

Rethinking Curating in an Age of Artificial Intelligence: The Next Biennial Should be Curated by a Machine¹

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Rapid developments in automation and machine learning are reshaping our relationship with computers, but also our understanding of creative practices: from writing to curating. In this short paper, we outline the principles behind the collaborative project entitled *The Next Biennial Should be Curated by a Machine* (2021): a series of machine learning experiments developed to explore the relationship between curating and Artificial Intelligence (AI) and to speculate on the possibility of developing an experimental system capable of curating, based on human-machine learning². Making reference to the *e-flux* project 'The Next Documenta Should Be Curated by an Artist' (2003)³ – which questioned the structures of the art world and the privileged position of curators within it – the project extends this questioning to AI. It asks how AI might offer new alien perspectives on conventional curatorial practices and curatorial knowledge. What would the next Biennial, or any large scale exhibition, look like if AI took over the curatorial process and make sense of a vast amount of art world data that far exceeds the capacity of the individual human curator alone?⁴

Curating an exhibition, and especially a biennial, is a complex process that goes beyond the selection of artworks, commissioning new works, writing curatorial statements, or arranging works in exhibition spaces. It is about drawing connections between works and between works and the context, and new interpretations; and ultimately creating narratives and telling stories. There can be many different ways of drawing connections and telling stories, and there might be many stories in one biennial. Biennials are not single entities, and neither they are made by one curator, but larger assemblages of humans and nonhumans⁵. This project is an experiment in making a biennial by multiple 'curators' – human and machine – exploring how machines select, label and organise works. It explores how machines make connections between works, between works and texts, how they might create new works and texts from the source material drawn from various biennials, or how

¹ The Next Biennial Should be Curated by A Machine is an umbrella concept that gathers various experiments exploring the application of machine learning techniques to curating, first developed as a collaboration between curator Joasia Krysa, digital humanist Leonardo Impett and artists Ubermorgen. See original project *e-flux* announcement on which this text draws upon: <https://www.e-flux.com/announcements/291923/the-next-biennial-should-be-curated-by-a-machine/>.

² Machine learning is defined as the study of computer algorithms that improve automatically through experience, as a sub-part of artificial intelligence. See 'Glossary' published in *Stages*, vol 9 /2021, Liverpool Biennial, <https://www.biennial.com/journal/issue-9/glossary>.

³ For a definition of experimental system see: https://en.wikipedia.org/wiki/Experimental_system.

⁴ *e-flux*, 'The Next Documenta Should be Curated by an Artist', 2013. <https://www.e-flux.com/announcements/42825/the-next-documenta-should-be-curated-by-an-artist/>.

⁵ Krysa, Joasia, 'Can Machines Curate?', keynote lecture at the 5th National Symposium of the Brazilian Association of Cyberculture Researchers ABCiber 2011, published in *Digital Art: fractures, proliferative preservation and affective dimension*, edited by Yara Guasque, pp. 38-89. Coleção Fast Forward / UFG/Media Lab, 2014. Also see Krysa's earlier experimental software curating online project entitled *Kurator* (2005), presented at Tate Modern and published in *Curating Immateriality* (2006) and as a chapter entitled 'Kurator - a proposal for an experimental, permutational software application capable of curating exhibitions' in *Networks* (ed. Lars Bang Larsen), Documents of Contemporary Art: Whitechapel Gallery and MIT Press (2014).

they make new connections that might lead to new narratives, new biennials as yet unimagined – or unimaginable – by human curators alone.

Under this overarching concept, two parallel experiments have been realised thus far applying various machine learning techniques (a subset of AI) to work on (‘curate’) datasets derived from various biennial exhibitions⁶. These experiments are *B³(NSCAM)* and *AI-TNB*, both released in the context of Liverpool Biennial 2021. [Fig. 1]

Experiment *B³(NSCAM)* is a collaboration with artists Ubermorgen, co-commissioned by the Liverpool Biennial and The Whitney Museum of American Art for its online platform *artport*⁷. The experiment takes archival text material and datasets from both commissioning institutions and processes them through a group of machine learning algorithms we have collectively named *B³(NSCAM)*. [Fig. 2] Processing datasets (including curatorial texts) linguistically and semiotically, the AI system ‘learns’ their style and content, cutting and mixing them together. The new texts generated in this way are then presented to the online audience, with a degree of interactivity and ‘branching’, while the AI iteratively rewrites small parts of its own text at random.

