



# Creative—Critical—Constructive —Collaborative—Computational: Towards a C5 model in Creative AI

by the Creative AI Lab

Mercedes Bunz  
Daniel Chávez Heras  
Eva Jäger  
Alasdair Milne  
Joanna Zylińska

January 2023  
[creative-ai.org](http://creative-ai.org)

The Creative AI Lab is a collaboration between Serpentine's R&D Platform and King's College London's Department of Digital Humanities. The Lab serves as a site of inquiry into how best to facilitate, theorise and historicise creative ML practices, taking artistic research seriously as a contribution to knowledge creation and technical development. The Lab is both a research unit and an active site of curatorial experimentation.

## Summary

This position paper analyses creative activity enabled by machine learning (ML) and recognised under the banner of 'Creative AI'. The theoretical discussion is anchored in critical reflection on the activities in which the authors have been involved as part of the Creative AI Lab, a collaboration between the R&D Platform at Serpentine and King's College London's Department of Digital Humanities. The paper proposes a C5 model ('Creative—Critical—Constructive—Collaborative—Computational') bringing together technical research and conceptual inquiry, while shifting focus from artefacts to their wider contexts, processes and infrastructures. It also outlines directions for future research.

## Introduction

Over the last decade, artists working in different media have intensified their exploration of AI technologies, focusing on AI's potential as a creative instrument, nonhuman collaborator and subject of social critique. In what follows, we want to discuss the problem of artistic and creative practice as enabled by AI—principally ML—while outlining new directions for future research. This discussion, we suggest, needs to consider a number of conceptual questions with regard to cultural production:

- What changes have the use of AI technologies brought about in the field of art practice? Do we need to revise our conceptions of artistic production, creativity and research in response?
- What value does artistic research, in return, bring to AI research & development (R&D) in adjacent academic fields? Should we strive for artistic research to have systemic impact?
- How does the use of generative algorithms alter creative processes and the embodied experiences of artists?
- How is the role and agency of the artist altered at a time

when many artistic productions are the result of a partially 'black-boxed' human-machine collaboration?

And from an institutional perspective, ask:

→ What role should cultural and research institutions play in the AI ecosystem?

→ Do we need new capabilities from our cultural institutions to support the development of art practices that interrogate, and/or build with, AI?

→ What new alliances, across both legacy and emerging organisations, might be conducive to fostering these capabilities?

→ How might such new alliances and capabilities be sustainably resourced?

Importantly, for us a theoretical discussion of these questions is anchored in the critical reflection on the practical activities in which we have been involved as part of the Creative AI Lab. Building on the Lab's existing collaborations, we want to propose a 'C5' model for Creative AI practice and research as a more enabling approach to working at the cross-discipline of 'Creative AI'. Mobilising critical inquiry with creative production and technical expertise, this model entails developing horizontal, noncompetitive networks of alliance between academic and cultural institutions dealing with creativity, ML and AI.

## **Creative AI Now**

The term 'Creative AI' comes from the technical community, which uses it to refer to the application of machine learning and other forms of AI for artistic purposes. The art world, in turn, prefers terms such as 'AI art' (Zylinska 2020) and, less frequently, 'ML art' or simply 'media art', while cognitive scientists talk about 'computational creativity' (Plouin et al.

2022:10-11). Our own adoption of 'Creative AI' as a label for the work of our Lab, and for the proposal entailed in this paper, treats it as an umbrella term, while foregrounding the technical and processual aspects of creative activity involving the wider family of AI technologies. It also signals that, as part of our project, we are examining more than the artefacts and that we are also focusing on Creative AI as a *research field*.

Despite its relative novelty, Creative AI has already stabilised into a substantial subfield populated by practitioners who break down traditional disciplinary boundaries. This subfield is a 'loosely defined ... movement' that is related to 'previous computational artistic practices such as cybernetics art, artificial life art, and evolutionary art' (Audry 2021:21)—as well as data visualisation practices in design. Given the high level of technical expertise required in producing and accessing at least some of the artistic outputs produced in this vein, Creative AI has led to a further destabilisation of ecosystem roles, such as artist, curator, technologist (engineer/programmer), theorist and producer.

Within the current Creative AI practice two dominant yet overlapping strands can be identified: a visually-driven one and a 'situated' one. The first strand can be characterised by artists interrogating new stylistic possibilities of dreamlike generative worlds, as well as data visualisations which surface and scrutinise the algorithmic tendencies of AI. Here the 'internal' workings of the ML are the primary subject of scrutiny. The second 'situated' strand is driven by ML tools being integrated into broader artistic 'complex systems' which function beyond the production of visual or textual artefacts. The embedding of AI and ML within simulations, video games, sensory apparatuses and countersurveillance systems mirrors the technology's wider societal deployment, where AI becomes more embedded in the wider work, rather than being the focal point of the artist's attention. Works produced as part of this second strand are frequently aligned with Marshall McLuhan's dictum about art being 'an early distant warning system' (McLuhan 1964). While public and curatorial attention was initially captured by the first strand, i.e. generative practices

and their bold visual aesthetics, the rise in institutional expertise has recently led to this second strand of 'situated' works receiving more critical response.

