surfing with

Art, Blockchain and NFTs

satoshi

AKSIOMA

Domenico
Quaranta

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FOREWORD TO THE ENGLISH EDITION

As we exit 2021, Jupiter has emerged from a year in Aquarius. Aquarius is associated with developments in technology, systems, and collectivity – hence the utopian dogwhistle, 'Age of Aquarius'. Jupiter was also in Aquarius in 1440, the year the printing press was invented. The succession into Pisces, the mutable Water sign linked to Christ by Western astrologers, suggests cultural absorption – the widespread adoption of new ways of making and being – following Aquarian breakthroughs.

Catherine Leigh Schmidt, 2022[1]

I wrote the very last words of *Surfing con Satoshi*, the Italian version of this book, on 4 May 2021. The deal with the publisher was to have it out in about a month, and we did. At the time, I was well aware of the risks of putting ink on paper about art, blockchain and NFTs. In the introduction, I wrote: "At best, the result will be bibliographically obsolete within a few months. At worst, it will fail to include developments and issues that have become crucial in the short time between the 'imprimatur' and the market." This turned out to be a self-fulfilling prophecy.

Almost a year later, when I started working on the English translation, the big question was how to deal with the question of obsolescence. Then I read the book and, to my surprise, I realised that though it had of course aged, it had aged pretty well. Things

[1] Catherine Leigh Schmidt, "Distributed Autonomous Occultism", in *Spike*, 17 February 2022, https://www.spikeartmagazine.com/?q=articles/distributed-autonomous-occultism

have happened since May 2021, some on a scale that would have been difficult to predict, and other things are happening as I write these pages. Yet none of these developments have significantly changed the overall picture. Re-reading the book, I was sometimes tempted to add in new references, new examples, new facts and figures, but I never felt the need to reroute the flow of arguments, or change my conclusions.

I'm not going to claim the merit for this. On one hand, it's because *Surfing with Satoshi* is not entirely bound up in the extreme present, as much as it might appear to be, even to its author. It starts with a simple, straightforward introduction to the history, ideologies and technicalities of blockchains and cryptocurrencies, the relatively short tradition of blockchain-related art, and the concepts of authenticity, originality, scarcity and dematerialization deeply rooted in Western culture and contemporary art. All of this could of course be improved and updated, or even reframed by new studies and insights, but it is not rendered obsolete by current affairs. On the other hand, it is because the seeds of all the developments that have come about in this last year had already been planted, hidden in plain sight. Everything that has happened since March 2021, when Beeple's *Everydays* was auctioned by Christie's for the exorbitant figure of $69 million, has been the predictable outcome of a business scaling up, of an experimental solution formerly relegated to a niche culture being adopted by the mainstream. I dare say it could have been predicted long before May 2021. If you want a proof of concept, I would invite you to read an old essay that hasn't aged a bit: Martin Zeilinger's "Digital Art as 'Monetised Graphics': Enforcing Intellectual Property on the Blockchain", written in 2016 and

published in 2018. At a very early stage of the NFT "revolution", Zeilinger intuits the role art should be playing in this context, stating that it has to act as a "zone of resistance", rather than becoming an "embattled target of commodification and financialisation efforts".[2] He also realises something that recent developments have widely evidenced, namely that, setting aside any techno-determinism, blockchains themselves are not changing the world – they can only adapt to, reproduce and possibly exacerbate, the present system's structure and ways of working. As Zeilinger writes about the promise of decentralisation:

> "Once decentralisation technologies are folded into proprietary, commercial products and services, models of centralised finance will be far from being disrupted but rather reinforced. The fact that such technologies are cryptographically secure might simply mean that the centralisation efforts they ultimately represent will be difficult, if not impossible, to counteract."[3]

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[2] The full quote: "digital art is becoming a site of intense contestation as an embattled target of commodification and financialisation efforts. Simultaneously, digital art emerges as an important zone of resistance where artists and creative communities have an opportunity to help shape blockchain technologies in ways that challenge conventional perspectives on private property and the enclosure of cultural commons, rather than feeding into them." Martin Zeilinger, "Digital Art as 'Monetised Graphics': Enforcing Intellectual Property on the Blockchain", in *Philosophy & Technology*, volume 31, 2018, pp. 15-41, https://doi.org/10.1007/s13347-016-0243-1, p. 17.

[3] Ivi, p. 37.

THIS CHANGED
EVERYTHING

But let's take a look back and consider a few of the developments of past months. What has taken place since this book was published in Italian can be summarised by outlining a number of ongoing processes and a few milestone events.

The first of these took place in June 2021, when Sotheby's auctioned the original source code of the World Wide Web, made available by none other than the inventor of the Web himself, Sir Tim Berners-Lee.[4] This event – titled "This Changed Everything" – deserves a place in history not because, as some have said, Berners-Lee sold the Web – he didn't. As he pointed out, "the web is just as free and just as open as it always was. The core codes and protocols on the web are royalty free, just as they always have been."[5] What he sold was a graphic rendition of the original code, "a picture that I made, with a Python programme that I wrote myself, of what the source code would look like if it was stuck on the wall and signed by me." It didn't even fetch a historic sum, though some may argue that $5.4 million is quite a lot for a signed, certified, unique poster accompanied by an animated visualisation and a letter (all the proceeds of the sale benefited various initiatives that he and his wife, Rosemary Leith, support). This event made

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[4] The auction took place online from 23 June to 30 June 2021. Cf. https://www.sothebys.com/en/digital-catalogues/this-changed-everything

[5] In Alex Hern, "Tim Berners-Lee defends auction of NFT representing web's source code", in *The Guardian*, 23 June 2021, https://www.theguardian.com/technology/2021/jun/23/tim-berners-lee-defends-auction-nft-web-source-code

history on a symbolic level, because of the way it puts Web3 rhetoric into practice and legitimises it, and also what Berners-Lee said about it: "NFTs, be they artworks or a digital artefact like this, are the latest playful creations in this realm, and the most appropriate means of ownership that exists. They are the ideal way to package the origins behind the web."