A parallel experiment, *AI-TNB* developed as part of the UK Arts and Humanities Research Council programme *Towards a National Collection*, to explore machine curation and visitor interaction with a focus on *human-machine co-authorship*⁸. A collaboration with Eva Cetinić (experiment machine learning concept and implementation), *MetaObjects* (Ashley Lee Wong and Andrew Crowe) and Sui (web development and design), the experiment takes specifically Liverpool Biennial 2021 edition and interprets it as a parallel machine-visitor curated online version⁹. [Fig 1] Recent machine learning techniques are applied to data derived from the Biennial – including the photos of artworks, their titles, and their descriptions – to create new readings of, and connections between, the works. At the heart of the experiment is OpenAI’s revolutionary new deep learning model CLIP, released in early 2021, which is able to compare the similarity between an image and a short text. On the project’s landing page, visitors encounter fifty eerie images – some of which look like photographs, others like drawings or collages. These are images generated by AI in response to the titles of the source artworks of the Liverpool Biennial 2021, using a technique developed by Ryan Murdock (@advadnoun) – using CLIP to guide a GAN (Generative Adversarial Network) into creating an image that ‘looks like’ a particular text. “Fraught for those who bear bare witness”, by Ebony G. Patterson, for instance, results in an image of a bear’s face in the woods – whilst Ines Doujak and John Barker’s “Masterless Voices” has led to a dark image with half a dozen disembodied open mouths. These AI-generated images give a new dimension to the title of the artwork – but they don’t create connections between them. Navigating through the experiment, visitors are presented with a triptych of images and texts,

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6 For a discussion about biennials see for instance: *The Biennial Reader*, Elena Filipovic, Marieke van Hal, Solveig Øvstebø, Bergen Kunsthall (Bergen, Norway) and Hatje Cantz Verlag (Ostfildern, Germany), 2010; *Biennials, Triennials, and Documenta: The Exhibitions That Created Contemporary Art*, Antoni Gardner, Charles Green, Wiley Blackwell, 2016; *How to Biennale! (The Manual)* by Shweta A Patel, Sunil Manghani, and Robert E. D’Souza, extract published in *On Curating*, issue 39, 2018, <https://www.on-curating.org/issue-39-reader/introduction.html#.YUzTNi1Q3OQ>; ‘The Biennial Condition’, *Stages* journal vol 6/2016, ed. Joasia Krysa, Liverpool Biennial 2016.

7 Experiment *B³(NSCAM)* by Ubermorgen, Leonardo Impett and Joasia Krysa was launched in March 2021 on The Whitney Museum of American Art’s online portal *artport* at: <https://whitney.org/exhibitions/the-next-biennial> and Liverpool Biennial at: <https://www.liverpoolbiennial2021.com/programme/ubermorgen-leonardo-impett-and-joasia-krysa-the-next-biennial-should-be-curated-by-a-machine/>. For more information visit: <https://whitney.org/exhibitions/the-next-biennial>.

8 Impett, Leonardo., Herman, I., Wollner, P. K., & Blackwell, A.F. "Musician Fantasies of Dialectical Interaction: Mixed-Initiative Interaction and the Open Work", in *International Conference on Human-Computer Interaction* (Springer, Cham, 2018), pp. 184-195.

9 11th Edition of Liverpool Biennial (2021) entitled *The Stomach and the Port* is curated by Manuela Moscoso and presented across multiple venues in Liverpool, March – August 2021. <https://www.biennial.com/2021>.

with the source artwork placed in the centre, AI-generated image on the left and a heatmap overlaid on the source image on the right. ‘Deep learning’ models are used to create new links between the visual and textual material, as well as entirely new images and texts. Every page is also a trifurcation: visitors can explore the links between the original source and generated material, word and image, art and data. As visitors navigate the project, they create their own paths through the material, each such journey becoming a co-curated human-machine iteration of the Biennial saved to the project’s public repository (Co-curated Biennials)¹⁰.

In undertaking these experiments, the overall intention behind the project is to explore the application of AI (machine learning algorithms) to envisage alternative forms of exhibition-making and curatorial agency that questions hard distinctions between humans and machines. In this scenario, machine learning algorithms are considered beyond the ‘search engine’ paradigm in which they have been mostly used to date by museums and galleries, and instead considered to be curatorial agents, working alongside human curators^{11,12}. This shift in thinking raises a number of issues, such as the degree to which creativity is compromised by the ‘intelligent’ machines we use, as well as the issue of bias in curating (for instance in selection of artists and artworks, or topics for exhibitions) and how it might become brought to the surface, by the use of AI¹³. The art world, much like a training dataset, is heavily biased, and consequently exhibitions and biennials themselves can be seen to reflect this¹⁴. Once the two paradigms – AI and art world – are correlated and when they become entangled, on one hand this might reinforce the inherent issues while on the other hand it might open up a possibility to speculate on what each paradigm might learn from the other. It is not just a case of identifying concerns, such as the inclusion of marginalised communities or the forms of creativity produced through AI – but also an opportunity to think about the transformation of human-machine relations and curatorial practices more generally¹⁵. This brings us back to the initial question behind the project. When the projects asks whether *the next biennial should be curated by a machine*, it posits further questions about emergent forms of creativity, the larger infrastructures within which it operates, and what alternative practices might emerge from these entanglements¹⁶.

