



# Future Art Ecosystems

Vol 3. Art x Decentralised Tech

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Printed on FSC-certified paper using plant-based inks  
by Aldgate Press and bound by Diamond Print Services



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# Preface

'Web3' is now part of our collective ☸ imaginaries, even if the specifics of what the buzzword entails remain murky and inaccessible to many. Originally coined in 2014 by Gavin Wood, co-founder of Ethereum, to describe 'a decentralised internet ecosystem based on blockchain', the term took off after the NFT boom of 2021, catalysed by the embrace of the crypto ecosystem by the likes of Silicon Valley venture capital firm Andreessen Horowitz (a16z).<sup>12</sup>



Like other social technologies, the swirl of narrative, attention and capital around web3 are as much part of its utility as the tools ☸ themselves. Mainstream discourses around 'the web3 space'—and the blockchains, non-fungible tokens ☸ (NFTs), cryptocurrencies,

decentralised web (dweb) frameworks that make it up—have been shaped by a cacophony of criticism, partiality and hype, played out over the past five years on Twitter and Discord.



*Future Art Ecosystems 3: Art x Decentralised Tech (FAE3)* attempts to take a long(er) view on the impact of decentralised technologies and imaginaries on the structures and processes that underpin the development of 21st-century cultural infrastructure, specifically art and advanced technologies (AxAT).<sup>3</sup> The downward slope of the hype cycle towards another ‘crypto winter’—as well as a market correction in the wider tech industry—is a good time to take a sober view of the lessons, potentials and affordances that have been generated over these years of energetic innovation  and speculative boom and bust.<sup>4</sup>





As with all Future Art Ecosystems (FAE) briefings, *FAE3* aims to sketch out strategies that can be integrated by various actors across the AxAT ecosystem—practitioners, existing and new institutional actors, policy-makers and funders—into their organisational and operational strategies.<sup>5</sup> It explores the kind of ‘worlding’ that can take place through hybridising, synthesising and augmenting the cultural value of legacy institutional forms with emergent socio-technical propositions.

*It is a social experiment that enters into reality.*  
–Primavera De Filippi

The ‘building’  $\infty$  of decentralised technologies is at once an experiment, an argument and an accreting infrastructural reality. The activity of ‘building’  $\infty$  characterises the shifting ground between the real-time development of products and services for an existing ecosystem and the social performance of cultures, narratives and fictions latent within them. For example, ‘multi-signature wallets’ or ‘multisigs’ have become a default tool for collectively  $\oplus$  managing crypto assets by pseudonymous members of decentralised autonomous organisations (DAOs), akin to shared bank accounts. At the same time, as digital assets like NFTs have discovered novel use-cases as in-game attributes or access tokens  $\oplus$ , multisigs take on new kinds of potentials as modular identity systems or player inventories.<sup>6</sup>



The nascent innovations  $\oplus$   $\infty$   $\oplus$  and turbulent discourses of web3 have galvanised social constellations and practices, which are often found by far less linear means than would be suggested by the commercial road-maps of tech products, marketplaces or

platforms. As web3's systems incubate and mature, their value flows and organisational patterns hybridise with 'legacy' models of institutional, corporate and market practices through logics of integration  $\oplus$ , cooptation and infection that push in both directions.<sup>7</sup>



Decentralised technologies such as smart contracts offer a powerful and provocative proposition for social organisation within the digital world. Executable code is co-extensive with legalistic mechanisms of consensus and enforcement, as well as their default enmeshed by default into diverse economic paradigms using fungible digital assets. Thus, code becomes a language that states intentions, choreographs users through mechanisms, and executes functions that manifest these mechanisms and intentions through markets. In this context, speculation, imagining and building  $\oplus$  entails direct experimentation  $\otimes$  with socio-economic systems. It is through this lens that *FAE3* considers the developments in the wider landscape of decentralised technologies and their relationship to 21st-



century cultural infrastructure—systems required to produce, distribute and financially support AxAT that is responsive to wider societal agenda.<sup>8</sup>



The Future Art Ecosystems strategic briefing series—and *FAE3* specifically—has been conceived as an evolving ⚙️ resource for crystallising nascent dynamics and opportunities in constructing 21st-century cultural infrastructure, while serving as a foundation for new organisational experimentation 🌀. As a result, FAE strives to unite and platform the voices of those whose efforts are directed towards building ☯️ out new systems for organising, consolidating emergent collective 🌀 intelligence and know-how. Through sheer necessity and as a conscious service to the AxAT ecosystem to come, these efforts have now transitioned to a more self-aware collective 🌀 project.



The core team responsible for the production of *F&E3* includes Serpentine R&D Platform (Alex Boyes, Tamar Clarke-Brown, Victoria Ivanova, Eva Jäger, Róisín McVeigh and Kay Watson) and co-writer and artist Gary Zhexi Zhang. We are immensely grateful to our advisors Seb Chan (CEO, Australian Center for the Moving Image), María Paula Fernández (Co-Founder of JPG Protocol and Founder of Department of Decentralisation), Aslak Aamot Helm (Diakron), curator and strategist Sophie Netchaef and Rival Strategy (Marta Ferreira de Sá and Benedict Singleton), who generously contributed their expertise and time to the development of this volume. We have been greatly inspired by the practices of the artists Sarah Friend and Harm van den Dorpel, who have helped shape this volume through their combined artistic, intellectual and technical expertise.

*Future Art Ecosystems 3* is a product of various explicitly and serendipitously formed research threads. We are grateful to all of our contributors for the conversations that have made this volume a reality, as well as our associate researchers, Anja Yencken, Laura Herman and Opashona Ghosh. Many thanks to the wider R&D Platform team for


the insights and continued support of the project: Alana Kushnir (Legal Lab), Yasaman Sheri (Synthetic Ecologies Lab), Ruth Catlow and Penny Rafferty (Blockchain Lab) and Mercedes Bunz (Creative AI Lab).


Additional thanks to artists Danielle Brathwaite-Shirley and Gabriel Massan for the honour of collaborating on R&D in the past year, and continuing to inform the Future Art Ecosystems outlook on art and advanced technologies.


Additional gratitude goes to Arts Council England for their support of this work. Many thanks to Calum Bowden and Arthur Röing Baer of Trust, Ralph Pritchard, Jaime del Corro, James Wreford of Black Shuck and Roxy Zeiher. We are extremely grateful to Serpentine's Hans Ulrich Obrist, Artistic Director, and Bettina Korek, CEO, for their ongoing support, which has been integral to the evolution of Arts Technologies at Serpentine. Serpentine thanks its partners Bloomberg Philanthropies, and advisors, AECOM and Weil, as well as The Royal Parks for their ongoing support. Public funding from Arts Council England provides an essential contribution towards the organisation's work


and Serpentine is grateful for this continued commitment. The Council of the Serpentine is an extraordinary group of individuals that provides ongoing assistance to deliver its ambitious programmes. We are sincerely appreciative, too, of the support of our Corporate and Trust partners, Americas Foundation, Patrons, Future Contemporaries, Donors and Benefactors.


# Notes 1-8

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1. See Gavin Wood's 'DApps: What Web 3.0 Looks Like' (2014) Wood is also the founder of Polkadot, 'a network protocol that allows arbitrary data—not just tokens—to be transferred across blockchains'.
- 

2. As of May 2022, a16z has raised more than \$7.6 billion for its Crypto Fund, which was launched in 2018.
- 

3. Web3 brackets the ecosystem of decentralised applications built on blockchain (predominantly Ethereum). The decentralised web (or dweb) comprises a wider vision of internet infrastructure built on peer-to-peer networks rather than centralised dynamics between servers and clients, platforms and users. For a generalist overview of web3, see Josh Stark's *Making Sense of Web3* (2018).
- 

4. On 2 November 2022, Bitcoin was trading at €20,665 compared to €54,500 on 2 November 2021.
- 



5. *Future Art Ecosystems 1: Art x Advanced Technologies (FAE1)* released in 2020 addresses artistic engagements with advanced technologies in terms of the infrastructural redesign that they enable within and in parallel to existing art ecosystems. *FAE1* identifies a series of 'infrastructural plays' to underwrite a more full-stack engagement with AT as artistic medium. *FAE1* shows that these tendencies have a capacity to cumulatively change the current landscape by normalising art stacks, the tech industry as art patron, and the project to construct 21st-century cultural infrastructure. This has brought about new systems for value production and circulation.

*Future Art Ecosystems 2: Art x Metaverse (FAE2)* released during the Covid-19 global pandemic in 2021 considers how the perception, experience and production of art are



transforming with the advent of the metaverse—an always-online, persistent, spatial ‘second’ world and an emerging internet megastructure. *F&E2* offers an approach to ‘digital transformation 2.0’ that asks cultural institutions to think holistically about their missions and capabilities through a ‘user experience of art’ (UXA) lens rather than attempting to translate their IRL activities into the metaverse realm. This means becoming more specific about who their users are and what modes of production and distribution are suitable for delivering organisational missions for these groups.

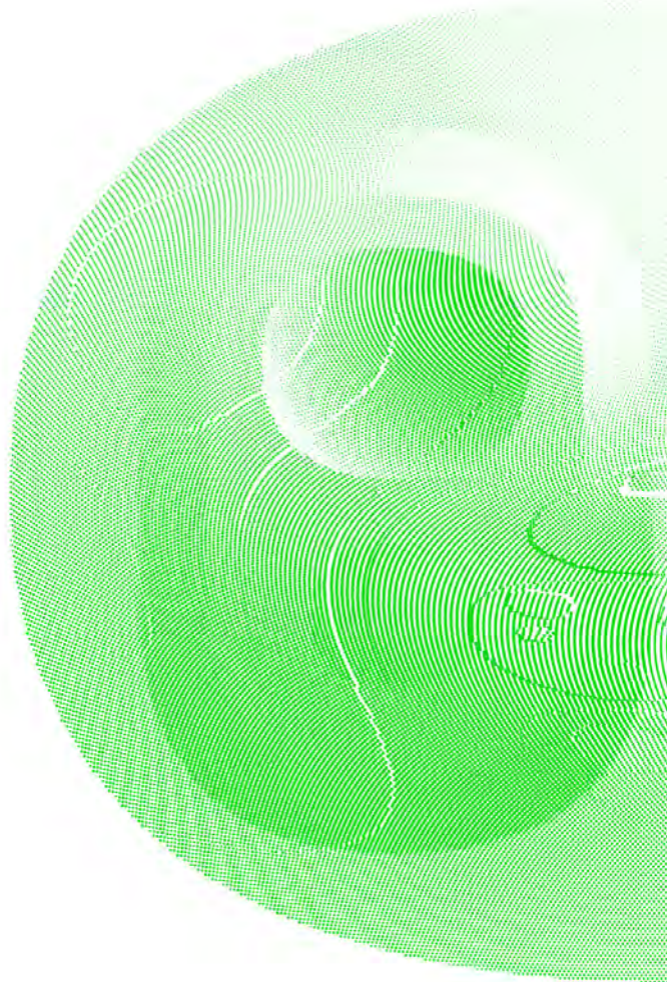
Most critically, UXA emphasises the advantage of recognising a plurality of users, from artists and cultural producers to research partners, technologists, financial stakeholders, geographically specific audiences and issue-based communities. At the micro level of individual organisations, UXA beckons a more multifaceted understanding of the organisation’s identity as it relates to these groups, guiding investment into capabilities-led specialisation that is aligned with the organisation’s mission and priorities. At the macro level of an ecosystem, UXA can ladder up to a more relational and symbiotic cultural infrastructure.