Tim Berners-Lee is not your average tech inventor, trying to monetise his game-changing technology any which way. After releasing the original code for the Web, his life became a mission, and an ongoing struggle, to keep its standards open and free, effectively pursued with the help of the W3C Consortium. His endorsement of NFTs as "the most appropriate means of ownership that exists" came at a time when the crypto bros and NFT platform founders were working hard to stress the lineage between the early, decentralised

```
HyperText.m
//      HyperText Implementation                          HyperText.m
//      --------------------------
//
// HyperText is like Text, but includes links to and from other hypertexts.
//
// Authors:
//      TBL             Tim Berners-Lee CERN/CN
//
// See also:
//      The Anchor class, and the HyperAccess class.
//
// History:
//      25 Sep 90       Written (TBL) with the  help of the Interface builder.
//      14 Mar 91       Page width is taken from application's page layout.


// Notes.
//
//      For all anchors to have addresses, the node must be made with
//      newAnchor:Server: . Do not use any other creation methods inherited.

#import <appkit/appkit.h>
#import "HyperText.h"
#import "HyperAccess.h"
#import "HTUtils.h"
#import "HTParse.h"
#import "HTStyle.h"
#import "WWW.h"

@implementation HyperText

extern          HTStyleSheet * styleSheet;           /* see StyleToy */
```

Sir Tim Berners-Lee, *Source Code for the WWW,* 1990-1991

internet – open, democratic, anonymous – and the so-called Web3,[6] in opposition to evil Web 2.0, with its centralised structure, surveillance, harvesting and exploitation of user data.[7] Consciously or not, by auctioning the original code of the Web as an NFT, its inventor is saying: this is the way the open environment I envisioned in the early 1990s will evolve in the future.

Yet there is much criticism of this utopian vision of Web3. Moxie Marlinspike's long essay[8] of January 2022 provides an in-depth technical analysis of the infrastructure of Web3, and earned a response from Vitalik Buterin, co-founder of the Ethereum blockchain.[9] According to Marlinspike, even if blockchains are decentralised, the infrastructure of the

[6] The term was coined by Gavin Wood, who worked on Ethereum, in 2014. Cf. Gilad Edelman, "The Father of Web3 Wants You to Trust Less", in *Wired*, 29 November 2021, https://www.wired.com/story/web3-gavin-wood-interview

[7] One telling example is Kayvon Tehranian's TED talk at TEDMonterey in August 2021. Tehranian, CEO and founder of the Foundation marketplace, starts the talk with a reference to the early Web, John Perry Barlow and, of course, Stuart Brand. Cf. Kayvon Tehranian, "How NFTs are building the internet of the future", August 2021, https://www.ted.com/talks/kayvon_tehranian_how_nfts_are_building_the_internet_of_the_future. Another popular reference in crypto discourse is Paul Baran's illustration of centralised, decentralised and distributed networks (1964), an iconic trophy of the pioneering research of the Sixties that led to Arpanet, the first seed of the upcoming internet infrastructure. Cf. "Paul Baran and the Origins of the Internet", in *Rand.org*, https://www.rand.org/about/history/baran.html

[8] Moxie Marlinspike, "My first impressions of web3", 7 January 2022, https://moxie.org/2022/01/07/web3-first-impressions.html

[9] Vitalik Buterin, Response to "My first impressions of web3", 8 January 2022, https://www.reddit.com/r/ethereum/comments/ryk3it/my_first_impressions_of_web3/hrrz15r

dApps (decentralised apps), platforms and services that are built on them is not. Why put so much effort into forging a trustless, distributed consensus mechanism, when to access it we still have to rely on a traditional, server-based structure and a few centralised platforms we are forced to place our trust in? Why spend so much money and energy to secure an NFT, when anyone can "change the image, title, description, etc. for the NFT to whatever they'd like at any time (regardless of whether or not they 'own' the token)"? Marlinspike illustrates his points by producing some interesting projects on the Ethereum blockchain. In *At my whim*, he shows how the same NFT can be linked to different digital contents depending on where and how it is visualised: on OpenSea his content looks like an abstract digital drawing, on Rarible it presents as a different abstract graphic, but when you buy it and view it from your crypto wallet, it displays as a large 💩 emoji. Marlinspike concludes: "Once a distributed ecosystem centralizes around a platform for convenience, it becomes the worst of both worlds: centralized control, but still distributed enough to become mired in time." If this trend doesn't change, Web3 is cursed to evolve into "Web2×2 (Web2 but with even less privacy)".
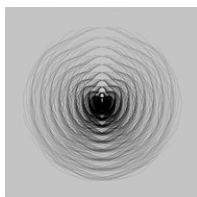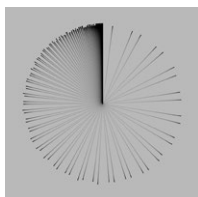
Moxie Marlinspike, *At my whim, #1*, 2021

GENERATIVE CODES
ON THE BLOCKCHAIN

Another turning point came in August 2021, when a relatively young, little-known NFT platform made profits on an unprecedented scale, $626 million in a month. The brainchild of entrepreneur and programmer Eric Calderon, Art Blocks launched in November 2020 with *Chromie Squiggle*, a project by Calderon himself (under the moniker of Snowfro) which illustrates the potential of the platform, and is described as his "personal signature as an artist, developer, and tinkerer."[10] Instead of uploading a static or animated file on a platform and minting the associated NFT, Calderon designed a system that enables

[10] Snowfro, *Chromie Squiggle*, 2021, https://www.artblocks.io/project/0. On Calderon, cf. Rachel Monroe, "When N.F.T.s Invade an Art Town", in *The New Yorker*, 18 January 2022, https://www.newyorker.com/news/letter-from-the-southwest/when-nfts-invade-an-art-town
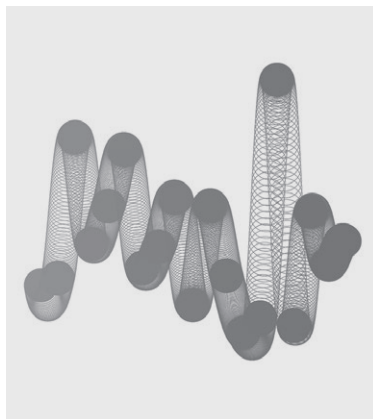
Snowfro, *Chromie Squiggle #9254*, 2020

users to deploy a generative code directly on the blockchain. As the platform's "learn" page explains,

> "A generative script (using p5js for example) is stored immutably on the Ethereum block-chain for each project. When a user wants to purchase an iteration of a project hosted on the platform, they purchase an ERC721 com-pliant 'non-fungible' token, also stored on the Ethereum blockchain, containing a provably unique 'seed' which controls variables in the generative script. These variables, in turn, con-trol the way the output looks and operates."[11]

The smart contract associated with each project also determines the number of "seeds" that can be gener-ated. Usually it's a large "edition" of unique variations: for *Chromie Squiggle*, and many other projects pre-sented on Art Blocks, this amounts to 10,000 mint-able pieces. When a new project is launched on the platform, new pieces are generated on request and minted directly by the collectors who participate in the auction. When all the seeds have been sold, the minting process stops, and from then on the individ-ual works are only available on the secondary market.

