x	
2	x					x	x			x
3		x			x			x		x
4		x				x	x		x	
5			x		x		x		x	
6			x			x	x			x
7				x	x		x			x
8				x		x		x	x	

Moruzzi, Caterina. “Perceptions of Creativity in Artistic and Scientific Processes." Proceedings of the 10th Conference on Computation, Communication, Aesthetics & X, 2022.



Factorial Survey Experiment

A **factorial experiment** presents participants with hypothetical scenarios (vignettes) in which multiple attributes (factors) are systematically varied.

Each **factor** has different **levels** (e.g., Actor: Human / AI / Human+AI). Participants evaluate the scenarios, allowing researchers to test how each factor and combination of factors influences judgments.

Useful for studying perceptions, decision-making, and social evaluations in controlled yet realistic contexts.

In this study, it helped isolate how **actor type, agency, embodiment, and explainability** affect perceived creativity and agency.

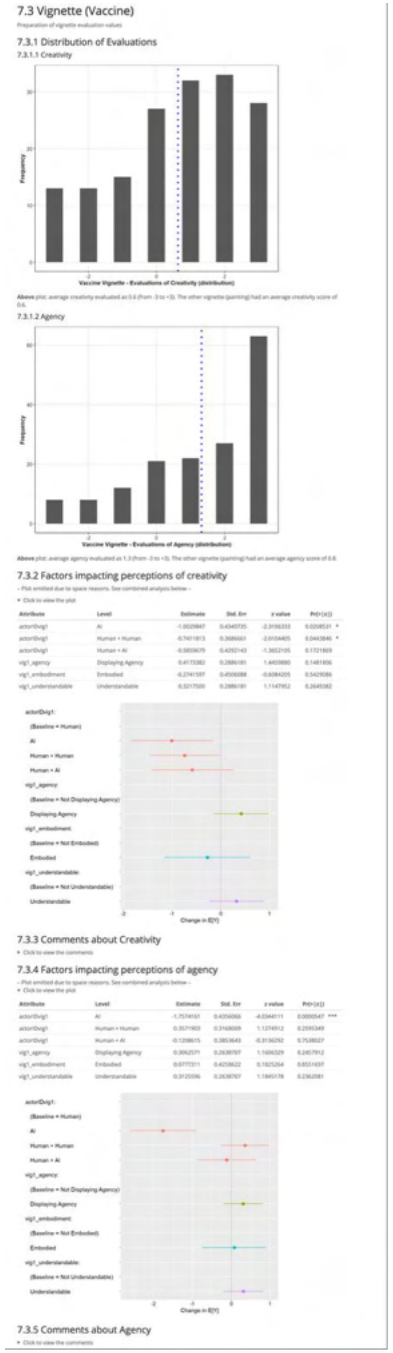
Moruzzi, Caterina. “Perceptions of Creativity in Artistic and Scientific Processes." Proceedings of the 10th Conference on Computation, Communication, Aesthetics & X, 2022.

Table 2. Factors impacting perceptions of creativity.

	Actor Dimension			
	Human (baseline)	AI	Human & Human	Human & AI
	Painting scenario			
Estimate	0	**-0.88**	-0.54	-0.18
Std. err.	0	0.44	0.37	0.38
z value	0	-2.00	-1.44	-0.48
Pr(> |z|)	0	0.04	0.15	0.63
	Vaccine scenario			
Estimate	0	**-1.00**	**-0.74**	-0.58
Std. err.	0	0.43	0.37	0.43
z value	0	-2.31	-2.01	-1.36
Pr(> |z|)	0	0.02	0.04	0.17
	Combined scenarios			
Estimate	0	**-0.98**	**-0.68**	-0.39
Std. err.	0	0.31	0.25	0.27
z value	0	-3.07	-2.68	-1.46
Pr(> |z|)	0	0.002	0.007	0.14

7. In Table 2 the significant estimates are indicated in bold, where the significance is indicated by the Pr(> |z|), the so-called ‘p-value’. The latter is a number between 0 and 1 which describes how likely it is that the null hypothesis is true, where the null hypothesis states that there is no relationship between the variables being studied. To be statistically significant, the p-value should be less than 0.05. This value indicates strong evidence against the null hypothesis, as there is less than a 5% probability that the null hypothesis is correct and that there is no relationship between the variables studied. It should be noted that from the fact that the p value is significant, does not automatically follow that the alternative hypothesis that the independent variable did affect the dependent variable, and the results are significant in terms of supporting the theory being investigated, is true.

From the Estimate row, it is possible to see that in both scenarios, just for the fact of not being a human, but rather an artificial actor (other dimensions being equal), the AI is judged as 0.88 or 1.00 point less creative than humans.[7] What is more surprising is that in the case of the vaccine scenario also the team composed of two humans (-0.74) results significantly less creative than an individual human (0), and even less creative than the team composed of a human and an artificial intelligence (-0.58). Combining the results of the two scenarios, similar results are obtained: both AI (-0.98) and the team composed by two humans (-0.68) are deemed significantly less creative than a human individual.



High-level findings

- Systematic differences observed in creativity ratings based on the identity of actors.
- Human actors were generally rated as more creative and agentic than AI actors.
- Participants' judgments were influenced not only by actor type but also by embodiment and explainability cues.

Moruzzi, Caterina. "The (Artificial) Physicality of Creativity: How Embodiment Influences Perceptions of Creativity." ICCC, 2022.

Moruzzi, Caterina. "Perceptions of Creativity in Artistic and Scientific Processes." Proceedings of the 10th Conference on Computation, Communication, Aesthetics & X, 2022.