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10 Experiment AI-TNB project page: <https://ai.biennial.com>. The experiment is developed by Joasia Krysa (series curator), Leonardo Impett (series technical concept), Eva Cetinić (experiment machine learning concept and implementation), MetaObjects (Ashley Lee Wong and Andrew Crowe) and Sui (web development and design); funded by the UK’s Arts and Humanities Research Council programme ‘Towards a National Collection’, under grant AH/V015478/1 (project title: Machine Curation and Visitor Interaction in Virtual Liverpool Biennial). For more information about the project visit: <https://ai.biennial.com/#howitworks>.

11 Crawford, Kate and Vladen Joler, *Anatomy of an AI System: The Amazon Echo as an Anatomical Map of Human Labor, Data and Planetary Resources*, AI Now Institute and Share Lab, 2018. <https://anatomyof.ai/>.

12 Impett, Leonardo, “Irresolvable contradictions in algorithmic thought”, published in this volume (Stages 9/2021). <https://www.biennial.com/journal/>.

13 Noble, Safiya Umoja, *Algorithms of Oppression: How Search Engines Reinforce Racism* (New York University Press, 2018).

14 See also: ‘Notes On A (Dis)continuous Surface’, Murad Khan, in Stages vol 9, Liverpool Biennial, April 2021, <https://www.biennial.com/journal/issue-9/notes-on-a-discontinuous-surface>.

15 For a review of the project in this respect see Kadish Morris, ‘Liverpool Biennial – bleeps, bones, and a machine that curates’, *The Observer*, 28 March 2021, <https://www.theguardian.com/artanddesign/2021/mar/28/liverpool-biennial-review-bleeps-bones-and-a-machine-that-curates>.

16 For a discussion on AI and Curating visit Liverpool Biennial online journal Stages, vol 9/2021, ed. Joasia Krysa, Manuela Moscoso, April 2021, <https://www.biennial.com/journal/issue-9>.



Figure 1. Curatorial sketch for Liverpool Biennial 2021 by its curator Manuela Moscoso (2019). Courtesy of Manuela Moscoso and Liverpool Biennial.

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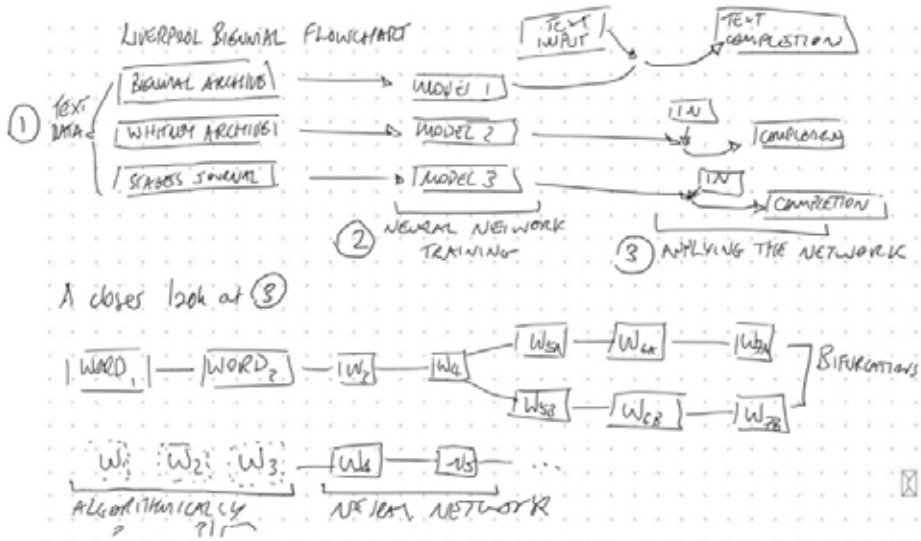


Figure 2. Sketch for planning multi-model bifurcations for Experiment B¹(NSCAM), drawing by Leonardo Impett (2020).