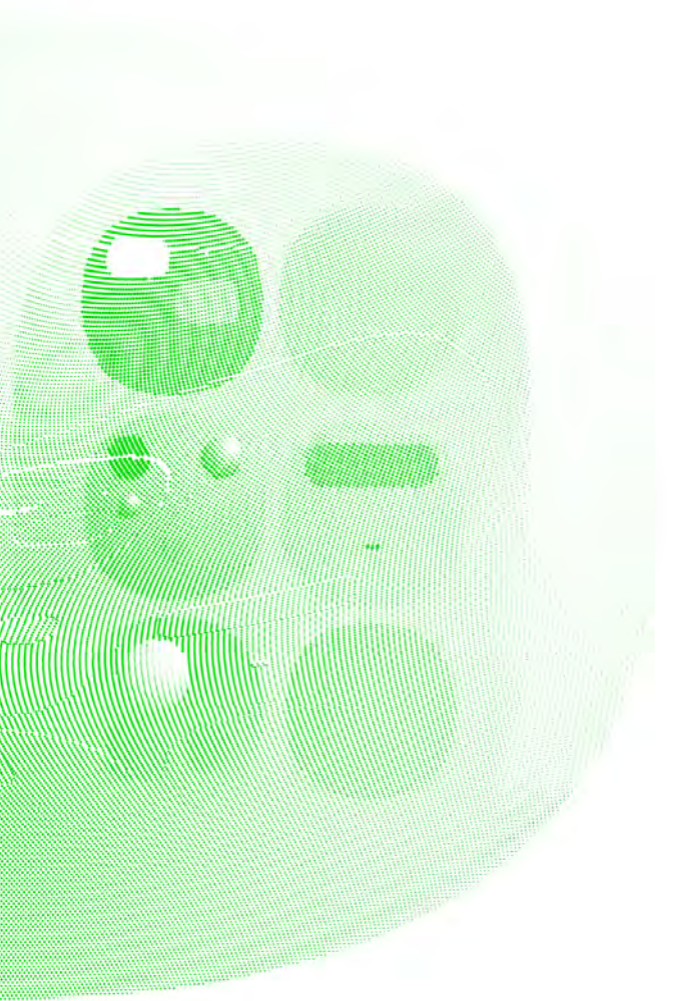
6.  This example draws from ‘Inventories, Not Identities’ (2021), an insightful characterisation of the potential of multi-wallets as more-than-financial digital identity systems by Kei Kreutler of Gnosis Guild.
7.  For example, many DAOs are coming to terms with the challenges of organisational design by turning to traditional corporate management theory, while traditional financial firms are diversifying into crypto.



8. Future Art Ecosystems (FAE) was born out of a need to inform and galvanise a language around organisational development in the arts, specifically around ecosystem design for art and advanced technologies (AxAT). While there is a rich, discursive space that revolves around art's critical interventions into contemporary technologies such as AI, blockchain and immersive technologies, and their mainstream narratives, a dedicated conceptual focus on operational and infrastructural conditions for supporting and developing AxAT has been largely lacking.





The artworks commissioned for *FAE3* are created by Harm van den Dorpel as an adaptation of his 2022 NFT collection, *Markov's Dream*. In the original series, van den Dorpel's software produces thirty-two animations whose compositions are generated by subdividing and transforming the rounded shapes through a Markov-chain-inspired mutation (in which the probability of each consequent event depends exclusively on the state attained in the previous event). In keeping with *FAE3*'s themes of hybridity and composability, this imagery identifies novel aesthetic formations emerging from the generative algorithms for *Spawn* and *UI (You and I)*. The forms have been enlarged, converted to monochrome and processed through a custom halftone rasterisation algorithm for print.







# Introduction

Artistic engagements with advanced technologies constantly expand possibilities for how art can intermediate between culture, technology and society. Both as a process and as an outcome, they demonstrate the variety of roles that art and advanced technologies (AxAT) can play in innovation   , advocacy, creation of civic spaces and collective  imaginaries.



There are a number of highly consequential, practical reasons for treating AxAT as its own domain within the larger space of contemporary culture; AT as an artistic medium requires a distinct set of infrastructural conditions as far as skills, production models, logistical arrangements and financial investments are concerned.<sup>9</sup>

For example, for artists working with AI technologies such as machine learning, natural language processing or computer vision, access to computing power, extremely large datasets and engineers who will build models from the ground up may be required. In addition, artists must have a deep fluency in the whole AI system in order to design interventions or assume meaningful control in terms of intent, predictability and accountability.<sup>10</sup>

These project budgets usually sit well outside the scope of a typical exhibition. Meanwhile, the artistic objective of creating an AI model is quite distinct from the core objective of showing finalised artworks in galleries. Finally, a public interface with this knowledge can make important contributions to society's approach to a black box technology that is undergoing large-scale adoption and is fraught with tensions and issues around justice, control and power.

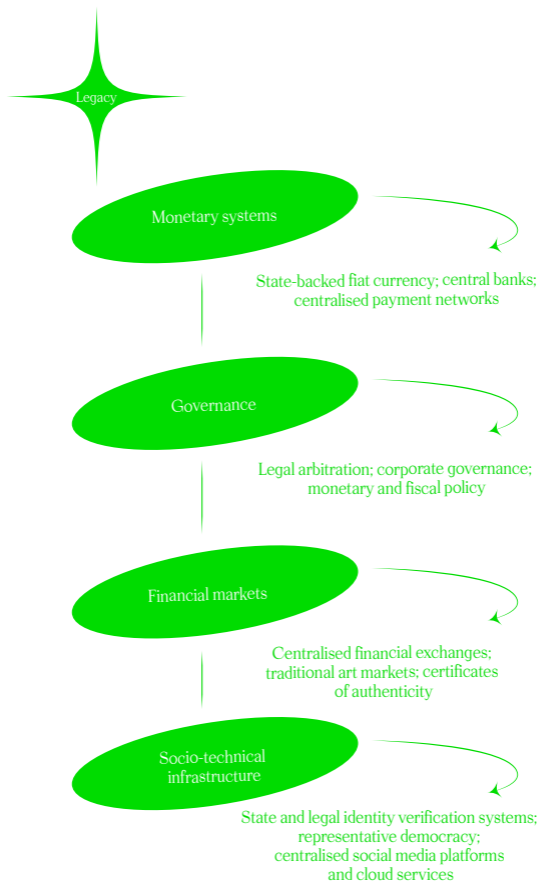
Public cultural infrastructure inherited from the late industrial era, as represented by such institutional forms as museums, galleries and theatres, cannot adequately fulfil the infrastructural needs of AxAT, nor offer a space for greater ambitions for exploring the relationship between technology and society. As a result,



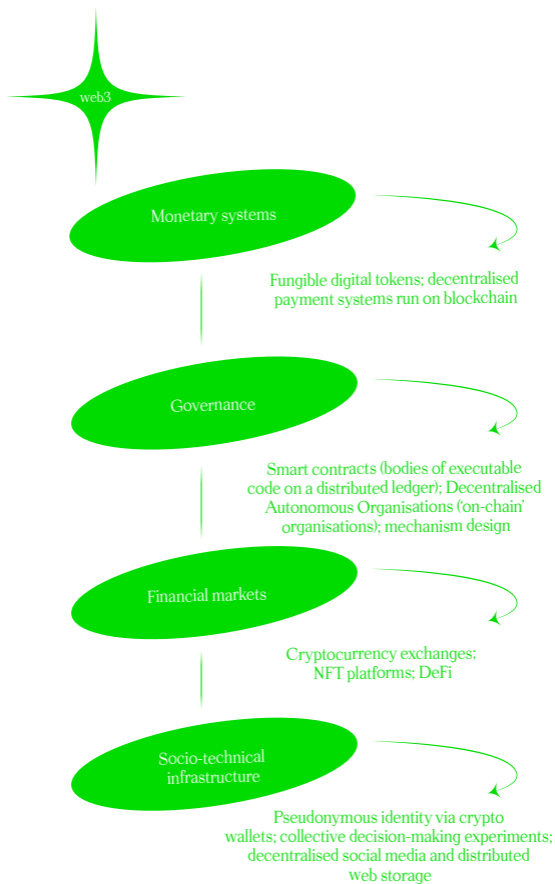
numerous cultural organisations across this spectrum have attempted to reconfigure at least some aspects of the original design.<sup>11</sup> Still, at a macro level, there is a significant gap between the fragmented and largely uncoordinated efforts of individual organisations to support AxAT, and the prospect of a diverse, interconnected  $\mathfrak{P}$  and empowered AxAT ecosystem. In identifying this, FAE centres operational and infrastructural awareness and capabilities as priority areas for institutional responsibility, investment and policy decisions.






In general, there is a wide array of ideological affiliations and perspectives clustered under the rubric of decentralised technologies. But a common objective shared by many operating in the space is to redistribute various forms of power from and within the legacy institutional world. How that redistribution is achieved and towards what ends is a matter of contestation. However, the scope of projected influence includes monetary systems, governance, financial markets and wider socio-technical infrastructure.



*Basic building blocks within 'legacy' institutional systems*



*F*AE3 delves into decentralised technologies to consider organisational logics that can aid the development of 21st-century cultural infrastructure for supporting AxAT and the delivery of public value  by the cultural sector. While the notion of public value  is slippery, public cultural infrastructure—institutions with an unconditional relationship to the collective  ownership of cultural production—is an important aspirational benchmark for interdisciplinary art and culture. AxAT offers a context for interrogating and reimagining technology as a social and creative medium in societies where technological development is largely driven by interests of commerce and control.



The most recent cycle in the development and adoption of blockchain-based technologies—as reflected in web3 and the development of dweb infrastructure—has made significant reverberations in the field of possibilities associated with operational and infrastructural experiments with culture and socio-economic organisation.

However, 'public value' 🌐 as suggested by web3 practices is constrained by overidentification with financial means of participation and, more generally, a lack of contextual grounding beyond the immediate communities who gather around minoritarian interests (e.g. collectible NFTs or shepherding specific technical projects).

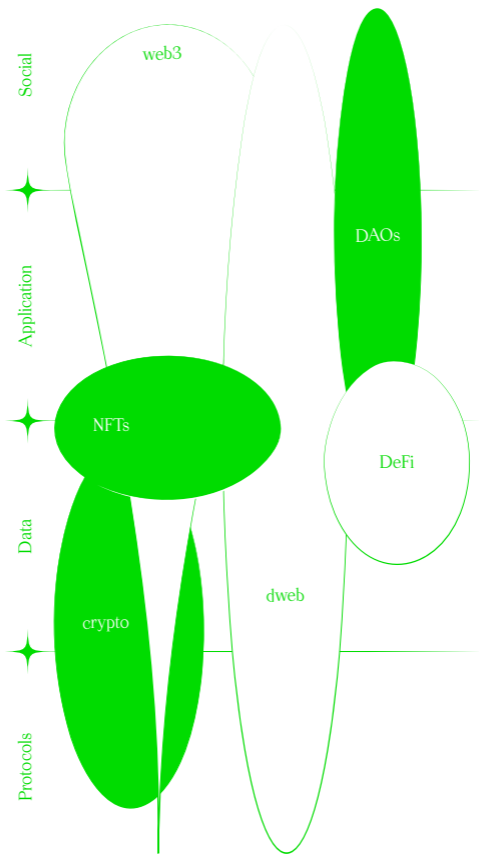


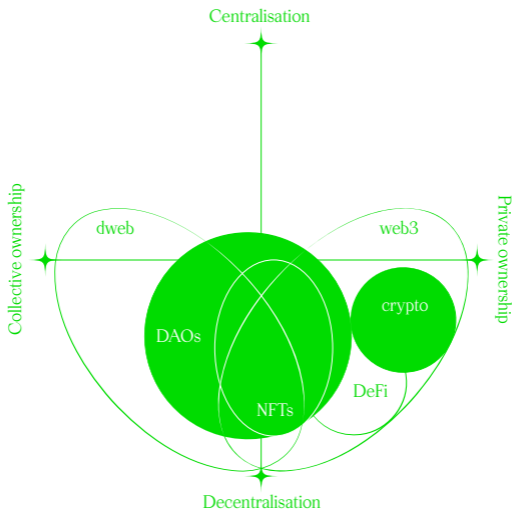
Against the backdrop of increasing societal and geopolitical fragmentation, decentralised technologies signal the potential of building bridges ⚡ across and through institutional contexts in order to renegotiate the explicit and implicit contract between stakeholders in culture, society and technology. At the same time, the organisational primitives that these technologies have surfaced need to find their way into longer memory chains and grounded 🌐 collective 🌀 concerns.



Decentralised technologies allow us to understand the potential of public cultural infrastructure as a composable ecosystem of competencies and capacities for negotiating technology and society. Cultural infrastructure is a mutable and experimental space in comparison to the more instrumental infrastructures of finance, science and industry. A more interoperable  $\mathfrak{P}$  cultural sector, in which organisations are able to integrate at the level of process and production as well as project and outcome, is a testing ground for more democratic systemic imaginaries.