In other words, instead of allowing artists to upload static or animated images available for pur-chase as unique pieces or limited editions, Art Blocks exploits the programmable nature of blockchains to share dynamic codes that can generate hundreds or thousands of unique items on request; its economy is based not on selling individual expensive digi-tal artworks to wealthy crypto collectors, but on the

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[11]   Cf. "Learn About Art Blocks", https://www.artblocks.io/learn

involvement of a broader community of generative art enthusiasts, who can mint and own a unique piece for a relatively small amount of money. And if the project is successful, the value can grow. By way of example, on 30 July 2021, Dutch artist Rafaël Rozendaal dropped the project *Endless Nameless* on Art Blocks. The piece consisted of 1,000 mintable items, generated by a code described as an "exploration of composition", which produced colourful animations based on ever-changing arrangements of RGB colours and square shapes.[12] The starting price was set at 0.25 ETH, and a "split" was programmed to award 50% of the proceeds from the primary sale to the non-profit organisation Rhizome. The project sold out pretty fast, and on 5 August Rhizome announced that it had brought them more than 164 ETH: then worth around $430,000, this was "the largest benefit donation in

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[12] Rafaël Rozendaal, *Endless Nameless*, 2021, https://www.artblocks.io/project/120
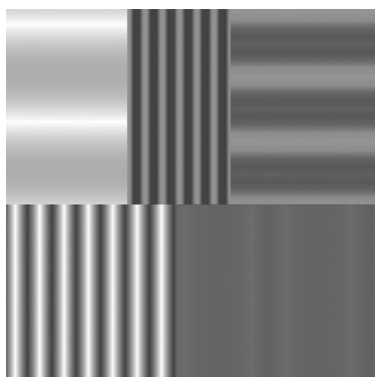
Rafaël Rozendaal, *Endless Nameless #982*, 2021

Rhizome's twenty-five year history."[13]

One unexpected outcome of Art Blocks' success is that it has not only changed the visual landscape of NFT art, but has also, for the first time, significantly affected the tip of the pyramid of the best-selling NFT artists. Generative processes have been used in art since the early days of Computer Art in the Sixties and Seventies, and many practitioners have acknowledged the notion's influence on various trends, including geometric abstraction, conceptual art, process-based art and minimalism. Although the field is as rich and diverse as always, including engineers, designers and amateurs, generative practices also have been adopted by many visual artists with a strong reputation in the contemporary art field, from Casey Reas to LIA, from Harm Van Den Dorpel to John F. Simon Jr. to Rozendaal himself. Thanks to the model launched by Art Blocks, and rapidly followed by other platforms, thousands of generative graphics have flooded the blockchain, undermining the dominance of pop-surreal aesthetics, pixel art and memetic imagery.

The way in which Art Blocks affected the world of NFTs soon became visible in the market too. In May and June 2021, both Sotheby's and Christie's offered curated auctions which aimed to bring together the rising stars of the NFT environment and established

[13] Zachary Kaplan, "Announcing the "Endless Nameless" Gift from Rafaël Rozendaal", in *Rhizome*, 5 August 2021, https://rhizome.org/editorial/2021/aug/05/announcing-a-major-benefit-gift-from-rafael-rozendaal

media artists. Christie's *Proof of Sovereignty*[14] featured Nam June Paik, Jenny Holzer, and Urs Fisher along with emerging "crypto artists" such as Raf Grassetti (born 1988) and Josie Bellini (born 1994); similarly, Sotheby's *Natively Digital*[15] auction included artworks by Casey Reas, Ryoji Ikeda, Simon Denny and Addie Wagenknecht, along with pieces by "crypto art stars" such as Pak, Don Diablo, Fvckrender, Xcopy and Larva Labs. Both auctions accepted crypto for payments, and were of course swarming with crypto collectors. And the latter's protégés ended up stealing the show, while the works by "artworld artists" did not significantly outperform their primary market quotations. Christie's auctioned a scan of a manual drawing and collage by Josie Bellini for $400,000, while a clip from Paik's video *Global Groove* (1973) regrettably sold for just $56,250, half the lower estimate. At Sotheby's, Larva Labs' *CryptoPunk 7523* went to a collector named Sillytuna for more than $11 million, while Ikeda's work only fetched $76,600. The only real revelation was Kevin McCoy's *Quantum* (2014), which sold for $1,472,000, as the NFT world cottoned on to the fact that it was in the presence of the first ever NFT. The crypto whales were still shaping their own art world, in their own image and likeness.

This approach to collecting hasn't completely changed, but a quick look at the list of the most successful artists at the beginning of 2022 provides a very

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14 *PROOF OF SOVEREIGNTY: A Curated NFT Sale by Lady PheOnix*, 25 May – 3 June 2021, https://onlineonly.christies.com/s/proof-sovereignty-curated-nft-sale-lady-pheonix/overview/2058

15 *Natively Digital: A Curated NFT Sale*, 3 – 10 June 2021, https://www.sothebys.com/en/digital-catalogues/natively-digital-a-curated-nft-sale

different snapshot of the NFT scene. Young generative artists who have made a name for themselves on Art Blocks, such as Tyler Hobbs and Dmitri Cherniak, are now tailing Pak and Beeple, and overtaking XCOPY, Hackatao and FEWOCiOUS, to mention a few of the artists discussed in this book. Casey Reas has made around $12 million so far, and Rozendaal more than $6 million.

MERGE

Merge is the name of the project that put Pak at top of this list. Although Pak have never sold one single artwork for $69 million, *Merge* allowed them to sell 266,445 shares in a single project to 28,000 buyers, bringing in $91.8 million in 3 days (from 2 to 4 December 2021) and making them the most expensive living artist (a slot previously occupied by Jeff Koons' *Rabbit*, sold by Christie's for $91 million in 2019).[16] This sale was also notable because it took place on the young NFT platform Nifty Gateway, rather than a traditional auction house; it did not replicate the conventions of the art world in the NFT environment, but theatrically showcased the NFT arena's distinctive mechanisms and modes of generating scarcity and value. How did it work? *Merge*[17] is an open edition and a dynamic NFT, regulated by a custom smart contract. An open edition means that the number of editions is determined by the buyers who generate new NFTs at the time of the auction. Dynamic signifies

[16] Amah-Rose Abrams, "Artist Pak Just Sold 266,445 Shares of an NFT for $91.8 Million on Nifty Gateway – Making Him (Arguably?) Pricier Than Jeff Koons", in *Artnet News*, 7 December 2021, https://news.artnet.com/market/pak-nft-91-8-million-2044727

[17] Pak, *Merge*, 2021, https://niftygateway.com/collections/pakmerge

Josie Bellini, *Genesis*, 2017

that the behaviour of the NFT is programmed and, as on Art Blocks, the visuals are generated as you buy, entirely on-chain. *Merge* visuals are deliberately minimal: a white spot on a black background. If you buy a single share, the white spot is tiny; if you buy more shares, they flow into a single NFT in your wallet, and the spot gets bigger (and

occasionally changes colour or background). This happens when a *Merge* is resold on the secondary market; if the new buyer already owns some shares, they will meld into a single NFT with the new shares, and the visual will change accordingly. Throughout the three day auction, which started at $299 per share and went up towards the end, incentives were programmed for the buyers who bought more shares. In theory, at some point one wealthy buyer could snap up all 266,445 shares, which will then turn into a single, priceless NFT in their wallet.