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Project "The Role of Embodiment in the Perception of Human and Artificial Creativity", 2021-22. In collaboration with Adobe Research and Oxford Internet Institute. Funded by the Intersectoral Co-operation Programme, Institute for Advanced Study, University of Konstanz.

1.5-day workshop on embodiment, creativity, and AI as part of ICCC 2022.

Method

Day 1: Performances + audience surveys (32 responses).
Renaud Chabrier: artist, researcher, illustrator.
Daniel Berio: researcher-artist using generative methods for graffiti & calligraphy, incl. robotics.
Audience experienced performances in separate rooms and completed online surveys evaluating creativity and other factors.

Day 2: Academic presentations + discussions.
6 peer-reviewed papers (philosophy, psychology, visual art, CS).
Panel discussion.
Keynote: Aaron Hertzmann (Adobe Research)

Herman, Laura and Moruzzi, Caterina (eds.). Proceedings of the ICCC 2022 workshop "The Role of Embodiment in Perceptions of Natural and Artificial Creativity." 2022.

Follow-up study

Method

- Online questionnaire based on workshop pilot.
- 500 participants
- Quantitative analysis: ANOVAs, T-Tests, the Pearson correlation coefficient, and regression statistics including linear regressions

High-level findings

- Embodiment strongly influenced audience judgments of creativity and humanity.
- Complexity ≠ embodiment: Berio seen as complex but less human; Chabrier seen as embodied but less complex.
- Agency attribution varied, suggesting ambiguity in human/machine co-creation.

	Process					**Outcome**					**Piece**				
	CodeVid		*DrawVid*			*CodeVid*		*DrawVid*			*CodeVid*		*DrawVid*		
Field	Mean	*SD*	Mean	*SD*	*P*	Mean	*SD*	Mean	*SD*	*P*	Mean	*SD*	Mean	*SD*	*P*
Creativity	3.23	1.23	3.36	1.09	<0.05	3.18	1.25	3.38	1.13	<.01	3.39	1.21	3.67	0.96	<.01
Originality	3.27	1.30	3.01	1.24	<.001	3.15	1.28	3.19	1.18	>0.05	3.46	1.22	3.56	1.14	>0.05
Complexity	3.82	1.06	2.61	1.06	<.001	-	-	-	-	-	-	-	-	-	-
Surprise	3.15	1.37	2.82	1.36	<.001	3.03	1.36	3.02	1.27	>0.05	2.93	1.37	2.86	1.21	>0.05
Embodiment	2.54	1.29	2.73	1.14	<.01	-	-	-	-	-	-	-	-	-	-
Humanness	1.58	1.09	3.29	1.16	<.001	1.52	1.10	3.17	1.19	<.001	-	-	-	-	-
Aesth.pleas.	-	-	-	-	-	3.40	1.28	3.55	1.14	<0.05	3.23	1.35	3.51	1.18	<.001
Value	-	-	-	-	-	2.44	1.24	2.30	1.19	<0.05	2.31	1.19	2.23	1.12	<.001

Table 1: The table shows the results of the participants' ratings of the of the **process**, **outcome** and **piece** for both *CodeVid* and *DrawVid* on different scales.

Moruzzi, Caterina & Laura Herman. "Perceptions of Embodiment & Creativity in Cases of Human-Technology Co-Creation", Proceedings of the 15th International Conference on Computational Creativity, ICCC, 2024.

Introducing the Method of Exhibit-Based Research

Authors: Kathryn Eccles, Laura Herman, Caterina Moruzzi, Maggie Mustaklem Authors Info & Claims

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Check for updates

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PDF eReader

Abstract

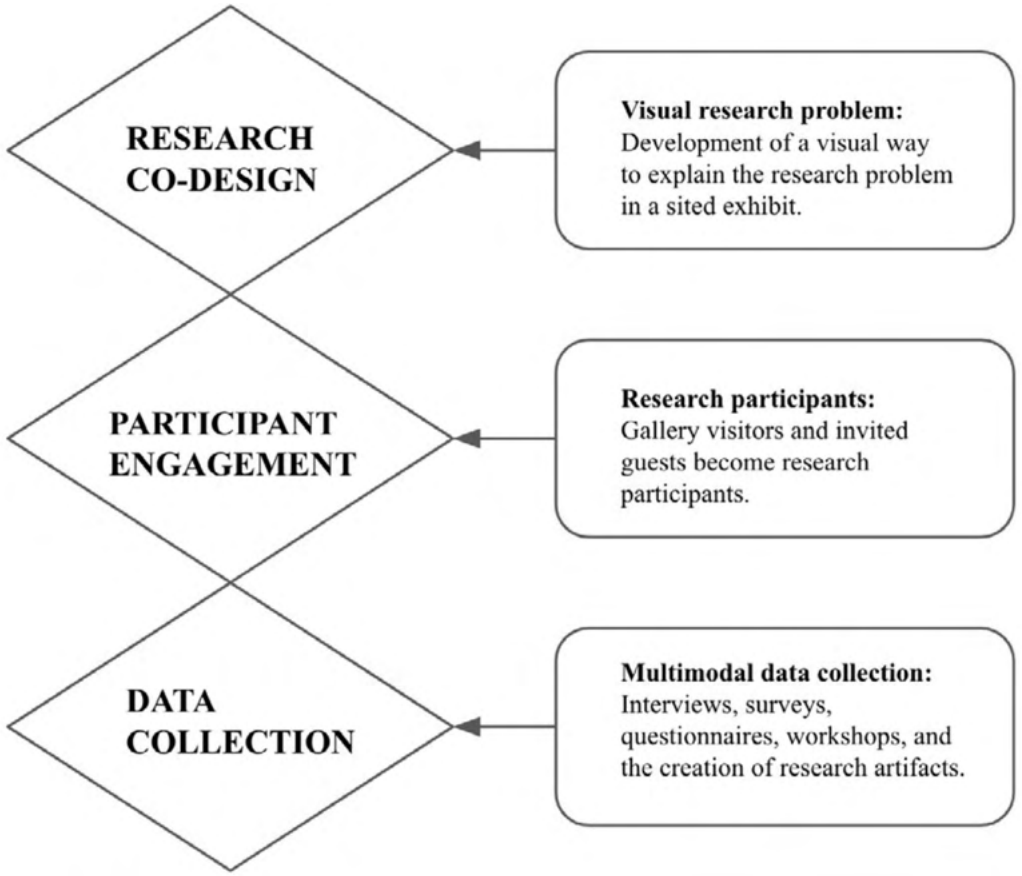
This paper introduces a method, Exhibit Based Research (EBR), in which we deploy standalone gallery exhibits as a central component of our research program. We adopt this method to distill complex visual research problems and problematize technological affordances. In the two case studies outlined in this paper, we deploy this method to articulate the role played by algorithms in processes of inspiration, design, and curation. EBR includes a practice-based component, the co-design of an exhibit, a participant engagement component, and interactive, multimodal data collection. The EBR approach creates a dynamic engagement between the public, academia, and creatives, increasing the relevancy of findings across audiences and advancing public understandings. This methodological paper aims to encourage other researchers in the community to consider EBR as an inclusive, immediate, and effective means of revealing opaque concepts and mechanisms via exhibition design.