*Relationship of decentralised technologies to dynamics of (de)centralisation and ownership*

Diagram developed together with Sarah Friend



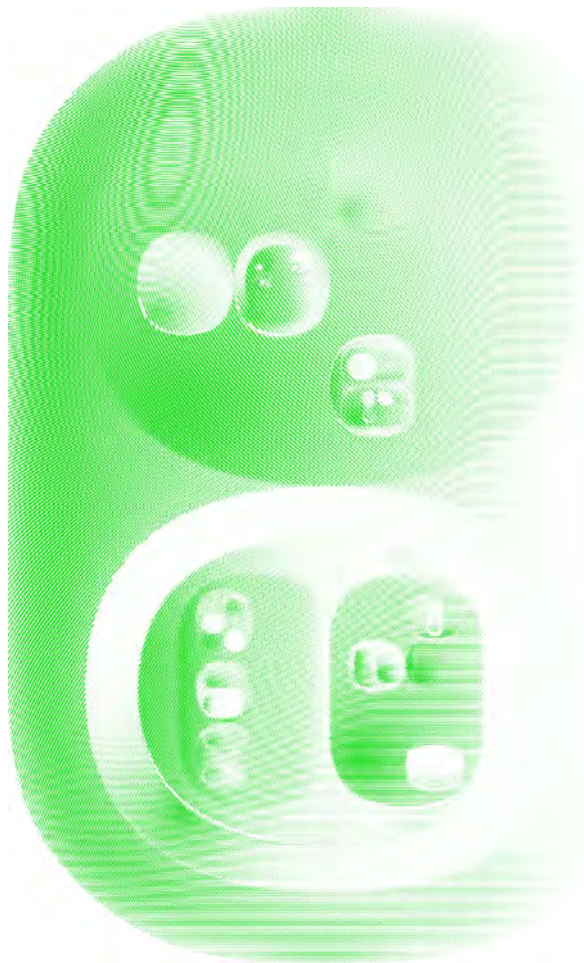
Chapter 1, *Primitives: New Patterns for 21st-Century Cultural Infrastructure* frames novel socio-technical patterns within decentralised technologies that can be applied across multiple contexts including systems that support the production, distribution and financing of AxAT. In many cases, existing applications can be considered tests for novel infrastructural logics whose true utility may lie elsewhere. For example, *Governance Design* primitives like quadratic voting have been tested in crypto grants programmes but a more profound test of its utility would need to be grounded  in wider public participation. Chapter 2, *Prospects: From Limits to Possibilities*, distils some of the critical constraints of these primitives from the perspective of public cultural infrastructure. As the tide goes out on the latest cycle of boom and bust in web3, it becomes easier to set reality tests and identify longer-term prospects for AxAT. Chapter 3, *Proposals: Pathways to Interoperability*, maps these prospects onto strategies for the realignment of risk, value and ownership within cultural production.



# Notes 9-11

9. See *Future Art Ecosystems 1: Art x Advanced Technologies*, Chapter 1: *Art and Advanced Technologies*.  
 p.23
10. Critical artistic engagements with the technical layers and their processes can be contrasted with the use of AI image generation tools such as Midjourney or Stable Diffusion. See Memo Akten's *Deep Visual Instruments: Realtime Continuous, Meaningful Human Control over Deep Neural Networks for Creative Expression* (2021).  
 p.24
11. For example, new media arts organisations, cultural organisations that follow an 'incubator' model, or traditional cultural organisations that have developed temporary or permanent departments focused on the experimental potential of artistic engagements with advanced technologies.  
 p.25








# 1

## Primitives: New Patterns for 21st-Century Cultural Infrastructure

Primitives

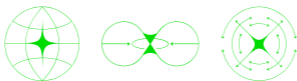
37

20th-century cultural infrastructure consolidated around the separation of functions and institutional responsibilities over production, distribution and financial support of art. In visual arts, production is the artists' domain and the site of experimentation  and innovation  , while institutions are responsible for regulating distribution: how art interfaces with the public, through curation of exhibitions, collections and narratives (i.e. discourse). The state, the philanthropist and the art market provide liquidity. While the boundaries may sometimes blur between these functions, the overall configuration and the value flows that it instantiates remain intact.



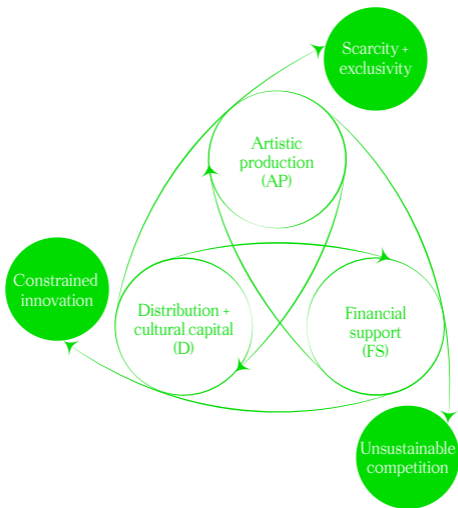
p.65

Let's call this the Legacy Formation.<sup>12</sup>







*What blockchain does have to offer is to relearn, retool and re-educate ourselves in small test sites.*

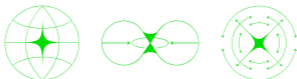
—Penny Rafferty



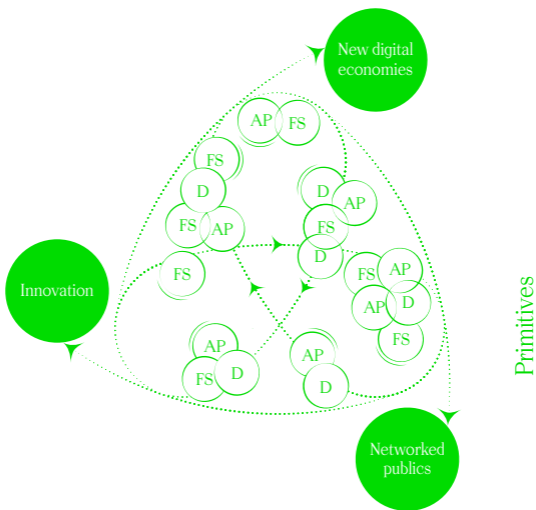
*The Dynamics of Legacy Formation: Separating the functions and responsibilities of production, distribution and financial support generates an ecosystem where (1) the distribution of artistic production relies on an exclusivity model; (2) the environment for seeking financial support of artistic production is highly competitive; (3) there are few incentives to innovate in the public's interest through artistic production*

Diagram after Gregory Bateson's *The Dynamics of Ecological Crisis (Steps to an Ecology of Mind, 1972)*

Today, blockchain, crypto-economies and the dweb are part of broader dynamics of institutional fragmentation and diffusion in a networked world—a trajectory that was initiated by the birth of the internet, but which has never been functionally adopted by the institutional cultural sector. The emergence of blockchain and adjacent systems has brought about an explosion of new techno-institutional forms based on the affordances of digital assets and networked provenance systems. Most of these remain highly propositional, even as they generate significant investments and appear to rub up against the Legacy Formation.<sup>13</sup> The turbulent financial cycles of the blockchain space have resulted in accelerated research and development (R&D) cycles and capital flows towards testing financial instruments, governance mechanisms and use cases of digital assets. Here, the main sites of innovation    and experimentation  are infrastructures that bring *production, distribution* and *financialisation* into novel formations.








*Novel operational formations appear when production, distribution and financial support are reconfigured by decentralised technologies*

Diagram after Gregory Bateson's *The Dynamics of Ecological Crisis* (from *Steps to an Ecology of Mind*, 1972)




Due to social and technical challenges of adoption, the intersection of art, web3, crypto and dweb plays out on a vocal but remote archipelago.<sup>14</sup> Between the old and the propositional, new patterns and norms of institution-building  are emerging across a wide spectrum of techno-cultural contexts. Understanding, shaping and augmenting these organisational primitives will be key to building out the affordances of 21st-century cultural infrastructure, as aspects of the Legacy Formation are rethought and exported, and integrated with new organisational efforts that straddle digital economies, networked publics and complex societal conditions.

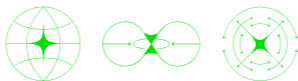


For brick-and-mortar cultural institutions, engagement with web3 has typically meant offering validation in exchange for income and cultural buzz.<sup>15</sup> While ‘off-the-shelf’ collaboration may suit institutions with significant cultural or collection-based capital, it is limited in exploring web3’s experimental  potential in a manner aligned with cultural institutions’ missions and public purpose.

This problem of alignment elides the role that decentralised technologies can play in the production, distribution and financing of an AxAT ecosystem that is responsive to a broader societal agenda.



In this chapter, a series of primitives for 21st-century cultural infrastructure can be identified through three distinctive conceptual lenses. The primitives that *Retool Artistic Authenticity* consider the centrality of identity and provenance to both the value of art and blockchain; primitives that allow for *Spontaneous Innovation*    consider incentive mechanisms deriving from the coextensivity of economic and governance power; *New Systems Ontologies* considers conceptual and infrastructural primitives of decentralised cultural forms.



## Retooling Artistic ‘Authenticity’




Provenance (a traceable and verified biography of any given artwork’s circulation) and authenticity (the ‘aura’ of the artwork associated with provenance and the artist’s identity) play a critical role in generating and attesting the value of the work. Within the Legacy Formation, it is the joint task of institutions and the market (i.e. galleries, auction houses and collectors) to track and verify provenance. As blockchain is fundamentally a provenance system, there is a structural analogy between on-chain data and the constitution of artworks in general. By disintermediating the institution’s role in certifying provenance, while also instantiating scarcity via the immutability of on-chain contracts, decentralised technologies have a role to play in disrupting the value chains of the Legacy Formation.

*The depth of value is created by provenance.*  
—María Paula Fernández

## → Networked Provenance

The art industry's earliest interest in blockchain technologies was largely centred around the possibility of using the publicly accessible distributed ledger to record provenance.<sup>16</sup> However, around 2015, blockchain technologies were still nascent and had not entered mainstream adoption. The change of tide came with the rapid development of the Ethereum ecosystem, which emphasised a plurality of application trajectories for its open source  protocol beyond crypto-currency. This vision led to varied and wide-reaching experimentation  with smart contracts, leading to an increasing number of crypto start-ups. The mainstream media coverage of Initial Coin Offerings (ICOs) in 2017 is also often credited as a pivotal phase transition.<sup>17</sup>








Ethereum's ERC-721 standard, released in 2018, allowed smart contract developers to create non-fungible tokens  containing specific metadata. The resulting NFTs could then be traded as unique digital assets. The NFT boom that coincided with the pandemic years (2020-2022) was largely driven by collectibles and the opportunities for online socialisation that the trade in collectibles unlocked.<sup>18 19 20</sup> For digital artists, NFT technologies offered a pathway for benefitting financially from their work. For the first time in the history of art, artists were able to claim royalties from secondary sales in a systematic and automated manner, while building  collector-fan communities  around their practices.<sup>21</sup>



*In the digital art economy, scarcity and authenticity are the key components that generate value.*

–Primavera De Filippi

## —> Artist-as-Platform

Artworks on the blockchain often instrumentalise the coupling of participation and ownership to develop projects as platforms, instantiating tools, protocols and services to enable audiences to spawn new works.<sup>22</sup> Such projects bootstrap the existing value of an artist's practice: 'identity' on the blockchain is symbolic and modular, rendering the audience a user, a creator and an economic agent generating and deriving value by propagating a shared economy. The artist leads on artistic direction but also determines the distribution models and rationales. As further explored in Chapter 3, an evolution of this model may be for artistic identity to follow the 'exit to community' model and ultimately dissolve into a distributed creator community .<sup>23 24</sup> As a 'business case', the model relies on the artist's network reach and fandom, and part of the challenge is outrunning speculative exhaustion. However, the collective  ethos of prototyping and innovating through art that this model offers is an important primitive for social innovation    in AxAT.

## —> Full Stack Blockchain Art

Full Stack Blockchain Art has emerged as a genre of AxAT that takes blockchain as a self-reflexive medium for technical and aesthetic experimentation ☉. Following from past iterations of media art, artistic interest in medium-specificity has driven innovations in on-chain collective ☼ decision-making, or experiments with the time-based affordances of digital ledgers. Where most NFT projects use third-party minting platforms to deploy ready-for-sale images and data onto the blockchain, the Full Stack Blockchain Artist is a smart contract developer interested in working with the technical, conceptual and economic dynamics of decentralised networks by building ☾ mechanisms from scratch. Like the work of net.art practitioners before them, poetic and avant-garde experiments with the materiality of decentralised media are a fertile ground for innovative forms of AxAT that work with the medium's constraints while extending its possibilities.





*My approach is thinking about what the specific platform or technology is really about, what its meaning is, what is newly afforded by it, and trying to intervene in that layer of the technology itself.*

–Sarah Friend

# Spontaneous Innovation





The collapsing of economic, technological and social dimensions in the decentralised technologies space offers opportunities for spontaneous innovation across these functions. Within the larger crypto space, most experimentation ☼ is geared towards financial mechanisms, but 'art' has served as a significant catalyst for creative R&D ☼ towards more socially imaginative ends. As an empty signifier linked to desire, information and ownership, art offers a capacious dimension for testing the use cases of digital assets, decentralised decision-making and commons-oriented infrastructures.



*Technology and culture do not wait for permission to be.*

–Cem Dagdelen

## → Tools Performing Culture

By and large, NFTs have grown mainstream as immutable blockchain-based replicants of traditional ownership certificates. Beyond the blunt economic affordances of artificial scarcity and ownership claims, however, the social, networked and computable qualities of digital objects have also led to significant technical and conceptual innovations, where technical projects are performative enactments of social aspirations and cultural identifications for the communities that gather around them.<sup>25</sup> Spontaneous organisational innovation    as a new pathway for institutional development via tools-based projects could serve as an early blueprint for AxAT institution-building . In this model for institutions that serve AxAT, the mission of producing tools that represent culture is key rather than acting as organisational sites that host culture, and for which tools are outsourced or are an afterthought.