Merge is an abstract portrait of the relational dynamics it triggers, and the techno-financial system it is based on. Owning a *Merge* is not about aesthetic pleasure, but the social pleasure of being part of a game in which players compete to accumulate mass. Amassing *Merges*, setting the resale price for your *Merges*, and selling them for much more than their starting price (and maybe more than another *Merge* that has amassed more shares) are all moves in this ongoing game. It's the gamification of collecting, presented as a game.

A couple of months later, Pak collaborated with Wikileaks founder Julian Assange to raise funds to support the latter's legal battles. The project went live on 7 February 2022 as a two-part online sale, which involved auctioning a single, unique NFT (*The Clock*) and an open edition, *Censored*.[18] *The Clock*, an online timer that counts the number of days since Assange was arrested in April 2019, was sold for about $52 million to AssangeDAO, an organisation of 10,000 supporters that was put together with the explicit mission of winning the auction. *The Clock* currently holds the title of second most expensive single NFT, after Beeple's *Everydays*. *Censored*, on the other hand,

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[18]   Both projects can be accessed at https://censored.art

was an open edition based on a pay-what-you-want system. Participants were invited to write a message in an online form and mint it as an NFT. After being minted, each message was displayed as a custom visual, a string of blackened text on a white background. *Censored* collected a total of 29,766 buyers, who paid a collective $2.1 million. Together, *The Clock* and *Censored* made $54 million, donated to the Hamburg-based non-profit organisation the Wau Holland Foundation, which has been supporting WikiLeaks since 2009.[19]

[19] For more information, cf. Vivienne Chow, "Crypto Investor and NFT Creator Pak on Why They Don't Identify as an Artist, and Their Recent Collaboration With Julian Assange", in *Artnet News*, 7 February 2022, https://news.artnet.com/market/pak-julian-assange-nft-censored-2069268; and Sarah Cascone, "Julian Assange and Crypto Artist Pak Have Raised $54 Million for the WikiLeaks Founder's Defense Fund With a Major NFT Auction", in *Artnet News*, 10 February 2022, https://news.artnet.com/market/pak-julian-assange-nft-54-million-2070993

An NFT minted by Domenico Quaranta
interacting with Pak's *Censored* (2022)
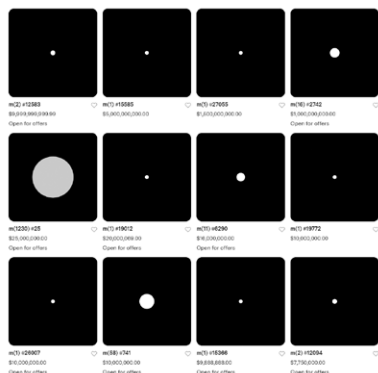
Listings from Pak's *Merge* (2021)
on Nifty Gateway on 7 March 2022

THE READYMADE
REVERSED

> *the category of art is equated with non-fungibility: It is the readymade reversed [...] Duchamp used the category of art to liberate materiality from commodifiable form; the NFT deploys the category of art to extract private property from freely available information.*
> David Joselit, 2021[20]

On *Wikipedia*, *Merge*'s record sale isn't classed as an art sale. After much debate and some public outcry, Wikipedians decided to leave their entry for the most expensive artworks by living artists[21] untouched, and

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[20] David Joselit, "NFTs, or The Readymade Reversed", in *October*, 2021; (175): 3–4. doi: https://doi.org/10.1162/octo_a_00419

[21] "List of most expensive artworks by living artists", in *Wikipedia*, https://en.wikipedia.org/wiki/List_of_most_expensive_artworks_by_living_artists

to create a dedicated entry for non-fungible tokens.[22] Pak shouldn't be bothered, as they don't identify as an artist: "I do not believe I create art; rather, I believe I create design at the nexus of beauty and technology. I don't consider myself an artist."[23] Yet, Pak aside, in recent months the category of art seems to have become permanently, inextricably embedded in the blockchain. As I have reiterated in this book, the relationship between art and blockchain can be understood as an exchange in which both have a lot to gain, but only art seems to have something to lose.

In the crypto space, art is being unapologetically used to promote cryptocurrencies, as well as bring real value onto the blockchain. This is something both crypto sceptics and crypto enthusiasts seem to agree on. "Crypto needs art more than art needs crypto", Twobadour (a.k.a. Anand Venkateswaran, Metakovan's co-founder) announced at the NFT.NYC conference in November 2021.[24] "At the conference, I keep hearing that the digital-art craze has merely been the vehicle to get the public's attention for this novel and inscrutable technology, which promises to be applied to every aspect of experience, in culture and in the economy", Ben Davis said about the same

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22   "List of most expensive non-fungible tokens", in *Wikipedia*, https://en.wikipedia.org/wiki/List_of_most_expensive_non-fungible_tokens

23   Vivienne Chow, "Crypto Investor and NFT Creator Pak on Why They Don't Identify as an Artist, and Their Recent Collaboration With Julian Assange", cit.