ACM Communication Design Quarterly. 2024.

Exhibit-Based Research (EBR) is a practice-based, participatory research method.

It explores the role of technologies and algorithms in creative processes, including inspiration, design, and curation.

Unlike traditional practice-based research, EBR uses exhibits as central sites for co-design, experimentation, and data collection.



Researchers collaborate with curators, designers, and artists to co-create the exhibit.
Explores technology hands-on and bridges theory and practice.

Visitors interact with exhibits, providing embodied, reflective experiences.
Facilitates cultural engagement and mutual learning.

Multimodal methods: interviews, surveys, workshops, research artifacts.
Exhibits function as interactive elicitation tools to surface participant insights.

The Algorithmic Pedestal, J/M Gallery London, January 11-17th, 2023
Project: “AI Futures and the Curated Visitor Experience"
In collaboration with Oxford Internet Institute. Funded by Minderoo-Oxford Challenge Fund in AI Governance.

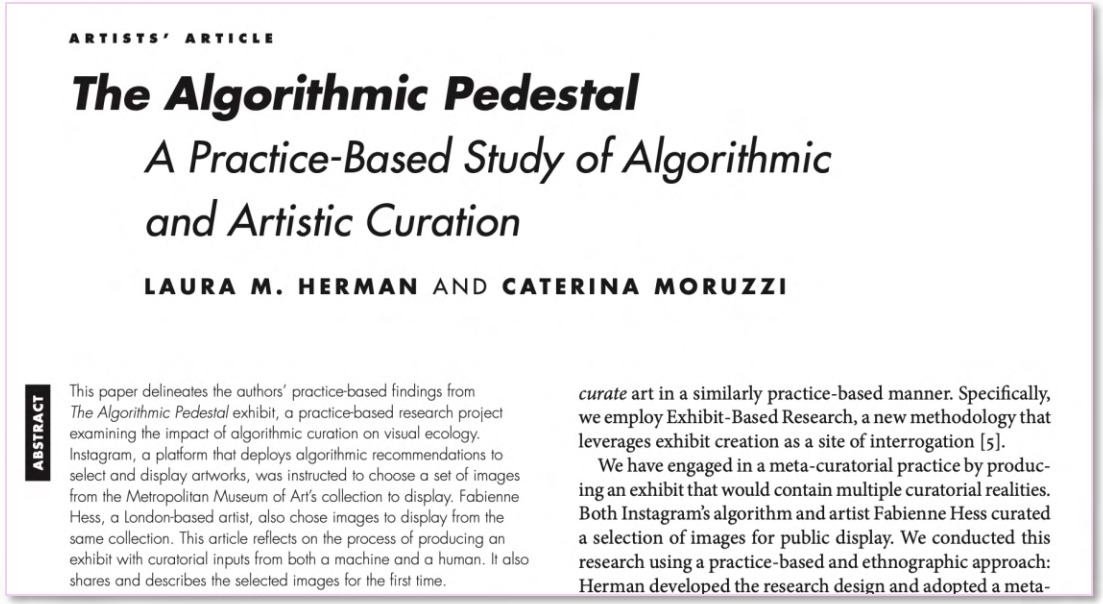
Compared human and algorithmic curation of images from the Metropolitan Museum of Art’s Open Access collection.

Method

- Uploaded 800 images to a dedicated Instagram account; observed which images the algorithm displayed and their order.
- Artist Fabienne Hess selected 20–30 images according to the concept of loss, informed by embodied, human experiences and physical engagement with the collection.
- Visitors (500+ attendees) engaged via questionnaires, surveys, and interviews to reflect on differences between human and algorithmic curation.

High-level findings

- Human curation emphasised conceptual meaning, narrative, and emotional resonance.
- Algorithmic curation was guided purely by visual features, independent of captions, metadata, or social context.
- Highlighted tensions between human creativity and algorithmic mediation in contemporary visual environments.