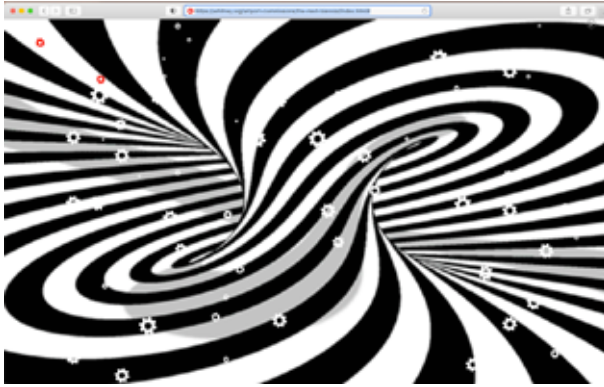


Figure 3, 4. *The Next Biennial Should be Curated by a Machine, Experiment 1: B³(NSCAM)*, Ubermorgen, Leonardo Impett, Joasia Krysa, Website screenshots, Liverpool Biennial and The Whitney Museum of American Art's artport,2021; <https://whitney.org/artport-commissions/the-next-biennial/>.

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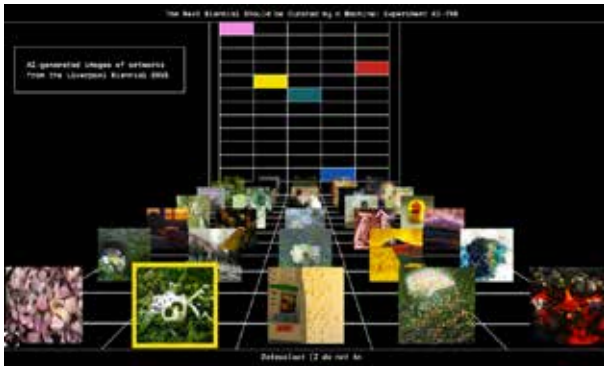


Figure 5, 6. *The Next Biennial Should be Curated by a Machine, Experiment 2: AI-TNB*, Joasia Krysa and Leonardo Impett, Machine learning development: Eva Cetinić; Web development and design: MetaObjects and Sui, Website screenshots, Liverpool Biennial, 2021.

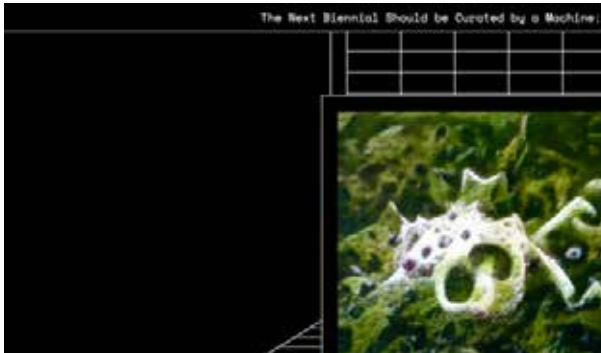


Figure 7, 8. *The Next Biennial Should be Curated by a Machine, Experiment 2: AI-TNB*, Joasia Krysa and Leonardo Impett, Machine learning development: Eva Cetinić; Web development and design: MetaObjects and Sui, *Website screenshots*, Liverpool Biennial, 2021.

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Biography

Joasia Krysa is a curator, Professor of Exhibition Research and Head of Art and Design at Liverpool John Moores University, with an adjunct position at Liverpool Biennial. Her first curatorial software experiment *Kurator* was launched at Tate Modern, London, in 2005 and published in *Curating Immateriality* (2006). She has curated exhibitions and commissioned work at the intersection of art and technology, amongst others, as Artistic Director of Kunsthall Aarhus, Denmark, part of curatorial team for Documenta 13, co-curator of Liverpool Biennial 2016, Curatorial Advisor for Sapporo International Art Triennale (SIAF) 2020, Japan, and International Advisor for the inaugural edition of Helsinki Biennial in 2021.

Leonardo Impett works in the digital humanities, at the intersection of computer vision and art history. In trying to bring 'Distant Reading' to art history and visual studies, his current research focuses on unveiling the implicit image-theories of computer vision and constructing new computer vision systems based on early modern philosophies of vision. He is a Lecturer at Cambridge Digital Humanities, Cambridge University. Previously he was Assistant Professor of Computer Science at Durham University, Scientist at the Bibliotheca Hertziana – Max Planck Institute for Art History, and Digital Humanities Fellow at Villa I Tatti - the Harvard University Center for Italian Renaissance Studies.