24   Quoted in Ben Davis, "Inside the NFT Rush: Entrepreneurs Promise NFTs Will Destroy the Gatekeepers, While Jockeying to Become the New Gatekeepers", in *Artnet News*, 25 November 2021, https://news.artnet.com/opinion/nft-rush-part-2-2039452

event.[25] In a video interview Colborn Bell, collector and founder of the Museum of Crypto Art, declared: "Crypto Art is the visual language for the crypto financial revolution, and how we display and disseminate and share this culture that we have is how we will spread cryptocurrency mass adoption, which I think will create a fair economic system for everybody."[26] And elsewhere:

> "Art is redirecting the conversation away from what it was, where crypto was associated with money laundering and drug dealing. This is a visual language that speaks to the power of blockchain technology to return self-sovereignty to the individual, to give them the rights to their data, to give them a right to privacy and anonymity on the internet – and to show the true power of what an open-access, permissionless network like Ethereum does when people all over the world can take their creativity, treat it as art, and begin to sell it without any intermediary who can say, 'No, this is not art. This does not belong.' Suddenly the scope of what we can include broadens tremendously."[27]

[25] Ben Davis, "Inside the NFT Rush: Crypto-Art Promises to Transform the Whole World – But Throw Some Totally Dope Parties First", in *Artnet News*, 3 December 2021, https://news.artnet.com/opinion/inside-nft-rush-axie-infinity-dreamverse-alesso-2042849

[26] "The Groundwork: The Museum of Crypto Art", in *Outland*, 30 November 2021, https://outland.art/the-museum-of-crypto-art

[27] Ben Davis, "Colborn Bell, Founder of the First Museum of Crypto Art, Isn't Worried About Wooing the Traditional Art World: A Q&A", in *Artnet News*, 17 December 2021, https://news.artnet.com/market/interview-colborn-bell-museum-of-crypto-art-2049578

"Art is being instrumentalised to inflate the value of a particular technology just as much, and perhaps more, than the other way around", Tina Rivers Ryan, curator and writer for *Artforum*, asserts.[28] "With the NFT, the distinction between art and asset seems to have disappeared... Art may simply be a useful way to advertise the possibilities of a new technology", Rosanna McLaughlin wrote in *The Guardian*.[29] "Marx calls this commodity fetishism, meaning the personification of things and the reification of people. Crypto-art is the personification of crypto, while the crypto-artist is the commodification of artists", artist Geraldine Juárez adds in a long, critical essay.[30]

The past few months have seen this happening in many different ways. Often viewed as an experimental space for usually young, digital native artists without much clout in the art market, in May 2021 the crypto arena welcomed none other than Andy Warhol, with a series of early digital drawings, made in the mid-1980s on a Amiga 1000 computer and stored on floppy disks, which had been rediscovered and restored in 2011 by a team of media archeologists led by artist Cory Arcangel. The property of the Andy

28   Jo Lawson-Tancred, "Tim Berners-Lee said the world wide web was for everyone, so why is he selling its source code as an NFT?", in *Apollo Magazine*, 29 June 2021, https://www.apollo-magazine.com/tim-berners-lee-internet-source-code-nft-sothebys

29   Rosanna McLaughlin, "'I went from having to borrow money to making $4m in a day': how NFTs are shaking up the art world", in *The Guardian*, 6 November 2021, https://www.theguardian.com/artanddesign/2021/nov/06/how-nfts-non-fungible-tokens-are-shaking-up-the-art-world

30   Geraldine Juárez, "The Ghostchain. (Or taking things for what they are)", in *Paletten*, n. 325, 2021, https://paletten.net/artiklar/the-ghostchain

Warhol Foundation, these early digital images became the subject of a questionable[31] initiative to raise funds for the Foundation, staged in collaboration with Christie's and the online platform Zora: the 320 by 200 pixel images were pumped up to high resolution .tiff files, and minted and sold as unique NFTs. Five of the eleven lots minted by the Andy Warhol Foundation were auctioned by Christie's for amounts ranging from $250,000 for a blue banana to $1,170,000 for a Campbell's Soup Can drawing.[32]

This initiative put forward a new model of

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[31] Sarah Cascone, "The Warhol Foundation Is Auctioning Off the Artist's Computer-Based Works as NFTs. An Archivist Who Uncovered Them Is Outraged", in *Artnet News*, 21 May 2021, https://news.artnet.com/market/andy-warhol-nft-christies-1971474

[32] Cf. *Andy Warhol: Machine Made*, 19 – 27 May, 2021, https://onlineonly.christies.com/s/andy-warhol-machine-made/overview/2051; and The Andy Warhol Foundation account on Zora: https://zora.co/andywarholfoundation.eth
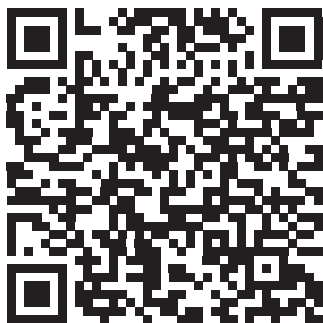
Andy Warhol, *Untitled Self-Portrait*, 1985
(minted in 2021)

self-funding for museums and art institutions: gener-
ating hi-res digital versions of some of their master-
pieces, minting them on the blockchain and flogging
them to wealthy patrons as unique, expensive collect-
ibles. What is sold is not the original work of course, or
the copyright for the image, but a luxury – digital or
physical – object, basically an exclusive poster. Also in
May 2021, the Uffizi Gallery partnered with the Italian
company Cinello to sell a unique digital version of
Michelangelo's *Tondo Doni* (1506-1508). Cinello has
patented a solution called DAW® (Digital Art Work),
which combines high quality scanning, high resolu-
tion display technologies and blockchain certifica-
tion to generate a digital multiple or a unique copy of
a masterpiece of art history, created with the consent
of the museum housing the original work and accom-
panied by a certificate of authenticity signed by
Cinello and the museum itself. For each DAW® an NFT
token is minted to certify ownership of the work;
the collector doesn't receive just a digital file, but a
custom-sized screen with a handcrafted reproduc-
tion of the work's original frame. The *Tondo Doni* sold
for $170,000, and the Uffizi Gallery received 50% of
the proceeds. Cinello is now partnering with many
other institutions, including the Pinacoteca di Brera
and the Veneranda Biblioteca Ambrosiana in Milan,
and the Gallerie dell'Accademia in Venice, and has
digitised masterpieces by Leonardo, Caravaggio and
Raphael, but also Amedeo Modigliani and Umberto
Boccioni.[33] In February 2022, five of these digital cop-
ies were exhibited in a show titled *Eternalising Art
History* at Unit, London – where they were presented
not just as marketable doppelgängers of inestimable

[33]   Cf. https://www.cinello.com

originals, but also as an opportunity to make works that can't usually travel accessible to international audiences.[34]

Deserted by audiences due to Covid-19 restrictions, other institutions like the Hermitage have chosen similar paths. And while young companies and new platforms are using an infrastructure (the blockchain) that is still in its teens to "eternalise" artworks that have been around for centuries, auction houses and art galleries are now regularly accepting crypto not just for NFT sales, but also in exchange for physical historical artworks. Blockchain entrepreneur Justin Sun, who missed out on the Beeple sale for a few million dollars, is reported to have spent more than $100 million on art in 2021.[35] In November, Sun made the winning $78.4 million bid on Alberto Giacometti's masterpiece *Le Nez* (1947 - 1949), from the respected Macklowe Collection, auctioned by Sotheby's. Now, along with a $20 million Picasso, a $2 million Warhol, and a number of works by Beeple, Pak and FEWOCiOUS, *Le Nez* belongs to the APENFT Foundation, an initiative by Sun which plans to anchor these artworks to NFTs and put them on show in virtual museums in the metaverse.[36]