ARTISTS' ARTICLE

The Algorithmic Pedestal

A Practice-Based Study of Algorithmic and Artistic Curation

LAURA M. HERMAN AND CATERINA MORUZZI

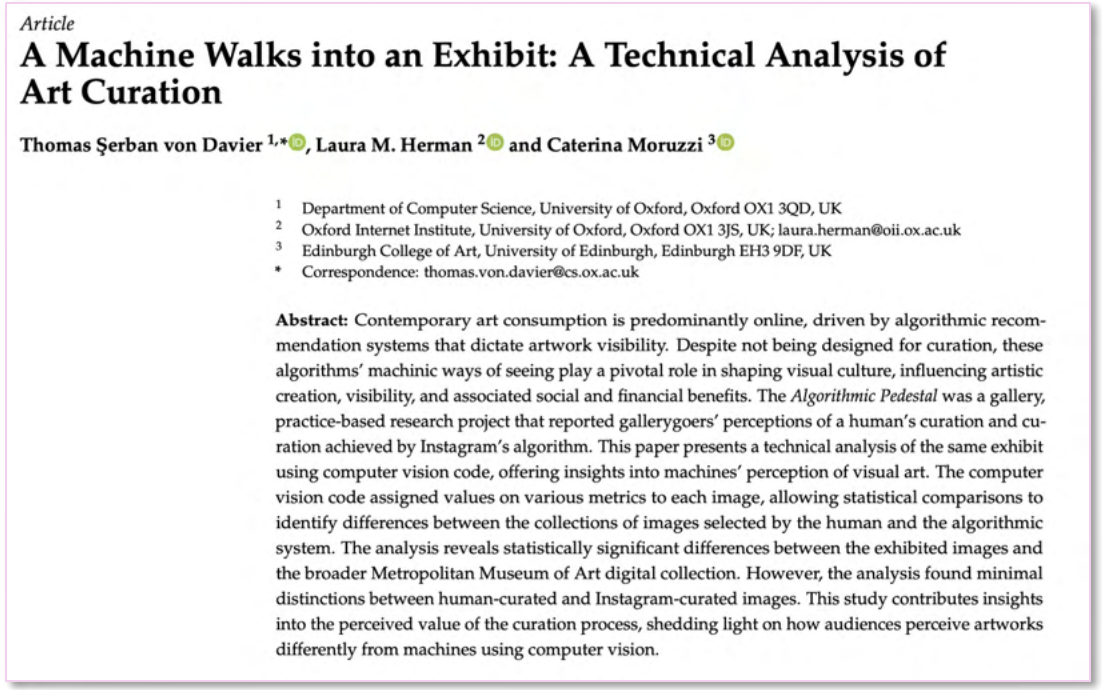
ABSTRACT

This paper delineates the authors' practice-based findings from *The Algorithmic Pedestal* exhibit, a practice-based research project examining the impact of algorithmic curation on visual ecology. Instagram, a platform that deploys algorithmic recommendations to select and display artworks, was instructed to choose a set of images from the Metropolitan Museum of Art's collection to display. Fabienne Hess, a London-based artist, also chose images to display from the same collection. This article reflects on the process of producing an exhibit with curatorial inputs from both a machine and a human. It also shares and describes the selected images for the first time.

curate art in a similarly practice-based manner. Specifically, we employ Exhibit-Based Research, a new methodology that leverages exhibit creation as a site of interrogation [5].

We have engaged in a meta-curatorial practice by producing an exhibit that would contain multiple curatorial realities. Both Instagram's algorithm and artist Fabienne Hess curated a selection of images for public display. We conducted this research using a practice-based and ethnographic approach: Herman developed the research design and adopted a meta-

Leonardo, 57 (5): 485–492, 2024.



Article

A Machine Walks into an Exhibit: A Technical Analysis of Art Curation

Thomas Şerban von Davier [1,*], Laura M. Herman [2] and Caterina Moruzzi [3]

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[2] Oxford Internet Institute, University of Oxford, Oxford OX1 3JS, UK; laura.herman@oii.ox.ac.uk
[3] Edinburgh College of Art, University of Edinburgh, Edinburgh EH3 9DF, UK
* Correspondence: thomas.von.davier@cs.ox.ac.uk