These varied artistic and technical practices have provoked an extensive theoretical and art-historical discussion (Zylinska 2020; Audry, 2021; Zeilinger, 2021). Starting from attempts to conceptualise the operations of the creative, curatorial and technical practices facilitated by AI, the discussion has also expanded to extant philosophical debates around authorship, agency and creativity. Theoretical work taking place in this field has gone beyond the specific subject matter of art practice, with scholars studying the epistemology (Bunz, 2019; Parisi, 2019; Weatherby & Justice, 2022), ontology (Fazi, 2020; Amaro, 2021), aesthetics (Manovich, 2018) and ethics (Ricaurte, 2019; Dubber, Pasquale & Das, 2020) of machine learning more generally, returning to these fundamental problems informed by the intellectual contributions of artistic research.

The relatively new subfield of Creative AI is itself constantly evolving, in line with the ongoing technical developments and societal issues. Most recently, it has been transformed by adjacent technologies (e.g. blockchain), which have had cultural impact on artists working with AI. Tracking, understanding and, at times, enacting these changes is part of the Creative AI Lab's agenda.

## **The Creative AI Lab**

Founded by Bunz and Jäger in 2019, the Creative AI Lab is a collaboration between the R&D Platform at Serpentine and King's College London's Department of Digital Humanities. The Lab serves as a site of inquiry into how best to facilitate, theorise and historicise Creative AI practices, taking artistic research seriously as a contribution to knowledge creation and technical development. Conceived as a 'space of action' (Spatz 2020:26), the Lab is both a research unit and an active site of curatorial experimentation. This approach acknowledges and enacts the necessity of theorising art practices not only

as they are received at the front-end of artistic production by its audience, but also during the processes of research and development. In this way, the Lab aims to go beyond the study of artefacts to focus on the ‘back-end’ environments that have enabled their production.

The Lab’s primary focus is on the ways in which artists and designers are adopting, adapting and remaking AI processes, building their own datasets and reaching into the ‘grey box’ of AI technologies. These technical activities engage closely and critically with the technology itself, testing new approaches and challenging assumptions about the labour processes involved in e.g. labelling data or programming new tools. The Lab not only studies such work but also facilitates it through providing curatorial and technical production support to artists. With a focus on building the curatorial infrastructure within Serpentine, it works with artists on both the conceptual and technical side of R&D processes (Brouwer 2005; Ivanova and Vickers 2020). The aim is to enable the production of new prototypes for technical processes and an overview of industry tools (Arrigoni 2016), which could contribute to the creation of artworks as well as be deployed in other institutional contexts.

The Lab’s mission is also to develop a critical literacy that can help cultural institutions approach AI technologies as advanced and multilayered media. While reliant on the highly specialised theoretical work needed to untangle issues such as ‘distributed authorship’ (Ascott 2005; Zeilinger 2021) involved in artistic research, the Lab does not shy away from the challenge to communicate complex technical and philosophical concepts to a wider audience. Similarly, the Lab brings audiences and practitioners into the conceptual development of media theory and practice. Some concrete outcomes of our work in the Lab involve training audiences, students, researchers and institutions in how AI works in a broader sense, as well as exploring specific algorithmic techniques, processes and infrastructures used by artists along with publishing academic papers, public-facing written work, a database of Creative AI tools, and several artist commissions.

Key to this output has been a desire to situate the power and labour relations underpinning the production of AI technologies in the creative field and more generally. From the perspective of the Lab, art-making has a special role to play in this process because it can help us get closer to the algorithmic logic we are all increasingly living under. Our critical pedagogy ultimately aims to contribute to the development of fairer and more democratic technical and social systems by way of an informed and hands-on public. To this end, the Lab's goal is also to lobby for a shift towards a production and exhibition model that acknowledges collaborative effort in AI art-making—and that extends creative attribution to technical roles.

We are now at a stage when we are ready to launch a new phase of the Lab's work and outline some broader directions for research into Creative AI.