## → Everything Is an Asset

The underregulated space of crypto-economics has seen rapid expansions in the application of securitisation logics familiar to traditional finance in the context of digital assets. Almost every token ☸—whether it carries the identity of an artwork, a carbon credit or a currency—is also a speculative asset, with all the affordances and pitfalls that accompany financialisation. As such, financial processes such as staking, collateralisation, arbitrage and bridging across crypto-networks have been a major source of market growth for the blockchain economy, particularly since the ascent of decentralised finance since 2020, which allows users to provide market liquidity to new crypto-assets without a centralised currency exchange.<sup>26</sup>



In the context of AxAT, ease of ‘assetification’ has led to novel project financing and distribution patterns such as fractionalised ownership, crowdfunding mechanisms and

automated financial distribution. Moreover, the separation of ownership and access to digital assets allows the work to inhabit parallel 'economies': for it to be traded for its financial value, but remain accessible to other users as a piece of public on-chain data from which further productions can be derived.<sup>27</sup>

At the legal level, the separation of ownership claims and user affordances, as with NFTs on a Creative Commons (CC0) licence, offers a truce between cultures of open  and permissive licensing and the attribution of authorship and royalties.



## → Governance Design

Almost every layer of the decentralised technology stack, from technical protocols to interfaces to cultural norms, can be understood as an experiment in the coordination of collective ☸ decision-making and governance. Whatever the fate of many blockchain projects, the lessons learned in organisational design and management will likely have a lasting impact on the fields involved, including AxAT. Emergent governance patterns and tools such as quadratic voting have been tested through the allocation of significant collective ☸ resources.<sup>28</sup> At the same time, the inadequacy of protocol and incentive mechanism design for addressing complex social problems is an ever-present theme of DAO governance and decentralised technology cultures more broadly.



*Blockchain technologies are a new laboratory for governance experimentation. We don't otherwise have a chance to experiment with governance anywhere, so it's a very valuable space for exploring and testing new governance structures.*

–Primavera De Filippi

# New Systems Ontologies

A significant impact of decentralised technologies that will likely live on, even as individual projects disappear into the bear market, is the reconfiguration of systemic concepts within artistic processes and network cultures by decentralised logics. In particular, the two-handed socialisation and financialisation of cultural and technical processes of storage, identity and narrative production have significant implications for AxAT practices as well as the social and technical patterns underpinning wider infrastructures of cultural production.

*Getting people from very diverse backgrounds and silos into a development space before it solidifies: that's when it is important because that's when the new imaginaries are formed.*  
–Ruth Catlow



## —▶ Networked Memory Infrastructures

Decentralised and addressable storage uses peer-to-peer networks to host and archive the web. Most notably, the Internet Archive has been working for several years with Interplanetary File System (IPFS) in order to create an infrastructure for hosting its vast archive on a decentralised network. If the future of the web is to be decentralised on a system such as IPFS, the latter's use of a content-based address system means that the web would not only be more resiliently hosted but also self-archiving, because a file's location is directly linked to its content. The technologies and imaginaries of dweb long predate the emergence of blockchain but grow from the same basic principles of decentralised control and immutable archiving.

*Can we get true dialogue between people who are pretty hands-on, building Estuary for Filecoin and have them talk to community network builders in Brazil or artists in London and question their assumptions about who they're building for and what they're building, and then realise that they can build the best tool in the world?*

–Wendy Hanamura

## → Entities vs Identities

Distributed ledgers are made up of transactions taking place between addresses. Addresses are most commonly used as a ‘wallet’ for holding digital assets such as currencies and NFTs, but they have rapidly evolved to become the identity and authentication layer of blockchain applications. Given the inherent pseudonymity of the blockchain, elaborate ecosystems have developed for the coordination of multiple or collective ☸ identities: e.g. for individuals to inhabit a plethora of different addresses, and conversely, for large groups such as DAOs to collectively manage a single address using a multisig wallet (akin to a shared bank account). Rather than identities (*idem*, ‘same’ + *ent*, ‘being’), on-chain agents might be better understood as modular, combinatorial entities unfixated to a single being. However, the recent emergence of soul-bound tokens (SBTs) ☸ pushes back against this ontological fluidity by proposing models of unique social identity on the blockchain.<sup>29</sup>



In *FAEI*, we discussed team-based models for artistic production and R&D. For AxAT, the supplantation of identities by entities affects the User Experience of Art (UXA) by de-centring the individual cultural producer and audience member in favour of collective ☘ and crowd-based phenomena. This pattern is already visible within large swathes of popular culture, such as subcultures, fandoms and cults, albeit not always in a self-consciously organised manner.



## → Community-as-Aura


In contrast to *Artist-as-Platform* and *Full Stack Blockchain Art*, *Community-as-Aura* drops the 'art' and the 'artist' in the Legacy Formation senses of those words, and exports the authentic character aura for building narrative momentum around which a token community ☼ is formed.



Some of the most organisationally innovative crypto projects develop a headless, bottom-up approach.<sup>30</sup> At its most effective, a tokenised community ☼ can become a self-fulfilling prophecy, whereby memes generate participation, which leads to financial appreciation, projects investments and more memes. Artistic production, subcultural community ☼ and financial investment become indistinguishable from one another. The token community forms around the artwork as a memetic narrative vehicle. While the aesthetic layer of the community token matters as a symbol of belonging, the positive feedback loop

between community engagement and the outward (networked) projection of the community's vibe is what allows tokens to appreciate in value.



While the financialisation of aura can be a cynical strategy, it also pushes at the limits of the Legacy Formation by revealing the thinness of the current systems of valuation. Moreover, imbuing symbols with shared meaning and generating community  commitment to grow financial value in the process could become rewarding in the context of AxAT practices where the inception of new symbols and narratives are at stake.<sup>31</sup>



## —▶ Permissionless Worlds

Permissionless participation, composable functionality and interoperability  $\otimes$  across domains are highly valued patterns within decentralised technology cultures. These patterns sit comfortably at the cross-section of ideological and technical objectives shared by free and open source  $\text{\textcircled{R}}$  software communities, anarcho-capitalists and meta-verse advocates alike.



The prevailing economic logic of centralised platform monopoly has been to build privatised, scalable social networks and to extract value from network effects; their users have become accustomed to participating in separate walled gardens masquerading as public spaces. The emergence of open  $\text{\textcircled{R}}$ , decentralised and permissionless networks has spurred new ways of thinking about bottom-up and collective  $\otimes$  forms of agency across interconnected  $\otimes$  social worlds. As decentralised technologies are organised around the exchange of digital assets

with scarce and monetary characteristics, interoperability  $\mathfrak{P}$  is also financially incentivised as a driver of innovation  $\mathfrak{E}$   $\mathfrak{E}$   $\mathfrak{E}$  and experimentation  $\mathfrak{E}$ , such as the ambition of creating portable assets across game worlds. Following the memetic logic of network culture, interoperability  $\mathfrak{P}$  in the context of AxAT encourages the production of modular and extensible projects with non-finite endpoints and that are open to post-production by others.<sup>32</sup>






*There are plenty of crypto products that have been impactful that don't necessarily have a traditional business model for software, that is, through an advertising model, but they have achieved staying power either through resources or community.*

–Kei Kreutler



# Notes 12-32

12. Here we borrow from the idiom of web3, which often refers to web2 companies and traditional organisational practices as belonging to 'legacy institutions'.  
 p.38
13. For example, the activity of KlimaDAO, which sought to disrupt the carbon market by converting existing carbon offset credits into crypto tokens, caused the underlying assets to almost triple in value.  
 p.40
14. Despite considerable increases in visibility and popular awareness of cryptocurrencies since the 2017 Initial Coin Offering (ICO) boom, as well as increasing regulatory scrutiny, 'onboarding' remains a significant challenge even for the most user-friendly web3 applications. Challenges range from the proliferation of new concepts and jargon; legal and regulatory barriers depending on locality; technical barriers of understanding how to set up and use digital wallets; the friction of fees required to process transactions; the inherent lack of trustworthy or canonical systems in an ecosystem filled with promoters, scammers, shillers and bots; the environmental concerns associated with proof-of-work blockchains such as Bitcoin. Ironically, for a system promoted for 'trustlessness', word of mouth between trusted friends and peers remains the easiest path to adoption—easier for technologists and artist communities, but more difficult for wider publics.  
 p.42

15. For example, the Uffizi Gallery in Florence turned to minting NFTs of Renaissance masterpieces by artists such as Botticelli and Michaelangelo through a partnership with Italian encryption firm, Cinello. The Whitworth Art Gallery in Manchester, in collaboration with Vastari Labs, minted an NFT of William Blake's *The Ancient of Days* to help raise funds for local community organisations. The Institute of Contemporary Art, Miami, acquired the non-fungible token (NFT) *CryptoPunk 5293*, marking the first NFT to enter a major art museum collection.
16. For example, ascribe, founded in 2013, was a protocol built on Bitcoin and an app for blockchain-secured digital art. Similarly, Verisart, founded in 2015, is a platform that certifies and verifies artworks and collectibles, both digital and physical, using the Bitcoin blockchain.
17. 2017 saw Bitcoin reach a then-all-time high of \$20,000, alongside an ICO market that grew nearly 100x between Q1 and Q4. While a great number of those projects subsequently died away, those with good luck and sound treasury management were able to create financial runways to build their products throughout the subsequent bear market.
18. 'Collectibles' is a term used to refer to digital files as collectible items. As 'non-fungible' tokens, NFTs are unique digital assets which can be traded but are not interchangeable with one another.
19. Due to the restriction placed on social life, lockdowns and the pandemic proved to be a pivotal period which saw a significant increase in retail investment activity in both traditional stocks and crypto.

20. Many 'profile picture' NFT projects that issued 10,000 combinatorial images (aka '10k pfp' projects), such as Bored Ape Yacht Club, became notorious status symbols with mainstream awareness bolstered by celebrity sponsorship.
21. Many artists who have not previously worked with digital media also entered the space, as it not only offered a lifeline in the shrunken cultural gig economy, but also opened up opportunities for artists who could not even conceive of having gallery representation.
22. Diverse examples include Holly Herndon's *Holly+*, Dom Hofmann's *Loot* and *Blitmap*, Area Technology's *Shields* and Jonas Lund's eponymous token (JLT).
23. See Nathan Schneider et al, *Exit to Community: a Community Primer* (2020).
24. Other Internet's 'Headless Brands' concept describes the generalised trend across distributed products and services.
25. Most notably, many popular NFTs are profile pictures, which serve as social signifiers for participation in a particular subcultural and investor community. As suggested by popular web3 slang such as 'frens', 'gm' and 'wagmi' ('we are going to make it'), the social and financial dimensions of collection, communal participation and investment reinforce one another.

26. In April 2022, NFT platform SuperRare announced that artists will be able to create their own smart contracts for minting rather than rely on SuperRare's standard smart contract, thereby giving artists greater agency over various parameters such as revenue splits. In a similar vein, proposals to modify technical standards in order to reform something within an ecosystem is a key feature of the decentralised technologies space. See for example, Ethereum NFT Royalty Standard Proposal to 'retrieve royalty payment information for non-fungible tokens (NFTs) to enable universal support for royalty payments across all NFT marketplaces and ecosystem participants' that followed the controversial decision by some NFT marketplaces to not honour artist royalties at the platform level.

27. NFTs from projects such as Loot, for example, fetched astronomical prices while still allowing non-owners to build projects on top of the content of its tokens.

28. Gitcoin Grants has so far used quadratic funding to allocate \$40 million in funds for web3 projects.

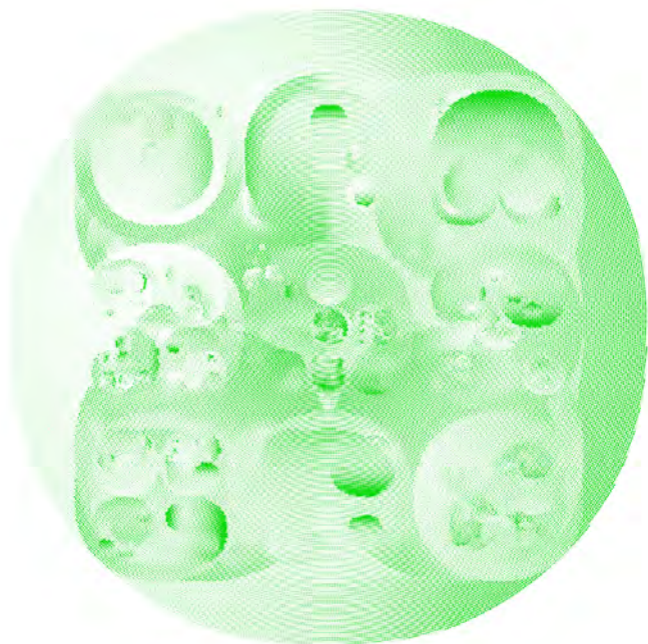
29. See Glen Weyl, Puja Ohlhaverand and Vitalik Buterin, *Decentralized Society: Finding Web3's Soul* (2022).