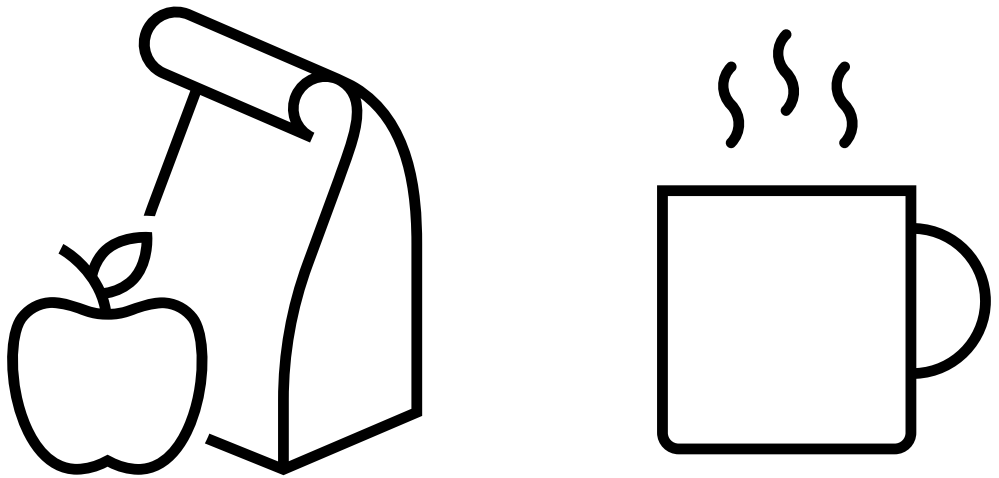
Abstract: Contemporary art consumption is predominantly online, driven by algorithmic recommendation systems that dictate artwork visibility. Despite not being designed for curation, these algorithms' machinic ways of seeing play a pivotal role in shaping visual culture, influencing artistic creation, visibility, and associated social and financial benefits. The *Algorithmic Pedestal* was a gallery, practice-based research project that reported gallerygoers' perceptions of a human's curation and curation achieved by Instagram's algorithm. This paper presents a technical analysis of the same exhibit using computer vision code, offering insights into machines' perception of visual art. The computer vision code assigned values on various metrics to each image, allowing statistical comparisons to identify differences between the collections of images selected by the human and the algorithmic system. The analysis reveals statistically significant differences between the exhibited images and the broader Metropolitan Museum of Art digital collection. However, the analysis found minimal distinctions between human-curated and Instagram-curated images. This study contributes insights into the perceived value of the curation process, shedding light on how audiences perceive artworks differently from machines using computer vision.

Arts MDPI, 2024.

Qualitative
Conceptual analysis
Interviews
Focus groups

Quantitative / Mixed
Online and in-person surveys
Factorial survey experiment

Participatory
Workshops
Exhibit-Based Research



Break

Authenticity


BACH
GOLDBERG
VARIATIONS
STAIER

March 21, 2019

https://doodles.google/doodle/celebrating-johann-sebastian-bach/

Qualitative
Conceptual analysis
Interviews
Focus groups

Quantitative / Mixed
Online and in-person surveys
Factorial survey experiment

Participatory
Workshops
Exhibit-Based Research

Qualitative

Conceptual analysis → What does “authenticity” mean in music practice?

Interviews → What counts as an authentic performance?

Participatory

Workshops

Exhibit-Based Research

Qualitative

Conceptual analysis → What does “authenticity” mean in music practice?

Interviews → What counts as an authentic performance?

Participatory

Workshops → What is the value of content authenticity for creators/audiences?
https://doi.org/10.1145/3698061.3726918

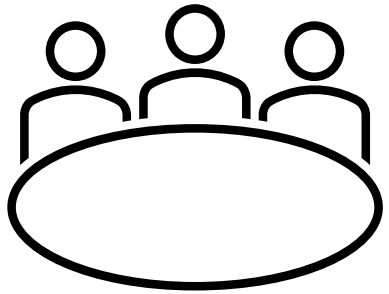
Exhibit-Based Research → Authenticity Unmasked

Qualitative
Conceptual analysis
Interviews
Focus groups

Quantitative / Mixed
Online and in-person surveys
Factorial survey experiment

Participatory
Workshops
Exhibit-Based Research

10 minutes



In small groups, discuss which of these methodologies you might apply in your own projects. Consider the potential benefits and challenges of each approach. We will then share insights and discuss them together.


Philosophy, music, and conceptual analysis
Theory grounded on empirical research
Interdisciplinary collaborations
Exhibit-based and participatory research
Intersectoral collaborations
Start with the problem, not with the method.
Use peer network/collaborators to upskill.
Think about your audience and include them in your research.
Be open to concepts and approaches from other disciplines/sub-disciplines to enrich your research.


Intersectoral
collaborations

Responsible AI in Creative Practices: The CREA-TEC Project

THE UNIVERSITY of EDINBURGH
BRAID
Bridging Responsible AI Divides
UKRI Arts and Humanities Research Council

Longitudinal study on use of Generative AI in the creative workflow.

Longer timeline and more in-depth study.

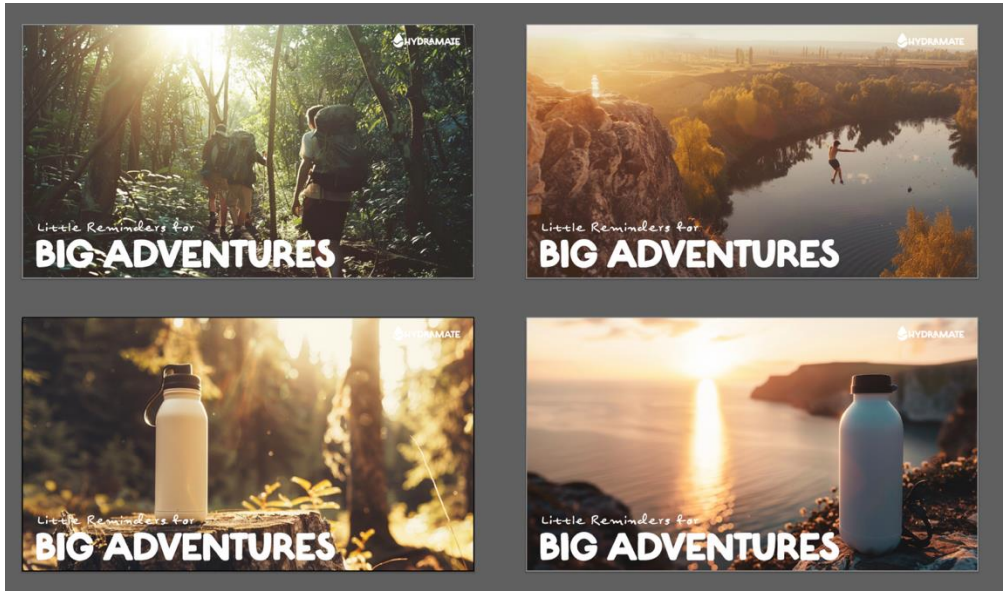
Workshop series on future of creative skills and training needs.