## **A C5 Model for Creative AI**

Drawing on the nexus of disciplines and fields of expertise—from art and design through to art history, cultural theory, philosophy, cognitive science, computer science, and, last but not least, engineering—in both the conceptual and practical aspects of its agenda, Creative AI needs to explicitly embrace and articulate an open-ended orientation that characterises art practice. Given that art (and, indeed, any other cultural practice) is not produced in a vacuum, there is a need to balance technical expertise with socio-cultural engagement in any project whose aim is not just to research but also map out Creative AI futures. With this, we are mindful of the poignant question raised by Sofian Audry: 'How can [artists] work creatively and independently with a technology that has been aggressively privatised and is increasingly reliant on an industrial complex based on social media and advertising?' (2001:44). Such technology is not just used in advertising and entertainment industries; it also frequently serves as a technology of war: be it on the (mis)information front, as part of surveillance operations, or as deployed in actual war machines, from drones through to planes and tanks.

Avoiding any simple binaries evident in the moralistic-sounding 'AI for good', and any naive attempts to merely overcome a technological bias, we want to put forward an engaged critical reflection on the AI/ML technologies and their sociocultural underpinnings as part of Creative AI's agenda. Through this approach, we argue, a more responsible position on designing the future of Creative AI can be developed. This approach may also involve building resources for artists and designers who are curious to work with AI but who are yet to develop the skill set needed, as well as for institutions interested in building the infrastructures that can support the production of Creative AI works. The focus on the 'back-end' of Creative AI, pioneered by the Creative AI Lab, needs to be extended to the study of both technical and social environments. Repurposing the framing of the C4 communication model, ('Command—Control—Communication—Computer'), with its orientation towards mission accomplishment based on the cybernetic logic and its original military associations, we propose to adopt a C5 model for Creative AI, a model which is, in its very premises, 'Creative—Critical—Constructive—Collaborative—Computational'.

Drawing on the existing practices in collaborative art, open source and knowledge exchange, the C5 model supports an ethics of cooperation that involves building horizontal, noncompetitive and research-driven alliances of institutions and stakeholders interested in Creative AI: museums and galleries, universities and art schools, technology and media companies, NGOs. The increasingly fragile funding landscape for the arts in many parts of the globe, whereby technology companies are the new art patrons, means that those companies are increasingly involved in setting the agenda for the creative field. This, coupled with the requirement for extensive technological support and innovation, means that no single artist or institution can 'win' at Creative AI. Like other similar organisations, our Lab has to consider negotiating when and how to work directly with industry in the new landscape of public-private partnerships in the name of both epistemic and economic innovation.

With the C5 model, we want to propose a move beyond any single-goal mode of thinking to support a sustainable



alternative for an open-ended Creative AI as a practice, a network of research and development spaces, and a framework of concepts. In a recurrent manner adopted from second-order cybernetics, this C5 model can itself in time become part of the practice of Creative AI, seen as an attempt to build not just new artefacts or new technologies that support them, but also new ways of working, thinking and making AI, and making things with AI, collectively and collaboratively, artistically and computationally.

As part of this model where the 'back-end' gets more attention than the artefact, a systematic dismantling of the myth of 'the artist' as a stand-alone genius, standing above, or aside from the world, needs to be enacted. Today's artist, as argued by Tereza Stejskalová, needs to understand that 'she is not anyone special nor is she doing anything special but is, in principle, like any other social network user who makes manifest the (crisis of) emotions, relations and labour which sustain life itself' (2021:101). This recognition can shift the attention of Creative AI work from individual accomplishments and solutions, to the collaborative construction of consensus and a horizon for joint political action. In this respect, artistic research projects can offer blueprints, or at least lines of flight, for different configurations of aggregated human-machine intelligence, beyond the 'optimal' models which remain the goal of tech industries (Vallor, 2021). Creative practice can thus serve as a space for the working out of alternative metrics and values—beyond optimisation, efficiency or profit.

## **Conclusion: Questions for the Future**

The C5 model for Creative AI that stands for an approach that is 'Creative—Critical—Constructive—Collaborative—Computational' brings together technical research and conceptual inquiry into AI art, while shifting focus from artefacts to their wider contexts, processes and infrastructures. Encompassing an examination of creativity as an emerging property that arises from the complex interactions between humans, machines and their technosocial milieus, we recognise

the need for a culturally-driven reflection on the value of those collaborations their outcomes. Future areas for Creative AI research that can borrow from, and expand on, this model include: (1) the reconfiguration of culture as a domain of not just human-made meanings but also machinic calculation; (2) positioning art-making as a testing ground for embodied models of AI and ML; (3) the shift from machine vision to machine perception as a mode of sensing the world through data; (4) the emergence of synthetic data as mode of artistic production; (5) the critical negotiation of claims regarding the emergence of artificial consciousness. Through this, Creative AI can serve as a space for rekindling old alliances between art and science—on both micro and macro, algorithmic and institutional levels—and for exploring new connections between knowledge domains and spheres of activity.

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## Acknowledgement

The first draft of this paper was presented at EVA 2022 London: a conference of the Computer Arts Society on 4–8.07.2022 and published in the conference proceedings, doi: 10.14236/ewic/EVA2022.20.