30. See Other Internet, *Headless Brands* (2019).

31. The MiladyMaker NFT was an example of a provocative pseudonymous project by an art collective that propagated a distinctive cultish symbolism across the crypto community, which has persisted even as interest in the core group has died down.

32. Moving Castles, a project for 'Modular and Portable Multiplayer Miniverse', is an ambitious proposal for a game world primitive which can be adapted by different communities.





# 2

## Prospects: From Limits to Possibilities

Primitives for 21st-century cultural infrastructure open up possibilities for aligning production, distribution and financial support of AxAT in multiple new configurations.

This harbours much generative potential for new organisations, which may opt to cross-breed legacy and decentralised models, and allow existing cultural organisations to rethink

and reorganise aspects of their set-up by referencing these patterns.<sup>33</sup> For practitioners of AxAT, such as artists, technologists and curators, the novel coordinative and economic tooling of decentralised technologies, buoyed by speculative investment, are an obvious testbed for community ☸ self-organisation,

collaborative production and para-institutional experimentation ☸.<sup>34</sup>



At the same time, it is important to enter this space of organisational experimentation ☸ soberly and with historical awareness. The emergence of the World Wide Web (web1) unleashed fundamental questions about the role of technology in society, many of which remain largely unanswered. The intensive



experiments of blockchain and web3 serve only as the latest variation in the longer project of reconstructing basic concepts and social practices from identity and agency, exchange and community ☸, to political organisation and participation, cultural production and distribution.



Echoing the techno-utopianism of web1, much of web3 relitigates the ‘networked society’, albeit this time by eliding the boundaries between paired concepts like sovereignty and individualism, possession and participation, economics and governance.<sup>35</sup> The rhetoric of decentralisation is often offered in flat opposition to centralised architecture, occluding the utility of hierarchical structures within technical systems and governance models, as well as the unsustainable emotional labour overheads that some decentralised structures necessitate.<sup>36</sup>

*We need to be careful that 'decentralised' does not lead to further 'atomising' of societies and social relations. The challenge for cultural institutions with a public mandate and/or public funding is to work with the grain of decentralising technologies, prioritising non-economic civic outcomes, whilst resisting their anti-public ideologies and tendencies.*  
–Seb Chan

From the perspective of AxAT, the hard question is: can the most recent wave of decentralised experiments yield tools  $\infty$  and insights into composable and polycentric forms of organisation and institution-building  $\infty$  with cultural, political and financial durability?



This chapter highlights some of the limitations of decentralised experiments in relation to non-blockchain specific *Creative R&D*  $\infty$ , *Delivery of Public Value*  $\infty$  and *Durable Structures*.<sup>37</sup> By drawing attention to these macrosystemic needs that are also underserved within the present model of cultural infrastructure, prospects for developing hybrid approaches are sketched out.



# Creative R&D: Collective Conceptual and Practical Experimentation that Allows for AxAT Innovation

*Creative action means making art into a verb—the effect of an artwork’s engagement with the world is an integral function of the artwork itself.*

—Barry Threw

Access to systems and provisions that allow artists to move upstream in technological development is at the foundation of thriving AxAT practices. Opportunities for artists to adapt technical proficiencies, put together multidisciplinary teams and have sufficient capital to underwrite long-term iterative experimentation 🌀 are necessary if they are to take advanced technologies as a medium for critical and reflexive artistic output—an essential contribution to democratic, technologically reliant societies.



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*If you have an investment into a community that is thinking about how to create a really productive ecosystem, rather than define a set of outcomes, loads of amazing things will come out of that.*

—Jo Lansdowne

*The key is going to be creating environments where people can play with this stuff and actually work out what those niches are, where they can contribute, where do they fit in, what is their thing?*

–Andrew Chitty

There are many early prototypes  $\infty$  of infrastructures that can support AxAT practices, both in terms of state-funded innovation  $\oplus$   $\infty$  projects and initiatives of individual cultural organisations across the globe.<sup>38</sup> In many respects, their existence is the reason why it is even conceivable to imagine a more interoperable  $\infty$  AxAT space where artists and creative practitioners can play with technologies and ‘work out what those niches are and what they can contribute’.<sup>39</sup> Ideally, they are contexts for production and experimentation  $\oplus$  that are non-linear and do not have to plug into an exhibition or performance or some other type of predefined output. They are, however, constricted by the limitations of their parent organisations and misaligned metrics.<sup>40</sup>



Nevertheless, it is important to keep sight of the infrastructural orientations and nascent affordances that these lab experiments for 21st-century cultural infrastructure have yielded. This is particularly critical in the context of blockchain, where there is a tendency to

ignore historical institutional precedents, and where ‘art’ is more commonly a narrative vehicle for catalysing community ☸ and infra-structural development, rather than the site of experimentation ☸ itself. Within the blockchain space, the funding logic relies too heavily on a speculative but covertly fixed idea of ‘art’—either through its association with a specific stakeholder community ☸ or an aesthetic vibe. As a result, blockchain could quickly lose relevance within the larger space of AxAT if its communities ☸ aren’t geared towards supporting open-ended ☹ experimentation ☸ with multiple technologies and non-web3-native practitioners and communities ☸.



At the same time, the malleability of the decentralised technologies space bears the potential of porting and nurturing both its logics and evolving ☹ technologies into creative R&D ☸ infrastructures, of which there are currently too few. More formal cross-pollination for AxAT experimentation ☸ could involve:




- Deploying web3 as the fundraising and PR arm of a creative R&D project. This is the lowest hanging fruit in terms of combining affordances, replicating the many instances of the legacy institutional space leveraging web3 for marketing and commercialisation.
- Organising DAOs more along the lines of an indie game studio, composed of technically competent people in a shared art-making collective (as opposed to a technically competent investment collective for whom art is a vehicle for gathering).
- State ‘digital transformation’ initiatives, such as Taiwan’s implementation of a collective deliberation app (POLIS), demonstrate how the public sector can engage in path-breaking R&D and roll out new democratic tools for deeper political engagement at scale. After all, it already has a captive ‘market’. Such initiatives should embolden public sector ambitions for creative and cultural R&D, turning publicly funded organisations into market creators rather than competitors.<sup>41</sup>



## Delivery of Public Value: Grounding and Situating Public Good

The 19th-century cultural institution cast itself as the steward of aesthetic judgement and the educator of a passive and receptive public—a patrician ethos that underpins many of today’s legacy institutions. Since then, the dynamics of access to culture, technology, education and information have changed dramatically. Thus, in addition to providing artists and creative practitioners the necessary means to experiment with contemporary media, an equally critical challenge of 21st-century public cultural infrastructure is to deconstruct and reconstruct its varied roles.

On the one hand, 21st-century public cultural infrastructure is situated  amid well-informed, technologically enabled and networked local and global publics. On the other, it should remain accountable to publics for whom the digital divide and various forms of dispossession are lived realities. To expect that a single institutional template can cater to the wide spectrum of public needs

is unrealistic and counterproductive. This calls for a greater diversity of institutional templates and modalities of delivering public value 🌐.



Nonetheless, cultural institutions in democratic societies retain an unmatched value proposition: that cultural production is a public good. They draw their power from the interaction between their roles as a centre of civic life (the public library), a cultural validator for the market (the rating agency) and a monopoly on the architecture of public memory (the state museum).

*DAOs enter their next phase when they introduce operations and objectives outside of the DAO itself... At a certain point they need to sit outside the project.*

–Kei Kreutler

Meanwhile, the challenge for new organisational forms such as DAOs and tokenised communities ☼ is to identify a public at all, beyond their immediate community ☼ of stakeholders. The self-initiated communities ☼ of the willing have accelerated experiments in organisational governance, yielding mixed results.<sup>42</sup> But they have yet to prove institutional value beyond mechanisms for self-reproduction, which are often based on fragile foundations within the wider economy of startup and venture capital investment, a trend that is beginning to shift.<sup>43</sup> In order to evolve beyond gated interests, DAOs would need to imagine a public beyond the community ☼ and a raison d'être beyond speculative returns and philanthropic hobbyism. In the context of 21st-century cultural infrastructure, DAOs would either need to emerge from communal ☼ needs and desires grounded 🌐 in social realities or provide services with demonstrable public value 🌐.<sup>44</sup>



As financial collectives  $\otimes$ , DAOs typically draw their communal value and mission from the interaction between speculative instruments (financial trading), sponsorship of projects (venture capital and philanthropy) and social network capital (multi-level marketing).

The rapid cycles of experimentation  $\otimes$  in decentralised organisations has demonstrated that purely financialised communities  $\otimes$  are not structurally sustainable for non-financial ends. While recent web3 discourse has shifted towards stewarding and developing public goods, more ambitious instantiations beyond native infrastructural tooling are scarce.<sup>45</sup>

Extant examples such as Gitcoin's Public Goods funding mechanisms and Gnosis' Zodiac DAO tools  $\otimes$  revolve around open-source  $\odot$  tools  $\otimes$  from within the web3 ecosystem.



*I don't think that tokenisation or co-ownership are valid models any longer. If you're lucky enough, your token can build a market, but it's no longer the norm. I think hybrid models are most interesting.*

–María Paula Fernández

The basic fungibility of financial stakeholder relationships provides a strong catalyst for building  $\infty$  speculative communities  $\otimes$  but produces weak links for public institution-building  $\infty$ . The recognition of a public beyond the community  $\otimes$  requires the separation of governance and economic power within tokenised communities  $\otimes$ , in order to create lasting non-financial incentive structures. Whether geographically specific or translocal, a relationship to 'place' depends on *non-fungible bonds* created through shared labour and material concerns. While tokenised models require transitioning to more-than-financial community  $\otimes$ , legacy institutions can utilise these hybrid models to augment their fundraising strategies:



- Organisations may adopt a 'bait and switch' manoeuvre: bootstrapping initial funding through token-based speculation before pivoting to a community infrastructure untethered to speculative value.<sup>46</sup>

- Other organisations have taken the opposite approach, in which a service demonstrates its public utility conventionally before distributing tokens to its user base. Analogous to a traditional IPO, the token distribution aids fundraising by creating a vector for speculative investment while also turning its users into a decentralised ownership and governance community.<sup>47</sup>



- A mission-oriented organisation that uses speculative incentives to propel a directionality and achieve a finite end goal. The token community is a vanishing mediator, which dissipates once this goal is achieved.<sup>48</sup>



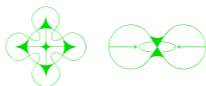
# Durable Structures: Ability to Navigate Market Cycles and Legal Thresholds

*I feel the digital art economy is quite fragile, especially if all the people in crypto who are in it for speculative reasons will see something else within crypto that will give a higher turnaround, then they will drop the artist.*

–Harm van den Dorpel



It is important to recognise that decentralised technology spaces and cultural organisations serve multiple stakeholder communities ❀ (e.g. investors, artists, day traders and technologists) and are bound by multiple and conflicting temporal horizons. The metabolic rate of technological development and market dynamics in blockchain is currently asynchronous with sustainable networked community ❀ growth and long-term oriented artistic processes and institution-building ∞. The former boosts fast-paced momentum through speculation, availability of idle capital and relative regulatory vacuum, while the latter rely on legal forms of governance for longevity and accountability. In their extremes, both domains are antithetical to conscious, systemic and values-driven advancement. However, if they are able to be responsive to mutually triggered challenges, adaptable and durable infrastructures could emerge.






While legacy institutions balance multiple interests through internal and external hierarchies and legal due diligence, these

bureaucracies also limit their capacity to develop, scale and integrate new governance mechanisms, ownership and operating models, and outcomes. Meanwhile, decentralised organisations that optimise quickly for specific new products and service verticals (e.g. blue chip NFTs, generative artworks and curatorial tools ☹️) can develop effective narratives for community ☸ formation, but also bear a greater risk from market volatility. As the market cools, even organisations with strong network capital in legacy and web3 worlds have failed to develop a market around token communities ☸ for long-term viability.