Last but not least, an increasing number of blue-chip or established living artists – from Damien Hirst to

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[34] *Eternalising Art History: From Da Vinci to Modigliani*, Unit London, 16 February – 19 March, 2022, https://unitlondon. com/whats-on/98-eternalising-art-history-from-da-vinci-to-modigliani

[35] Amah-Rose Abrams, "Cryptocurrency Billionaire Justin Sun Has Bought More Than $100 Million Worth of Art This Year. So What's He Going to Do With It?", in *Artnet News*, 29 November 2021, https://news.artnet.com/art-world/justin-sun-interview-metaverse-2041065

[36] Cf. https://www.apenft.org

Daniel Arsham, from Urs Fischer to Refik Anadol – have started tokenizing their work on the blockchain, blue-chip galleries like Pace and König have set up their own NFT platforms, and the NFT buzz has reached art fairs too, such as Art Basel Miami in late 2021.[37]

Though quite diverse, all these events have one thing in common: things of proven value being anchored to the blockchain and converted into crypto, and crypto being used to buy things of proven value. As Geraldine Juárez puts it: "In the end, it doesn't matter if the asset (the NFT) sells or not: more blocks are added to Ethereum's chain while Ethereum's market also has been further capitalised by the conversion of fiat into ether." Legitimacy and real value is what art and the art market offers to the crypto economy. But what does it get back in return? Juárez:

> "NFTs are contracts being used to deploy the category of art to extract private property, turning art things into digital assets that can be loaded into a vending machine. This frictionless machine only dispenses art as a ghost, a form that – like all exchange value – is magical and mysterious but should not be confused with aura, simply because there is no such thing as an authentic digital copy. It is not the ghost in the vending machine either. It is the ghost of property, a fictitious experience of ownership glancing back at us through our screens."[38]

[37] Cf. Anny Shaw, "Art and crypto: a marriage made in Miami", in *The Art Newspaper*, 1 December 2021, https://www.theartnewspaper.com/2021/11/30/art-and-crypto-a-marriage-made-in-miami

[38] Geraldine Juárez, "The Ghostchain. (Or taking things for what they are)", cit.

All in all, this is not that bad a deal, considering that, along with the "ghost of property", we also get a new economy for creators and art institutions, new and previously inaccessible fortunes pouring into the art market and auction houses, and a more horizontal, democratic infrastructure, as often promised by crypto enthusiasts like Colborn Bell or Li Jin, co-author of the essay "The Web3 Renaissance: A Golden Age for Content". Jin writes about "a new era, one where new incentives reward new behaviors, giving the internet the opportunity to collectively hit the 'reset' button and move towards a more just distribution of value"; and discusses "patronage+" as "patronage with the possibility of profit", a model in which "all tokens are investments that not only fund the creator, but also could benefit the holder if the value appreciates".[39]

These claims – which could be summed up with the WAGMI mantra ("We're All Gonna Make It") – are being made while many, including some of crypto's early supporters are pointing out that "The crypto art space appears to be on an accelerated path to replicating the problems we see in the traditional art market". This quote is from a study by Massimo Franceschet and Sparrow Read, who analysed datasets provided by SuperRare and realised that "the crypto market is extremely concentrated among few artists and even fewer collectors".[40] Their

[39] Li Jin and Katie Parrott, "The Web3 Renaissance: A Golden Age for Content", in *Every*, 20 December 2021, https://every.to/means-of-creation/the-web3-renaissance-a-golden-age-for-content

[40] Massimo Franceschet and Sparrow Read, "The Inconvenient Truth About Secondary Markets, Part II", in *Medium*, 14 December 2020, https://powerdada.medium.com/the-inconvenient-truth-about-secondary-markets-part-ii-6c148a917a08

analysis dates from December 2020, and more recent figures show that the situation is only getting worse: in a presentation at NFT.NYC, market analyst Richard Chen claimed that there is a "huge power law" in operation in the NFT market, a situation in which early success begets more success. According to Chen, "the top 32 artists have more than half of the entire crypto market". For Ben Davis, who reported on the presentation, "Chen's data... confirms that in just a few months of its mainstreaming, the NFT space has come to conform to all the hyper-asymmetrical dynamics you'd expect."[41] Similarly, the claim that the NFT market opens up unprecedented possibilities for women artists, minorities and artists from underdeveloped countries is not confirmed by recent data. In November 2021, a report from ArtTactic analysing the Nifty Gateway marketplace showed that "Women artists accounted for just 16 percent of Nifty Gateway's NFT sales over the last 21 months", and that artists from the US, the UK and Canada account for 73 percent of all artists on Nifty Gateway, while South America and Asia claim 2.4 percent each, and Africa is home to just 1.2 percent of the platform's artists.[42]

[41]   Ben Davis, "Inside the NFT Rush: Speculators Offer Up the Literal Formula for Success, Plus Other Lessons From 'Crypto Coachella'", in *Artnet News*, 30 November 2021, https://news. artnet.com/opinion/inside-the-nft-rush-a-token-could-save-your-life-artistic-value-means-nothing-until-its-flipped-and-other-lessons-learned-at-the-crypto-coachella-2040043

[42]   Sarah Cascone, "Depressing New Report Finds That Women Artists Accounted for Just 16 Percent of NFT Sales Over the Past 21 Months", in *Artnet News*, 5 November 2021, https://news.artnet.com/market/nft-sales-just-16-percent-women-2030490

PFPs, DAOs
AND THE METAVERSE

In January 2022, Twitter announced the launch of a badge of verification confirming ownership of NFTs used as profile pictures on the platform. Once ownership is verified, i.e. linked to the wallet in question, the NFT profile pic appears as a hexagon instead of the usual circle, embedding bragging rights into your Twitter account.[43] This apparently minor change in the policies of a social media platform is yet another confirmation of the increasing convergence between Web 2.0 platforms and the Web3 economy. It is also a response to the so-called right-click savers who mock digital ownership by downloading images from collectors' profiles and reposting them as their own. And it acknowledges the rising star of 2021, PFPs: NFT projects based on (algorithmically generated) collections of unique characters that can

[43] Cf. https://help.twitter.com/en/using-twitter/twitter-blue-fragments-folder/nft

Larva Labs, *CryptoPunk 7523*, 2017

be used as profile pictures. The prototype is of course the now iconic *CryptoPunks*, a collection of 10,000 unique pixelated characters. Free for the taking back in 2017 and now worth millions at auction, the Punks were not originally created with this purpose in mind. The second generation of PFPs, on the other hand, are sets of characters (kittens, robots, apes, astronauts, dogs, zombies, skeletons, etc.) intentionally designed as badges attesting membership to an exclusive club. The *Bored Ape Yacht Club*, for example, is a package of 10,000 NFTs by Yuga Labs, a Delaware company set up in February 2021, which soon became an object of desire for crypto investors. A Bored Ape "can serve as your digital identity", explains the project's website, and grants "membership access to a club whose benefits and offerings will increase over time".[44] Benefits aside, Ape ownership is a status symbol, as shown by the number of VIPs who have invested in them, including basket players, musicians, actors and influencers. In September 2021, Sotheby's auctioned a set of 101 apes for $24.4 million.