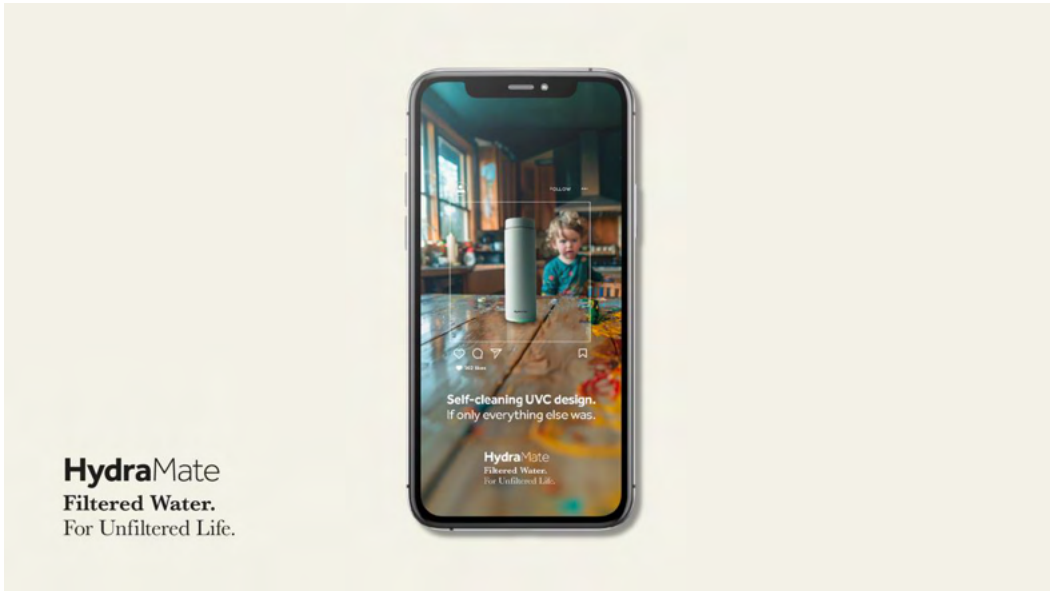
More structured, multiple sessions, thinking about impact during the designing stage.

Artist commission and exhibition on authenticity and AI.

Dedicated producer, more collaboration with the artists pre-exhibition.

Longitudinal study, July 2024





Goals

Understanding how the use of AI tools is transforming the creative workflow of creative professionals in the marketing & advertising sector.

Proposing recommendations to guide the responsible development of AI-powered tools that support, uplift, and benefit the work of creative professionals.

Method

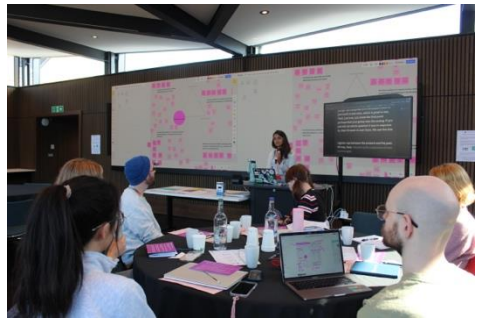
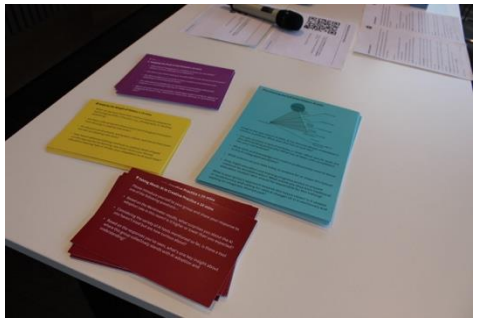
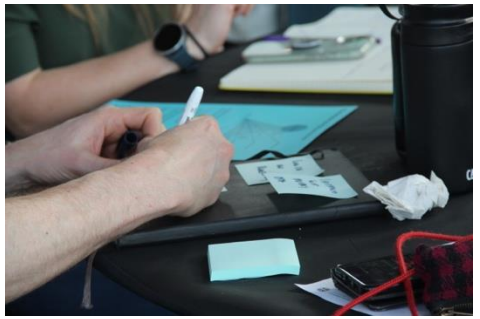
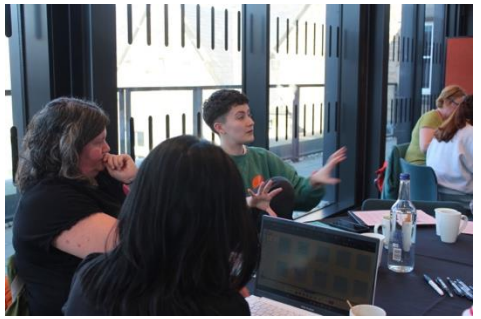
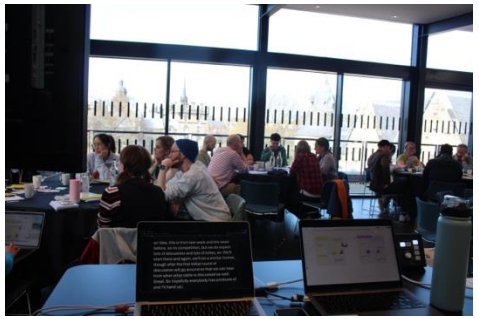
Case study research.