In a similar vein, the imaginative affordance of DAOs as proto-fictional organisational blank canvases is also their greatest limitation in transitioning to more durable forms of infrastructural commitment that are required by AxAT. DAOs' lack of legally recognised status may be beneficial for anonymous peer-to-peer campaigns across jurisdictional boundaries. However, unresolved questions around personal liability for investors





prohibit long-term projects from emerging, particularly where cross-integration  of physical infrastructure and non-DAO member communities  would be required. There are a number of costly legal workarounds for operating DAOs as ‘real world’ entities, and these involve complex navigations of the nuances that separate regulatory architectures relating to incorporation, taxation and securities in different jurisdictions.<sup>49</sup> A more thorny topic concerns the potential regulatory clamp-downs such as the recent sanctioning by the U.S. Treasury Department of for-profit deployment of the Tornado Cash open source  code, which led to a developer who had built on that code being found criminally liable.<sup>50</sup>

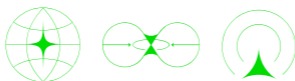


*Policy and software are converging.*  
–Ben Cerveny

*Licensing is so invisible, yet so essential for innovation in the context of infrastructures for new knowledge and creativity.*

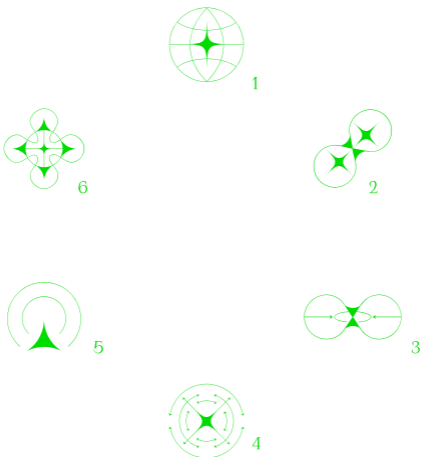
–Catherine Stihler and Brigitte Vézina

Despite the potentially adversarial relations between regulators and decentralised technologies, there is also a great potential for legal and regulatory innovation  , particularly vis-a-vis cultural production. If the 'networked' world of open  code is replicable, scalable and malleable, the 'analogue' world of legal code is top-down rulemaking and policy. Cross-pollinating ideas between these two worlds allows imagining possibilities where the reliability of traditional legal mechanisms can be combined with decentralised models for governance and decision-making, and permissive IP . Such models could include:



- Trading an artwork as a digital asset (e.g. NFT) but licencing its constituent elements (code, aesthetic layer) under various copyleft licences that open up usage and circulation.
- Traditionally, policy has been understood as a top-down phenomenon emerging from the state. However, with increasing deployment of software systems that codify interactions, technology development is a new pathway for influencing the conceptual space of policy-making from the ground up.
- Hybrid models that utilise elements of non-profit, limited liability partnerships or other legal entities, and innovate around interfaces with DAO structures, for example as a way of using DAOs as organisational extensions that open up governance and distribute decision-making to wider communities.

Prospective qualities for a mission-oriented AxAT ecosystem supported by decentralised technologies:







Prospects

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- 1 Cultural production as a public good
- 2 Interoperable service ecosystem
- 3 Tools creating culture
- 4 Valuing creative R&D
- 5 Open source
- 6 New ownership models

# Notes 33–50

33.  For example, Black Swan DAO is an artist collective 'pursuing horizontal and decentralised approaches to art making' by prototyping decision-making and governance mechanisms for allocating art production funding. Another example is Zien—a WhatsApp channel for collecting contemporary art as Expanded NFTs: digital art with material presence'.
34.  For example, using DAOs to plug new stakeholder collectives into existing institutions to augment audience participation and/or trustee boards.
35.  The ideological and technical conditions comprising a self-sovereign conception of 'ownership' in web3 underpins many of these dynamics. For most current web3 applications, token ownership simultaneously serves a fungible supply of personal capital, an access key for token-gated spaces and actions, a share in the ownership of the relevant project, and a supply of votes in on-chain decision-making.
36.  See Balazs Bodo, Jaya Klara Brekke and Jaap-Henk Hoepman, *Decentralisation: a multidisciplinary perspective* (2021), where the authors argue that 'in practice, decentralisation might very well be served by and produce centralising effects'. For example, 'a cryptocurrency system might comprise a distributed network of nodes, while producing highly centralised effects in terms of wealth or other resources, or a protocol might be designed and promoted as *distributed* but then only be run on a handful of machines owned by the same company'.



37. Both *FAE1* and *FAE2* highlighted these as priority areas for AxAT practitioners and organisations from different perspectives: in terms of the ad hoc infrastructural plays that AxAT artists construct in lieu of appropriate institutional provisions, and in terms of the vectors for developing 21st-century cultural infrastructure that can orient cultural organisations in taking on the challenges of metaverse technologies in an empowered and socially responsible manner.

38. Examples include Innovate UK and EU Horizon projects, as well as hybrid cultural organisations including New Inc, Gray Area, Eyebeam, ACMI, V2 and many others.

39. Large-scale art and technology initiatives like the EU-funded STARTS programme view art as a pathway to innovation but have produced limited successes, arguably due to the overdetermination of R&D goals.

40. Most prominently, audience footfall metrics and centralised budgeting.

41. See Mariana Mazzucato *From Market Fixing to Market-Creating: a New Framework for Innovation Policy* (2016).

42. The popular web3 concept of 'squad wealth', for example, makes a virtue of small-band libertarian voluntary communities amongst atomised but entrepreneurial freelancers—a heartwarming imaginary against corporate 'wage-cuckery', but resulting in competitive business as usual at scale.




43. 2022 saw the beginning of what has been widely characterised as the popping of the tech bubble, with significant stock market wipe-outs in the value of giants like Meta and Amazon. Meanwhile, Silicon Valley commentators are also beginning to question the confidence with which venture capital firms like a16z have invested in web3.

44. Under the stewardship of Ruth Catlow and Penny Rafferty, the *Artworld DAO Think Tank* hosted by Goethe Institut London in February 2020 led to the development of six prototype Artworld DAOs, each mobilising networks and responding to the immediate priorities and cultural contexts of their cities. See also *Radical Friends: Decentralised Autonomous Organisations and the Arts* (2022).

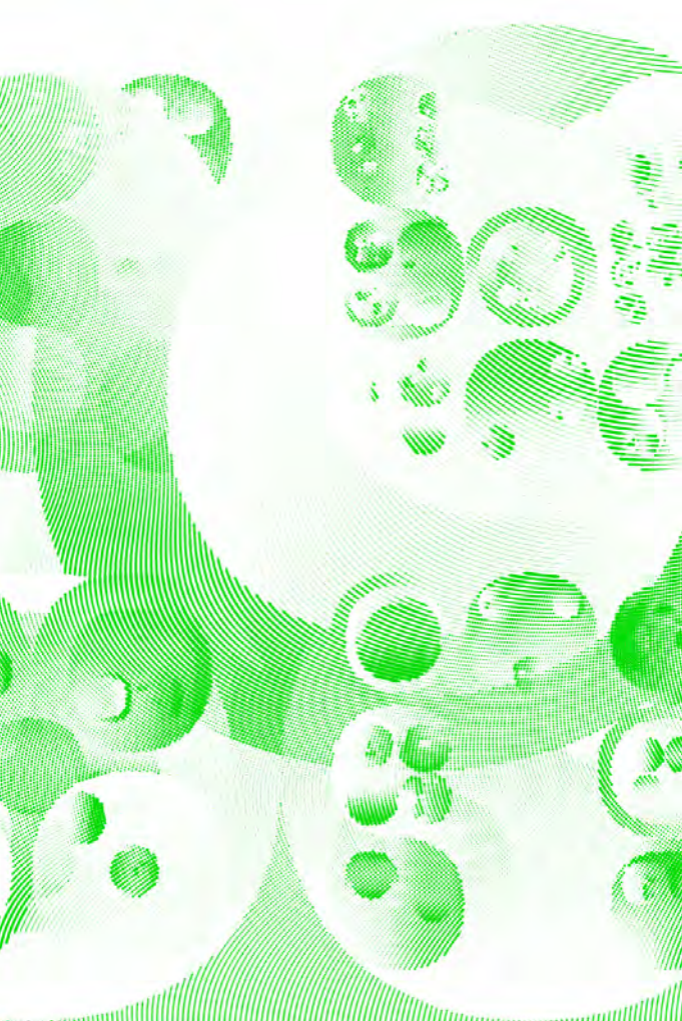
45. See Other Internet's *Positive Sum Worlds: Remaking Public Goods* (2021).

46. For example, the token-gated cultural community Friends With Benefits (FWB) saw a surge in popularity over the pandemic and a dramatic increase in its token prices, which have since decreased. However, likely owing to its strong roots in the U.S. creative scene and focus on in-person events, an engaged community persists.

47. Ethereum Name Service (ENS) is an example of a crypto-native service with demonstrated utility: allowing Ethereum users to attach readable names to their addresses, analogous to how we use web domain names instead of IP addresses. The project then launched an airdrop distributed between ENS users, a development team and a community-governed treasury, creating significant market capitalisation while also instantiating a delegate-based governance system.

48.  p.87 An example of a mission-oriented project is Ukraine DAO, which was spun up days after Russia's full-scale invasion of Ukraine on 24 February 2022. Led by Nadezhda Tolonnikova of Pussy Riot, Alona Shevchenko, digital artists Trippy Lab and endorsed by Vitalik Buterin (co-founder of Ethereum), within weeks UkraineDAO raised more than \$6.7 million in support of Ukraine's army and the NGO Come Back Alive, by selling 10,000 non-fungible tokens (NFTs) of the Ukrainian flag. Another example is ConstitutionDAO, a meme-driven attempt to purchase a copy of the U.S. constitution at Sotheby's, which managed to raise over \$40 million in a short period. While the project had dubious leadership and ultimately failed (they were outbid by a hedge fund manager), it exists in an emerging pattern of disruptive, networked, financial activism seeking to use speculative investment and network effects to rapidly achieve single-issue goals. An example from the art world is the sale of the Balot NFT series by CATPC—The Congolese Plantation Workers Art League—a cooperative of plantation workers based in Lusanga, Democratic Republic of Congo, to buy back land currently owned by companies such as Unilever.
49.  p.91 Delaware, British Virgin Islands, Malta, Gibraltar and Switzerland are increasingly common legal abodes for 'landing' DAOs and their ownership structures as legal entities. As these locations indicate, legalisation of DAOs is falling into an existing map of offshore jurisdictional spaces that are lax on financial and tax regulations.
50.  p.91 This was the first time a government department blacklisted a piece of technology not explicitly tied to a person or an entity. In the US, the landmark case *Bernstein v the Department of Justice* (1996) established that computer code should be considered speech and hence writing code should be protected as free speech by the U.S. Constitution. As a result, while the Tornado Cash code was brought back on-line since its removal constituted a limitation on free speech, the precedent of criminalising development on open source code puts web3 developers in a potentially precarious legal position.







# 3

## Proposals: Pathways to Interoperability

The developmental agendas for 21st-century cultural infrastructure and society-wide technological infrastructure converge around the question: how should institutions be organised to embody and support dynamic democratic societies?

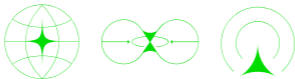
The vision proposed by *FAE3* is one in which cultural infrastructure is made, and made available, by many actors with widely divergent interests but united by common standards that engender interoperability <sup>Ⓔ</sup>. These actors, including but not limited to artists and existing institutions, provide AxAT infrastructural tooling that is generated as a byproduct of their ongoing practices—code, datasets, systems, spaces and so on.



The cultural institution of the 21st century is accordingly a federated entity, a decentralised but coordinated system composed of multiple different systems pursuing their own missions at different scales. A future art ecosystem is only made possible by mass interoperability—beyond (and not the same as) marketisation.



Cultural institutions at present already comprise a market, especially those at the larger end of the scale: similar organisations presenting similar ‘cultural offers’, which are differentiated by details of location, architecture, archive and curatorial programme, and which are in competition for funding and footfall. Moreover, cultural institutions with a mandate for creating public value  can act as market creators rather than competitors in the field of AxAT. Our proposal is closer to a GitHub for the arts; a common protocol drastically lowers barriers to entry in terms of building  institutions through open  development.



In the context of AxAT, *F&E2* identified a series of developmental vectors:

1. Investing in advanced production capabilities.
2. Recognising and supporting expanded economic and distribution rationales beyond the state and philanthropic donations, the art market and the presentation of work in brick-and-mortar/online spaces.
3. Harnessing new proficiencies for deeper engagement with users-as-stakeholders by moving away from the 'broadcast-to-audiences' model.
4. Devising new systems of measurement beyond footfall.
5. Building for interoperability.

