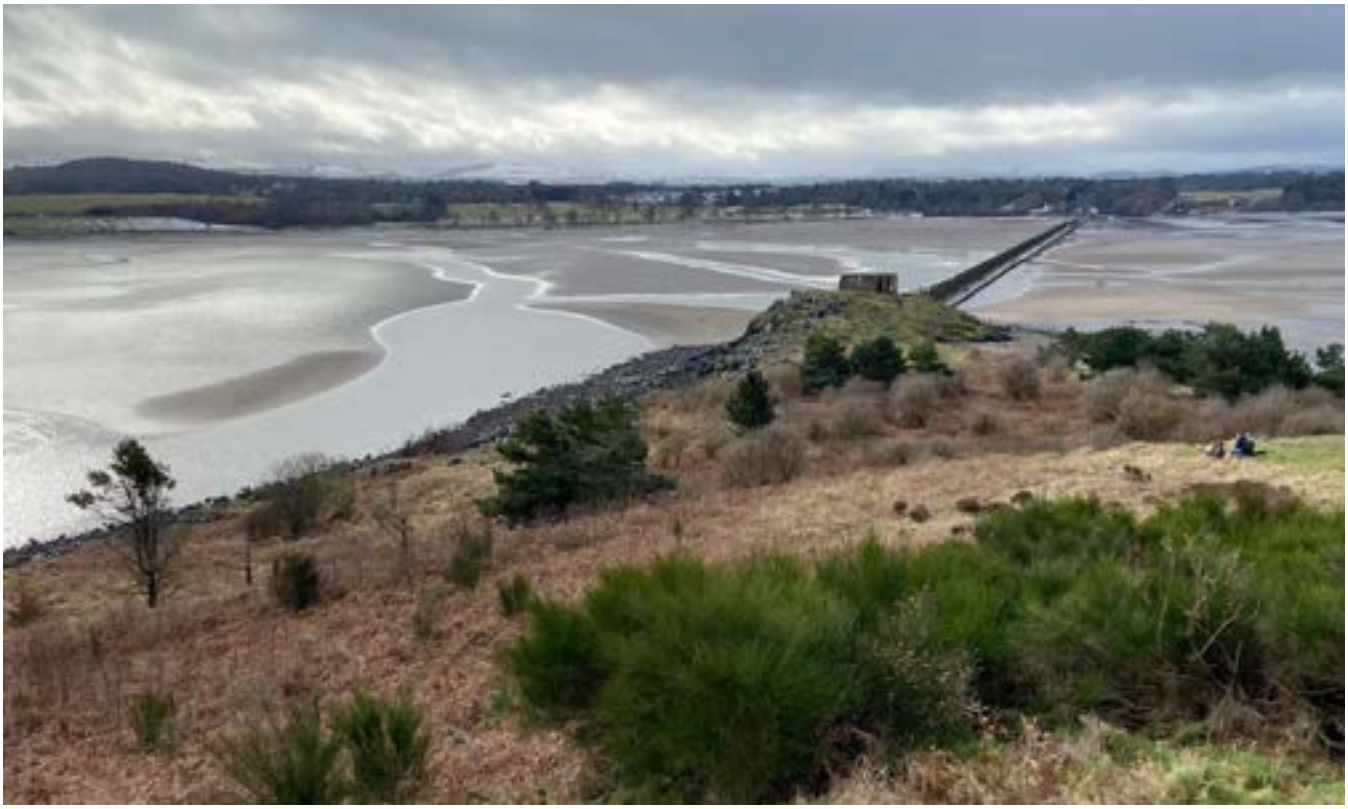
Responding to Global Challenges Through Data-Driven Art

By Martin Zeilinger



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Researcher and curator Martin Zeilinger discusses a landscape review of AI art and artists in the context of responding to global challenges through data-driven art.

Many artists working with AI are engaged in exploring the impact of new technologies on our socio-cultural and ecological life-worlds...

Early in 2021, The New Real, in partnership with the Edinburgh Science Festival, set out to develop a new data-driven artwork that could both engage a global Festival audience (in response to the COVID-19 lockdown) and also inspire behavioural and/or attitudinal change on the climate emergency. Underlying this ambition, a number of crucially important concerns – to do with the usability, sustainability and accessibility of computational technologies – quickly began to take shape. As such, we looked at art practices dealing with large bodies of data, AI systems and other emerging technologies

which concern themselves with a wider range of social and environmental issues that are not always well defined or understood.

Don't be afraid to ask

We carried out a landscape review of existing and emerging practices among artists working with large computational systems and AI, as well as a survey of artists who might be commissioned as a part of any co-creation research emerging from this analysis. In particular, we were asking a range of key questions:

- How can complex computational systems be used to facilitate localised, community-oriented, accessible cultural experiences, so that the artworks can serve to elucidate the workings and capabilities of these same systems, rather than obfuscating them?

- How can we ensure that artworks foster critical literacies concerning immensely powerful technologies that are by many non-specialists perceived to be so complex as to be virtually unknowable?

- How can emerging data-driven technologies such as AI be used in the creation of cultural experiences that invite their audiences to contemplate and tackle the biggest challenges we are facing today, such as humanity's impact on the planet, the climate crisis or issues of surveillance and data privacy – even if these same technologies are by many understood to be deeply implicated in how these challenges were brought about in the first place?