Assigning participants a creative brief to complete in 3 weeks (approx. 3 hours/week).

Interviews and screen-recordings pre-, during, and post-brief development

5 creative professionals

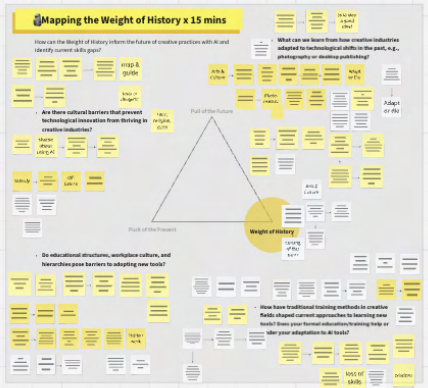
Future-proofing creative skills for Responsible AI adoption. March-April 2024, Edinburgh Futures Institute

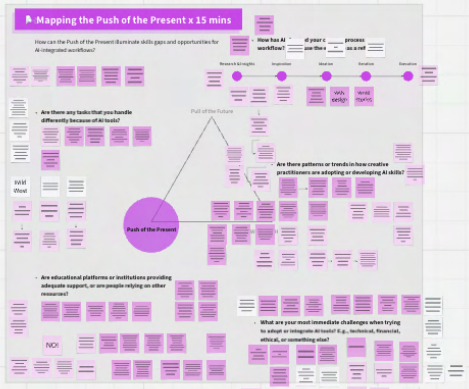
Wednesday, 16th April

Creative Managers & Leaders

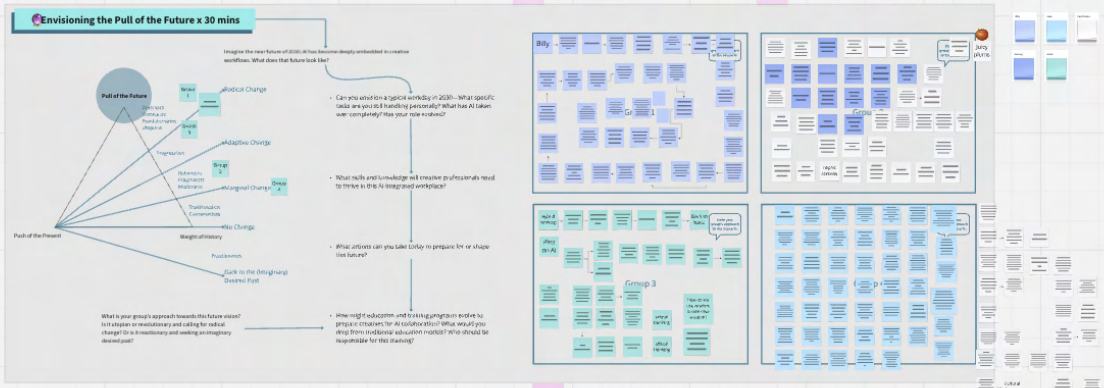
Copy of Ex 1_Mapping the Weight of History



Copy of Ex 1_Mapping the Push of the Present



Copy of Ex 2_Envisioning the Pull of the Future



Goals

Identify key reskilling areas and emerging skill requirements.

Explore how different user categories learn and adapt to new technologies.

Understand the barriers different user categories encounter in AI tool adoption, e.g., organisational versus individual adaptation mechanisms.

Generate insights into reimagining educational models for AI-integrated creative practices.

Method

Participatory design workshops.

Designed in collaboration with the Innovation Services, EFI and Billy Dixon.

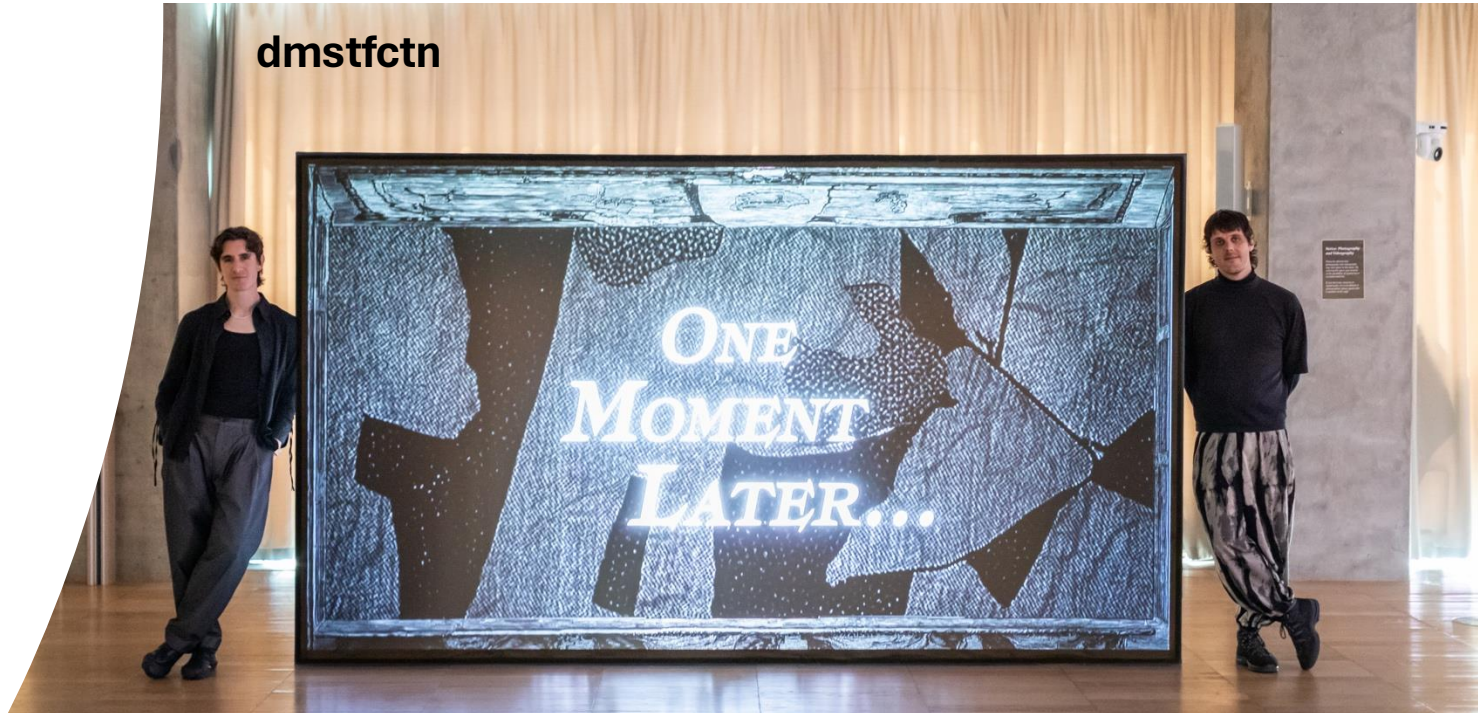
Small group activities, discussions, feedback collection.