While PFPs are basically just trending luxury assets that reveal the exuberant approach to investing in the crypto scene and have little to do with art (except, maybe, for the relational dynamics they trigger), DAOs (Decentralised Autonomous Organisations) are often held up as proof of this community's ability to mobilise quickly and effectively around a common cause or mission, be it collecting an artwork, setting up an institutional collection, supporting a benefit auction or a specific minority of creators. My text mentions AssangeDAO, created to "inspire a powerful solidarity

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[44] Cf. https://boredapeyachtclub.com

network and fight for the freedom of Julian Assange",[45] which was admittedly influenced by FreeRossDAO, set up to help Ross Ulbricht – the founder of the Silk Road marketplace – by promoting and selling the artwork Ulbricht is making in prison, and to advocate for prison reform.[46] herstoryDAO supports black women artists, and "exists to ensure that the metaverse we are actively helping to architect with our contributions, collections, and experiences is an equitable space".[47] Muse0 "is a DAO which operates as a digitally native museum with curated, beautiful NFTs, run entirely by

[45]   Cf. https://assangedao.org
[46]   Cf. https://www.freerossdao.org
[47]   Eileen Isagon Skyers, "herstoryDAO Manifesto", in *Foundation*, 10 June 2021, https://foundation.app/blog/herstorydao-manifesto
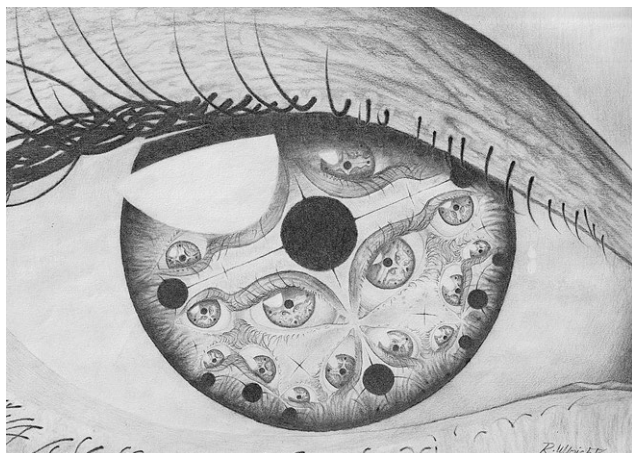
Ross Ulbricht, *Perspective*, Age: 36

its members""[48] while aGENDAdao is a group that supports trans and non-binary digital artists working with blockchain. TheSpiceDAO came together to buy a copy of Alejandro Jodorowsky's "director's bible" for his (never made) film version of Frank Herbert's sci-fi classic, *Dune*, and to crowdsource its production (they got it for $2.9 million, but soon realised they would not be able to use the images in the book due to copyright restrictions).[49] ConstitutionDAO formed out of a community of 17,000 people and raised $47 million in a week to buy a rare copy of the US Constitution (but were pipped at the post); and UkraineDAO is one of many crypto initiatives rapidly set up to raise funds for Ukrainian organisations that are helping those affected by the war in Ukraine. Promoted by Russian activist Nadya Tolokonnikova from Pussy Riot, among others, in five days more than 3,000 people joined, and by 3 March 2022 it had raised $7.1 million. According to founding member Trippy:

> "It is apparent a revolution cannot be started with fiat as there are too many ways for traditional funds to be intercepted or halted by traditional institutions, governments, and other factions with intent to control, harm, or simply shift funds without transparency. Decentral-

[48] Cf. https://muse0.xyz/donate

[49] Cf. Aman Sethi, "How A Bunch Of Crypto Nerds Liberated Jodorowsky's Bible For "Dune," The Greatest Film Never Made", in *BuzzFeed News*, 9 December 2021, https://www.buzzfeednews.com/article/amansethi/spicedao-dunedao-soby; and Ryan Broderick, "The anime "Dune" DAO learns about copyright", in *Garbage Day*, 17 January 2022, https://www.garbageday.email/p/the-anime-dune-dao-learns-about-copyright

ized Autonomous Organizations are a model for the world to witness how people with a common purpose can join and work together quickly to distribute funds to present humanitarian causes."[50]

However, celebrating DAOs as an innovative governance mechanism and an "ecosystem for digital startups outside Silicon Valley",[51] as compared to other, less edifying phenomena in the crypto economy, is misleading. As I show in Chapter 5, DAOs are anything but democratic: participants' voting power depends upon their funding power. And in most cases, the money that goes into DAOs comes from the speculative economy that most of the people drawn to the enlightened side of DAOs can't stand. TheSpiceDAO is just one of the many community initiatives largely funded by the sale of one or more CryptoPunks. Additionally, as policy maker Francesca Bria noted in an interview, the belief that DAOs can help shape a new political environment is rooted in the blind technological solutionism I have questioned throughout this book:

> "When I look at the promises made by the proponents of DAOs and NFTs, they seem to believe that technology itself would somehow do the job: once we code a DAO correctly, it will ensure a new institutional form and that form would have revolutionary effects, etc.