The research revealed an impressive landscape of existing creative practices and art projects and validated one of the founding ideas behind The New Real, namely that for many artists who are experimenting creatively at the forefront of emerging technologies, such questions are already informing much of their work. In fact, artists are often in the lead when it comes to contextualising new technology, as reported in Edition One of this Magazine.

Impacts of new technologies on socio-cultural and ecological life-worlds

Many artists working with AI are engaged in exploring its impact on our socio-cultural and ecological life-worlds, or their work might

Image credit: Julie Ann Fooshee

speculate on the emergence of productive interfaces between such new technologies and their users. These were precisely the kinds of domains we identified as most relevant including AI, the Anthropocene and big data analytics.

Tega Brain: making complex systems human-computable

A good example is the work of Tega Brain, an Australian-born artist now living and working in New York. Brain's art practice often links environmental issues to technological infrastructures and networked data systems, frequently with a focus on conveying highly complex information about the Anthropocene and dystopic climate futures in accessible and engaging formats. Many of her projects are designed with a focus on public engagement, accessibility and educational contexts. Often, this means visualising complex bodies of data relating, for example, to carbon emissions, energy consumptions or climate change. This has resulted both in technologically highly sophisticated work, such as *'Asunder'* (2018), an AI-based 'environmental management' tool that simulates future alterations required to keep the planet safely within boundaries of survivability (often with absurd requirements and/or results), but also strikingly simple works such as *'The Phenology Clock'* (2014), a clock-like installation that conveys critical information about the temporalities of the Anthropocene, such as life cycles of plants native to a specific locality. Both of these works represent efforts to make extremely complex systems – plant life cycles, the ecosphere, large bodies of environmental data – human-computable in the form of art installations in which complexity becomes affective experience. In the case of *'Asunder'*, this also means exploring absurd dystopian elements of futuristic technologies, including, for example, AI-based suggestions to erase or relocate entire megacities in order to keep planet Earth survivable for its human inhabitants.

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Memo Akten and the nature of nature

Another artist whose work focuses strongly on the making of sophisticated technological systems, and on the exploration of how human users can interact with such systems, is Memo Akten. The majority of Akten's work explores the creative affordances of AI and machine learning, often with the specific aim of making these technologies accessible to wider audiences. A common theme in his work is a focus on 'the nature of nature,' including phenomena such as seeing, sensing and consciousness, all of which represent extremely complex potential interfaces between human users and computational systems. In this sense, Akten's work explores crossings-over between biological and artificial intelligence.

For example, *'Learning to See'*, an extensive series of interconnected projects and experiments first presented in 2017, focuses on the interpretability of data, and speculates on ways in which human and non-human systems can learn from one another while also expressing information for one another. Among the most interesting instantiations of the project is an interactive installation that invites audience members to manipulate simple objects such as cables placed on a table. This simple interaction is recorded by a camera and processed by an AI system that tries to visualise for the human audience what it 'sees.' Because the underlying neural network was trained only on the basis of very specific real-world images (such as waves lapping on the shore, or the flames of a wood fire), the resulting outputs, even though they can be highly realistic, bear no resemblances to the real-world impressions on which they are based. This allows audiences to explore transcendental questions of perception and seeing through the latent space outputs of neural networks, and the series overall, by implication, addresses critical questions about interpretation, meaning and understanding.

Other artists

There are many other examples of AI-driven, technology-based critical art projects that explore the utility of emerging technologies right alongside questions of their sustainability, ethics, aesthetics and medium-specific particularities. Some that instantly spring to mind are Pierre Huyghes installation *'UUmwelt'*, commissioned by Serpentine Galleries in 2018, which deals with the co-evolution of human and non-human agents, or Alexandra Daisy Ginsberg's *'Machine Auguries'* (2019), a sound installation that explores, through AI-generated bird song, how the light and sound pollution of urban lifestyles affect birds, while also demonstrating AI systems' ability to assume the aural identities of real and imagined songbirds.

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Questions for now

While the nexus of a global pandemic and climate crisis in which this survey took place is now behind us, many of the issues and questions it brought to light remain highly pertinent, and for artists working in virtually every medium, new AI-related challenges are developing. These span both the ethical and practical dimensions of creative expression, and more than ever challenge our consistency on the issues of environmental and social sustainability.

So, how does an artwork contribute to global concerns surrounding the environmental impact and sustainability of our manifold uses of technology?

The experiment subsequently conducted by The New Real Observatory sheds some light on critical dimensions that shape such artistic work. Both issues of control and responsibility as well as knowledge and understanding played out over a number of works commissioned by the programme. We are thus called to examine at the same time the generative AI capabilities and the reality of climate-change impact on both algorithmic modelling as well as our knowledge of our planet(ary future).

Author bio

After many years of living in Vienna, Toronto, and London, **Martin Zeilinger** is glad to have landed in Dundee, where he is currently Senior Lecturer in Computational Arts & Technology at Abertay University. His research interests include digital art, appropriation-based art practices, emerging technologies in relation to contemporary art (specifically AI and blockchain), theories of cultural ownership and intellectual property and various aspects of experimental video game culture. Co-curator of the Toronto-based Vector Festival from 2014 to 2020, Zeilinger frequently collaborates with curators/artists/activists on curatorial projects.

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