For individual institutions, a strategy that responds to vectors 1 through 4 will look radically different if vector 5 is either taken as a fundamental protocol or rejected. Without 'interoperability'  $\otimes$ , building  $\otimes$  an institution that can 'do AxAT well' would mean building  $\otimes$  proprietary and gated art tech stacks that could produce sensational and wide-reaching AxAT projects. Such an endeavour is extremely challenging, carries high risk

and requires copious amounts of investment. Only a handful of institutions with the appropriate leadership and network reach will have the capacity to transform themselves into such monoliths, but in the process, an even more polarised and oligopolistic cultural sector, where opportunities and resources are even more uneven than today, could emerge.



If, on the other hand, ‘interoperability’ <sup>⊕</sup> serves as an underlying protocol for all of the other four vectors, a different vision for 21st-century cultural infrastructure becomes possible: one that is grounded <sup>⊕</sup> in ecosystemic awareness, development of systems and new organisations that create links across institutional and sectorial borders, innovation <sup>⊕</sup> <sup>⊗</sup> <sup>⊖</sup> around financial models for distributing value across entities, and where the infrastructure can perform social values. *FAE3* offers three possible pathways for developing an interoperable <sup>⊕</sup> 21st-century cultural infrastructure based on the insights gained around primitives and prospects related to decentralised

technologies. A reframing of organisational mandates, art-industrial strategy and public stakeholdership is needed to identify interoperable <sup>Ⓐ</sup> goals and restructure cross-sectoral incentive structures.



*Continuous Service Architecture* straddles the operational and the ideological. It shows that, strategically, the low-hanging fruit for AxAT is to recognise that all the pieces for greater interoperability <sup>Ⓐ</sup> are there, but the value chain needs to be realigned in order to allow common agendas to meet.

*Distributed Ownership* demands assessment of the conditions of stakeholdership, ownership, risk-taking and investment. It means empowering public cultural infrastructure to assume the mandate of creating the conditions for innovative and experimental <sup>Ⓢ</sup> public goods.

*Modular AxAT Practices* proposes decen-  
trating the individual artist-auteur in favour  
of valorising ambitious inter-disciplinary

productions as fundamentally collaborative entanglements of technical and conceptual processes emerging from hybrid, interdependent practitioners. For a flourishing AxAT ecosystem, the organisational and cultural conditions of multimodal artistic labour must be enabled by cultural institutions, educational frameworks and artists alike.

These pathways are put forward as starting points for conversation and prototyping, to hopefully become part of a much wider array of strategies and, most importantly, collective ❖ operational realities.







# Continuous Service Architecture: An Infrastructure for Composable Organisational Practices

*We are in a transitional period. The challenges aren't at the scale of institutions, they are at the scale of industries. There is a real desire to go beyond fragmentedness, to go beyond individual processes and individual projects and to try and establish a methodology and a practice that are connected.*



–Annette Mees

# Context




If decentralised technologies have a role to play in the long-term horizon of AxAT, it is as an organisational logic for an open  technology stack in service of public cultural innovation   . The present trajectories of artistic R&D and societal-technological development are intertwined but idiosyncratic because their value systems, metrics and institutional structures are incommensurable and dysfunctionally mediated. Institutions are over-indexed on exhibitions and footfall, competing in a content-driven economy when their true leverage lies upstream in shaping the conditions of cultural production. Conversely, many of the processes of technological development that have driven societal change are under growth pressures that preclude external reflection.




Artists aiming to work upstream of cultural production end up freelancing as strategic consultants. Experimental  technologists

are caught between underpaid technician gigs and the corporate machinery of big tech. An open , full-stack approach to AxAT ‘exists’ only in fragments spread across institutional bureaucracies, part-time practices, pro bono collaborations and a handful of prodigious all-rounder individuals—elsewhere, they are built into proprietary production and consultancy models, where experimental R&D  are made possible only by corporate gigs.



As a result, the logistical back-end in culture is shallow and discontinuous, driven by the outcomes of individual projects rather than the potential value created by the developmental process itself. For example, AxAT commissions often involve specialist technicians who develop a minimal viable prototype for the exhibition, but without sufficient investment in the R&D process to render technical outcomes reusable by others. Moreover, collaborations between public cultural institutions exist largely at the level of project-specific partnerships, whereas back-end innovations   , from technical



display tools  to audience engagement methodologies, are typically siloed within individual institutions.



The result is a public cultural sector that is over-leveraged and under-resourced in the competitive market of content production. Meanwhile it underplays its infrastructural role and unique position to shape the value chains of culture, cross-sector socio-technical innovations   , artistic R&D and civic cultural participation. Institutions are limited to competing with market players on the narrow scope of partnerships oriented to project outcomes, while artists unable to access R&D funding are funnelled towards conventional production modes and marketable formats.



## Where to Start?

A standard and organisational consensus around the sharing of basic resources, metrics and R&D labour would lay the logical foundation for an interoperable public cultural infrastructure. Just as the Foundation for Public Code stewards codebases to be reused and adapted across municipalities, an analogous logic for cultural organisations would resemble interconnected infrastructural stacks comprising in-house tools, organisational methodologies, technical capabilities and strategic networks. For example, a DAO developing AxAT research and infrastructural tooling spun out from Serpentine's R&D Platform could be contracted by in Tate's Turbine Hall commission, while consulting with the Australian Centre for the Moving Image (ACMI) on audience engagement methods.

Technical standards and protocols are needed for bringing different layers of operation into common currency. For example, at University of the Arts, London (UAL), the Creative Computing Institute (CCI) offers training and diplomas in creative technology to students across UAL, allowing textiles, illustration and

film students alike to gain fluency in emerging technology stacks. Artists experimenting in AxAT and other boundary-rich domains often require access to specialised R&D needs beyond the conventional scope of ‘culture’, such as legal support, scientific expertise and advanced technological tools ☹️. Such requirements are typically dependent on happenstance and personal connections. At the same time, practitioners across these fields are often aligned in their desire for experimentation 🧪 and space to collaborate, and developing more formal access points for artists and cultural practitioners to plug into specialised domains within research and industry contexts. For example, the ‘percent for art’ rule according to which in a number of different jurisdictions, anywhere from 0.5-2% of total costs of building ☹️ budget must be spent towards public art, could be adapted to apply to universities and companies specialising in societally strategic areas for opening up 🌐 sharing and developmental capacity (i.e. know-how, time or space) for the cultural sector.<sup>51</sup>



For individuals and small groups, the ethos of ‘researching in public’, which underpins social platforms like Are.na, enables communities of creative practitioners to share research and methodologies in both intentional and passive ways. By definition, a public exceeds the voluntary community ☼ and denotes that which is held in common, both good and bad. Exposed application surfaces allow public organisations to inter-operate with an openness 🌀 to peers and users who have yet to be specified.




An exposed operational surface allowing internal and external users to interact with an organisation’s internal functionalities could guide organisational primitives with functions akin to a software service’s Application Programming Interface (API). Existing examples of exposed application surfaces include public technical platforms such as Transport for London’s open data 🌀 API, or organisational knowledge bases such as wikis.<sup>52 53</sup> The UK government’s Contracts Finder interface is another example of an

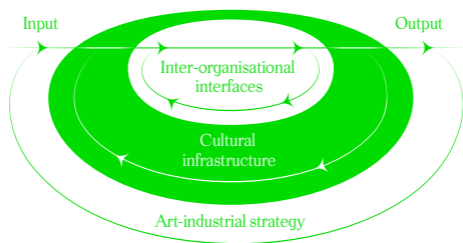

 exposed organisational surface for well-defined procurement needs.<sup>54</sup> Whether as a partnership approach or a public resource, interfaces that enable as-yet-unknown users to plug in to an organisation's backend functionalities allow more bottom-up and permissionless forms of ecosystemic innovation 🌐 🌐 🔗.



Like decentralisation, openness 🌐 can lead to its own enclosure. For example, Uber makes use of Transport for London data even as it thwarts regulatory oversight, while many of the most important open-source 🌐 projects are managed by Google and Meta.<sup>55</sup> In order to maintain a balance between openness 🌐 and risk, a traceable decentralised protocol between service users and providers, along with flexible licensing arrangements, would enable complex interoperations across the cultural ecosystem.


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Proposals

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*Feedback loops between different layers of coordination required to operationalise 21st-century cultural infrastructure*

## Inter-organisational interfaces

- Methods-level interoperability  $\otimes$   
(common knowledge and practices)
- Equipment and resource sharing

## Cultural Infrastructure

- Organisational-level interoperability  $\otimes$   
(commensurable metrics and protocols, provenance)
- Tool-level  $\otimes$  interoperability  $\otimes$   
(reusable R&D  $\otimes$  outcomes)

## Art-industrial strategy

- R&D  $\otimes$  programme interoperability  $\otimes$   
(shared/pooled R&D  $\otimes$  processes)
- Public infrastructure interoperability  $\otimes$   
(with non-art supply chains)



# Distributed Ownership: Configuring Risk-taking and Investment across Distributed Networks of Stakeholders

*Something institutions could learn from the tech industry is how to build software - it's a real skill and the skill is not primarily programming. Instead, it's to think about problems the way a startup team thinks about problems. That often means stripping what you're building down to something very lean, getting ready to iterate quickly, and failing sometimes. This is not a compatible approach to public funding, which tends to want you to know what you're doing and have a plan at the beginning.*

—Sarah Friend



## Context

Cultural production is not a constant: it flourishes and flounders in relation to geo-political, ideological, technological and economic conditions. Cultural and scientific infrastructure since the 19th century, particularly after the Second World War, has acquired a national and democratic character, with a nominally universalist mandate. While the receipts may tell a different story, today's private museums and foundations alike model themselves on the image of public museums and stewards of public goods, while public museums are powerfully dependent on private capital. Over the post-war era, global cultural institutions and funding programmes were a key pillar of the West's propaganda strategy against communism. The Goethe Institute, for instance, continues to be a fundamental source of cultural investment across the Global South.

A latent modernist impulse of contemporary cultural production underpins the broad, self-reflexive role it plays in exploring the conditions of society and experimenting with emergent systemic imaginaries. This agenda remains crucial amid today's globalised,

technologically-mediated societies. However, the dynamics connecting cultural production, techno-scientific innovation    and the realities of sociopolitical organisation have shifted considerably since the post-war decades. As FAE has continually argued, a realignment of values, capabilities and sites of intervention is needed for cultural production to fulfil its role in shaping a wider social agenda. Continuous service architecture invites new imaginaries of organisational interoperability , but further new models of ownership—of technological processes, economies of knowledge, and organisations themselves—are needed to meet the demands of dynamic cross-sector cooperation and high-risk investment.



*How do we then start to think about the network of ideas and interconnections and then pull on other forms of resources, tools, networks and broader cultural paradigms to be more of a reflexive space?*

—Maitreyi Maheshwari

*We don't yet have a place in our heads to think about a public institution taking the place of a Facebook or a Google or an Uber.*

–Ben Cerveny

## Where to Start?

For AxAT, decentralised technologies and concomitant organisational logics have pointed the way towards new models of hybrid ownership and civic participation within cultural and technological production.

*Quadratic voting, quadratic funding, partial common ownership, data coalitions: these things have the potential to make traditional institutions work better and to unlock really useful innovation. Genuinely democratic innovation.*

–Matt Prewitt

For example, tools  $\infty$  like Black Swan DAO's Cygnet software or RadicalxChange's quadratic voting mechanisms are valuable technological articulations of self-organised modes of decision-making, which offer participants more direct and nuanced forms of agency and deliberation over processes of resource allocation and curation.<sup>56</sup> At the level of protocol, these tools  $\infty$  can allow multiple organisations to convene around standard setting, in order to allow for needs, capabilities and metrics to become comparable.



Models of public investment–state funding but also commons-oriented frameworks based on Creative Commons  $\infty$  and open source  $\infty$  software—should be emboldened to claim the returns on socialised risks.<sup>57</sup> Competition for public funding should be aligned with the systemic aim of inter-organisational technology and sharing knowledge.




*Within a decentralised economy, the role of an institution is something quite different –it is still to address an audience, but not to amass power and instead redistribute it back to artists and make sure that the connection between the artist and the public is a peer-to-peer-connection.*

–Kelani Nichole






Through the much-needed separation of economic and governance power, decentralised technologies such as DAOs can shed their speculative and plutocratic dynamics, freeing ‘tokens’  to take on more pluralistic functions within a decentralised ecosystem vis-a-vis access, identity and ownership. For example, token-based  models of cultural organisations could enable layered structures for the public ownership of public works; possibly, even by allowing audiences a stake in the work or in shaping a curatorial programme, while also enabling avenues for external investment as a risk buffer in complex projects.



One other plausible structure would be analogous to existing instruments like social impact bonds. Here, an AxAT project with agreed parameters and goals (whether qualitative or metrical) would be bootstrapped by public institutional funding while inviting private funds, with returns contingent on the project’s successful completion of those goals. For artists and institutions, this could result in alignment with longer time horizons for R&D

processes necessary for experimental  works. For external funders, it could mean partial exhibition rights, participation in derivative projects and cultural capital. The MIT Media Lab, for instance, uses a ‘membership’ model whereby sponsor companies fund the institution without specific outcomes but may partake in the intellectual property (IP) created in its labs.