March 26: Freelancers
April 2: Early career practitioners and students
April 9: In-house professionals (including those working in teams)
April 16: Creative managers and leaders

70 participants

Authenticity Unmasked: Unveiling AI-Driven Realities Through Art

Edinburgh, 7-17 August 2025



Edinburgh fringe

EAF

Goals

Exploring how Artificial Intelligence technologies impact perceptions and values of authenticity.

When does the audience care if content is authentic?

What aspects of different types of digitally-generated content influence perceptions of authenticity most?

How should digital content be presented to engender user trust?

Method

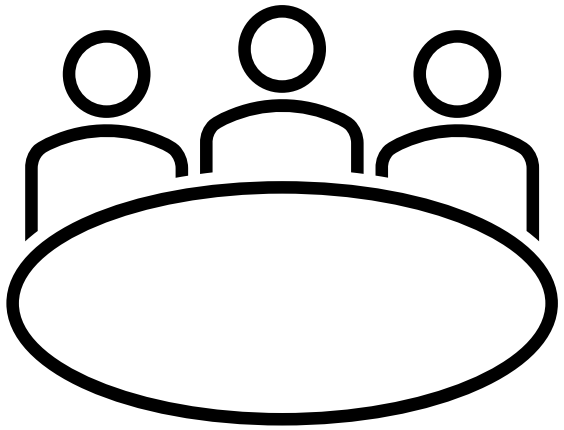
Collaboration between artists, researchers, and industry partners (Adobe, Content Authenticity Initiative).

Public exhibition with collection of audience feedback.

7-17 August 2025

600 visitors

10 minutes



In your groups, discuss the potential benefits and challenges of collaborating with industry partners. Consider strategies for how you might overcome these challenges. We will then share reflections and discuss them together.

Intersectoral research: Opportunities

Real-world impact and validation. The potential to shape industry practices and contribute to real-world outcomes.

Access to internal knowledge. Involvement provides privileged access to internal agendas, strategies, and proprietary research.

Informing responsible development. Opportunity to guide technology development in ethically and socially responsible directions.

Scalability of outcomes. Findings can be more readily scaled or implemented through industry mechanisms, increasing societal relevance.

Intersectoral research: Challenges

Participant trust and reciprocity. Risk of participants feeling exploited; requires careful planning of engagement strategies and meaningful forms of exchange.

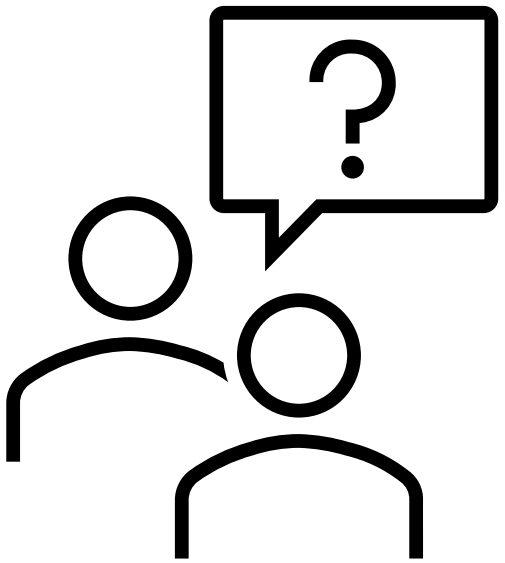
Perception of bias. Potential for research to be seen as industry-led or lacking independence, affecting credibility.

Translation to action. Need to render academic methods and findings in formats that are actionable and relevant for non-academic stakeholders.

Data collection for policy. Difficulty in designing data collection that serves both research integrity and policy relevance.

Balancing foundational and applied research. Tension between contributing to long-term academic knowledge and addressing fast-moving, applied problems with immediate relevance.

Temporal mismatch in impact evaluation. Industry often demands short-term deliverables, while academic contributions might only show impact in the long term, through conceptual or societal influence.



Ask me anything!