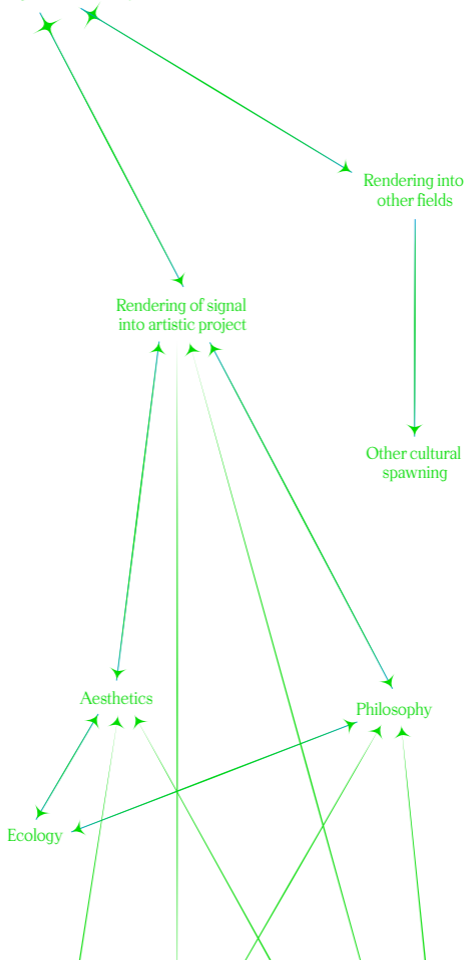
Within the Legacy Formation, cultural institutional funding often performs the role of selecting, nurturing, validating and ‘de-risking’ ambitious artistic practices. AxAT, on the other hand, proposes the space of art as an ecosystem of open-ended  aesthetic and socio-technical innovation    and experimentation , with both higher risks and higher rewards. A hybrid ownership model, which instantiates the structures of ownership within a work or organisation (between artists, institutions, the public, private backers and wider stakeholders), could offer a more equitable distribution of risk, value and longer-term stakeholder alignment within AxAT projects.



Modular ownership models would draw necessary resources into R&D outcomes while extending the scope of public cultural investment beyond the exhibition and through the lifetime of the project. Such a renegotiation of the artistic and institutional contract would keep private funding in the picture but position the work of AxAT as an ongoing avenue of investment in a public good.



Signal from society



Rendering into other fields

Rendering of signal into artistic project

Other cultural spawning

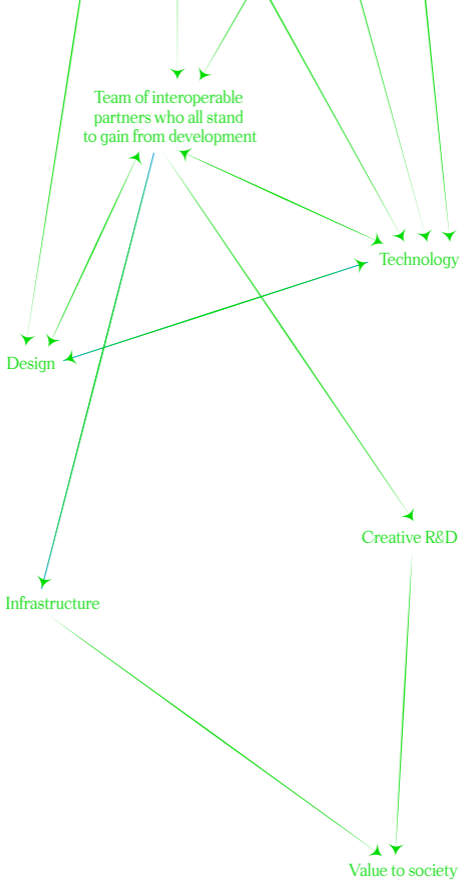
Proposals

Aesthetics

Philosophy

Ecology

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*Towards a more interoperable and societally integrated ecosystem for AxAT*

Modular AxAT Practices:  
Decentring the Individual,  
Distributing the Aura  
and Hybridising Authorship  
in AxAT

*Producing new work, or aiming to produce new art forms, is our primary goal. So it's inherent in our mission to constantly be at that forefront of our field. Even though we're not explicitly determining what that forefront is, people know that if they want to do cutting-edge work, we have a platform for it.*

–Michel van Dartel

While the work of AxAT is fundamentally interdisciplinary in its experimentation ☼ with emergent technical frameworks and cultural forms, the scope and capacity for this work to develop depends on the availability of skills, particularly in the traversal of artistic and technological terrains. The reality for contemporary institutions working with AxAT productions is that most ambitious projects depend on a small network of technically-fluent artists, artistically conversant commercial agencies and independent technologists.



The propositions of *Continuous Service Architecture* and *Distributed Ownership* point to the ways in which decentralised logics can reconfigure logistical affordances and valuation mechanisms at ecosystemic and organisational scale. The remaining scale of intervention is perhaps the one most precious, and rightly so, to the institution of art: the artist. But perhaps, in the context of AxAT more than others, the aura emanating from the individual artist genius is a smokescreen behind which interdependent collaborators—producers, programmers,

technicians, fabricators, writers—subsist, many of whom are artists themselves. That is to say, an informal interoperability  $\otimes^p$  already exists between AxAT practitioners sharing technical skills, networks and expertise deriving from the hybrid nature of their practices.



Often, this resembles a case of arbitrating between the material conditions of collective  $\otimes$  labour and the precarious production of individual aura demanded by the art world. Indeed, cultural institutions could learn from such operational strategies. At the same time, this situation fails to recognise that most AxAT productions function more like a short film with a skeleton crew or the work of an indie game studio than the heroic image of an individual artist. Such collaborative models are less concerned with the abolition of hierarchy than with the interdependency of capability.



## Where to Start?

For a thriving AxAT ecosystem, cultural institutions need to shift away from systemic dependencies on a small number of well-placed technologists, and develop wide-ranging interfaces with hybrid practices that comprise AxAT beyond the conventional profile of solo artists. While emerging technologies are often fetishised, the actual work of technical labour in AxAT is typically under-recognised in the consequent artwork. This effect speaks to the wider problem consistently addressed by FAE: the undervaluation of R&D processes.

Amongst the unique resources of cultural institutions is their role in the validation and attribution of cultural value: their production of aura. To develop the ecosystem of AxAT labour would mean to recognise and incubate the work of collective ☸ entities and to elevate collaborative models of AxAT production at the level of institutional strategy as well as on a project-by-project scale.<sup>58</sup> Cultural institutions exploring AxAT could serve as a hub connecting networks of prospective AxAT practitioners in order

to exchange capabilities and catalyse longer term co-productions.<sup>59</sup>



For practitioners, the question is also one of socialised risk, both in terms of the precarious rewards of artistic labour, the capricious nature of artistic clout and the high-risk nature of AxAT projects. Much like older, analogue initiatives such as the Artist Pension Trust (APT), DAOs could be an effective tool for the pooling of uneven collective ☸ income. Moreover, the modularisation of identity enables a decoupling of artist from artwork which would mean that hybrid practitioners can operate across multiple collective ☸ entities and projects, in a manner which compounds rather than detracts from their legibility and standing as a solo artist.<sup>60</sup> As it stands, supporting roles are often elided by a single-author artistic convention. Not unlike an IMDb page, a practitioner may have a hand in multiple works in different capacities. On the one hand, this is the formalisation of an interoperability ☹ which already takes place invisibly. On the other hand, it blurs the












distinction between ‘artist’ and ‘non-artist’ in the work, diffusing the auratic valuation of complex and experimental ☒ productions across the AxAT ecosystem. At the level of provenance, if works are authenticated to the blockchain, attribution mechanisms can be implemented for relevant hybrid practitioners to be credited as part of the artwork’s metadata, along with automatic royalty distributions.



While ‘authorship’ and ‘provenance’ are key sources of value of a work, their structural integration ⚙ through the smart contract transforms them into functions and tools ⚡ for artistic organisational innovation 🌐 ☒ ⚡. A more distributed concept of aura can serve as a building ⚡ block for organisational experimentation ☒ rather than something that is transferred from the artist’s studio to the gallery and to the art fair. This means that the roles of ‘art’ and ‘artist’ can be transformed into structural positions that can either be developed into a platform, a full-stack innovation 🌐 ☒ ⚡ proposition or a community 🌐.

# Notes 51-60

51. Such a model would effectively function as a 'social goals' tax on closed IP models.  
 p.115
52. See Transport for London's open data platform.  
 p.116
53. See Gnosis Guild's Zodiac Wiki.  
 p.116
54. See gov.uk's Contract Finder interface.  
 p.117
55. See Natasha Lomas *Uber Adds Real-Time Public Transport Data for London* (2019), and Adrian Bridgewater, *The Impact of Tech Giants on Open Source* (2019).  
 p.117
56. For example, Furtherfield—an art organisation in London's Finsbury Park—has developed Culture Stake, an app that uses quadratic voting to engage wider communities in making programming decisions.  
 p.125
57. In Germany, institutional bureaucracies such as Kulturveranstaltungen des Bundes in Berlin typically block the usage of internally developed technical resources such as code-bases to external collaborators on intellectual property grounds. Creative Commons licensing of public cultural productions is frequently forbidden.  
 p.125
58. Indeed, artistic collectives have lately been valorised within contemporary art but fetishistically: often positively identified with utopian social aspirations and laced with a hint of martyrdom against the competitive, individualised nature of the traditional art world.  
 p.135

59.  An example of a reconfigured historical effort within that vein is E.A.T\_WORKS—‘an experimental Web3 art organisation that takes its name and inspiration from Experiments in Art and Technology (EAT), founded in the 1960s by artists Robert Rauschenberg and Robert Whitman together with Bell Labs engineers Billy Klüver and Fred Waldhauer’, and specialises in matching artists and technologists, whilst underwriting the effort by building tools and community for collecting NFTs.

60.  For example, see The Sphere as an example of utilising collective fractal ownership to develop a model for supporting cultural production.

# Postface

'Worlding' is a concept the artist Ian Cheng—with whom Serpentine collaborated to birth the artificial lifeform *B.O.B.* in 2018—describes as: 'the art of devising a world: by choosing its dysfunctional present, maintaining its habitable past, aiming at its transformative future, and ultimately, letting it outlive your authorial control.' It is precisely this notion that informs Future Art Ecosystems in its pursuit of meaningful organisational and ecosystemic development, as this is driven by Serpentine's belief that art and artists can shape how worlds are built.

It is hard to ignore the impact that decentralised technologies are having, not only on art and culture, but on society as a whole and the legacy public and private institutions through which our world-view has been formed. Creating the dynamics for creative collaboration across traditional boundaries and the support of artistic practice at this nascent stage is vital. Since 2018, Serpentine's R&D Platform has supported experimental

research in this area through its Blockchain Lab, led by Ruth Catlow—the pioneering co-founder of London’s Furtherfield and, more recently, Penny Rafferty—writer and visual theorist, who now co-directs the ongoing practical and theoretical prototyping that the lab undertakes. The lab’s early focus on Decentralised Autonomous Organisations (DAOs) and how these shift our understanding of governance, transparency and agency has been hugely influential on both this briefing and the wider cultural sphere.

As always, *FAE3* is informed by the network of practitioners and organisations across art, science, technology, research and policy who contribute to the ever expanding AxAT ecosystem and with whom Serpentine Arts Technologies is so glad to continue collaborating as we look to the future of our shared worlds. We are immensely grateful for their time, expertise and dedication.

We would like to thank Gary Zhexi Zhang, Harm van den Dorpel, Sarah Friend, Aslak Aamot Helm, Marta Ferreira de Sá and Benedict Singleton of Rival Strategy, Roxy Zeiher and Sarah Shin for their vital contributions in shaping this briefing.

We are indebted to Ben Vickers, former CTO and founder of the Arts Technologies programme at Serpentine. It was his vision and knowledge of the blockchain space that, after nine years of patience and guidance, has led us to this briefing.

Finally, we would like to express our gratitude to Serpentine Arts Technologies: Alex Boyes, Tamar Clarke-Brown, Victoria Ivanova, Eva Jäger, Róisín McVeigh and Kay Watson.







# Biographies

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**Andrew Chitty**

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**Peter Wu**

generates artworks and immersive environments utilising modeling and rendering software, projection mapping, 3D printing, and machine learning. In 2020, he founded and created EPOCH, an artist-run virtual experiment that functions as an inclusive community building platform inviting established and emerging artists working in both digital and analog mediums to participate.



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Published November 2022, Serpentine  
ISBN 978-1-908617-78-1

**SERPENTINE**