50 Cf. https://www.ukrainedao.love/ukraine-dao
51 Kyle Chayka, "The Promise of DAOs, the Latest Craze in Crypto", in *The New Yorker*, 28 January 2022, https://www.newyorker.com/culture/infinite-scroll/the-promise-of-daos-the-latest-craze-in-crypto

This seems to me short-sighted and also very inward-looking."[52]

In this paragraph, I have briefly explored PFPs and DAOs as an example of how concepts and scenarios that were present at the beginning of 2021 evolved through the year. However, nothing seems to have changed in public perception as much as the metaverse – that mystical non-place where digital ownership can be made manifest, and tokenized governance can regulate social environments – even though it continues to be extremely vague, both as a concept and as an actual experience. The metaverse does not equate to a single virtual space; it hovers between Web 2.0 and Web3, centralised servers and decentralised blockchains, mixed realities and digital assets. In order to actually exist, it would require an interoperability and a set of cross-world interactions that are not yet available, and maybe never will be. And yet here it is again, the same old new frontier: a space of conquest that, at least for now, seems to be of more interest to investors than users, assuming this distinction can still exist in the metaverse. When Facebook became Meta in October 2021, and Mark Zuckerberg described his idea of the metaverse, most of the reactions were negative: while most of us wondered who would ever want to live or even spend any time in what was basically a clunkier version of reality, many in the crypto space believed that Facebook was appropriating their project and burning it up. While rebranding as Meta doesn't seem to have benefited the company,

52   Evgeny Morozov, "Francesca Bria on Decentralisation, Sovereignty, and Web3", in *The Crypto Syllabus*, 8 January 2022, https://the-crypto-syllabus.com/francesca-bria-on-decentralisation

which in February 2022 lost $230 billion in market value, it triggered a land rush in blockchain-based metaverses,[53] causing a surge in market capitalisation of tokens in platforms such as Decentraland, Somnium Space and the Sandbox. In January 2022, Onyx, the blockchain arm of JPMorgan – the largest bank in the United States, and the world's largest bank by market capitalisation – released a study called "Opportunities in the metaverse", which predicts that "the metaverse will likely infiltrate every sector in some way in the coming years, with the market opportunity estimated at over $1 trillion in yearly revenues."[54]

THE LEFT CAN'T CRYPTO

> *within our present oligarchic, exploitative, irrational, and inhuman world system, the rise of crypto applications will only make our society more oligarchic, more exploitative, more irrational, and more inhuman.*
> Yanis Varoufakis, 2022[55]

In December 2021, media theorist and journalist Evgeny Morozov, together with the non-profit CAII (The Center for the Advancement of Infrastructural Imagination), launched *The Crypto Syllabus*, a blog that publishes unusually long, in-depth interviews

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[53] Eric Ravenscraft, "The Metaverse Land Rush Is an Illusion", in *Wired*, 26 December 2021, https://www.wired.com/story/metaverse-land-rush-illusion

[54] Christine Moy, Adit Gadgil, "Opportunities in the metaverse", 18 January 2022, https://www.jpmorgan.com/content/dam/jpm/treasury-services/documents/opportunities-in-the-metaverse.pdf

[55] Yanis Varoufakis in Evgeny Morozov, "Yanis Varoufakis on Crypto & the Left, and Techno-Feudalism", in *The Crypto Syllabus*, 26 January 2022, https://the-crypto-syllabus.com/yanis-varoufakis-on-techno-feudalism

with many critics of the crypto space. Explaining the mission of the magazine, Morozov writes:

> "The debate on crypto-related topics has been dominated, almost exclusively, by a very tight coterie of voices. The critics of crypto have not done this field a service by being excessively dismissive and polemical; it won't suffice to dismiss it as mere fraud or a bubble... However, it's the true believers that worry us the most. In today's bizarre world, the main organic intellectuals of the crypto sphere are the venture capitalists, who, in the absence of an active pushback from progressive circles, have established themselves as the voice of common sense on all things digital."[56]

Morozov is not alone in noticing that, in the face of the aggressive rhetoric of crypto entrepreneurs, progressive thinkers have often barricaded themselves into positions of criticism and dismissal. As writer Daniel Pinchbeck puts it in his newsletter: "For the most part, the traditional Left passionately despises crypto and its latest innovations."[57] Critical voices have been multiplying in recent months (thanks also to *The Crypto Syllabus*), from philosopher Slavoj Žižek[58] to art theorist

[56] Evgeny Morozov, "About Us", in *The Crypto Syllabus*, 16 December 2021, https://the-crypto-syllabus.com/about-us

[57] Daniel Pinchbeck, "What Revolution Will Be Tokenized? Why the Left Hates Crypto, Part One", 29 December 2021, https://danielpinchbeck.substack.com/p/what-revolution-will-be-tokenized

[58] Slavoj Žižek, "Slavoj Zizek: It's naive to think Bitcoin & NFT give us freedom", in *RT*, 8 January 2022, https://www.rt.com/op-ed/545405-bitcoin-nft-digital-control

Marina Gržinić,[59] from artists Geraldine Juárez[60] and Aram Bartholl[61] to Creative Technologist Martin O'Leary,[62] from blogger Tante[63] to media theorists Felix Stalder[64] and Ian Bogost.[65] In some of these texts, the idea that the only possible way to deal with crypto is to stay out of it altogether is clearly stated. "I don't have any kind of counter-paradigm or 'proposal' against NFTs specifically: I'm more inclined to do nothing about it, to refuse participation in the process of capitalisation, and simply not add more blocks to the chains", Juárez says in an interview. "The promotion of cryptocurrencies is at best irresponsible, an advertisement for an unregulated casino. At worst it is an environmental disaster, a predatory pyramid scheme, and a commitment to an ideology of greed and distrust. I believe the only

[59] Marina Gržinić, "Necropolitical Screens: Digital Image, Propriety, Racialization", in *The Nordic Journal of Aesthetics*, 2021, 30(61-62), 98-106, https://tidsskrift.dk/nja/article/view/127885

[60] Cf. the already mentioned essay "The Ghostchain" as well as Evgeny Morozov, "Geraldine Juárez on NFTs & Ghosts", in *The Crypto Syllabus*, 19 December 2021, https://the-crypto-syllabus.com/geraldine-juarez-on-nfts-ghosts

[61] Aram Bartholl, "I don't need to own art", 16 February 2022, https://arambartholl.com/blog/i-dont-need-to-own-art

[62] Martin O'Leary, "The Case Against Crypto", in *Watershed*, 3 December 2021, https://www.watershed.co.uk/studio/news/2021/12/03/case-against-crypto

[63] Tante, "The Third Web", 29 December 2021, https://tante.cc/2021/12/17/the-third-web

[64] Felix Stalder, "From Commons to NFTs: Digital objects and radical imagination", in *Makery*, 31 January 2022, https://www.makery.info/en/2022/01/31/english-from-commons-to-nfts-digital-objects-and-radical-imagination

[65] Ian Bogost, "The Internet Is Just Investment Banking Now", in *The Atlantic*, 4 February 2022, https://www.theatlantic.com/technology/archive/2022/02/future-internet-blockchain-investment-banking/621480

ethical response is to reject it in all its forms", Martin O'Leary writes in his text.

Many critiques of the crypto ideology point to its origins in crypto anarchism and techno-libertarianism, harking back to the Austrian school of economics and its belief that the only way to achieve political and moral freedom is to give individuals full economic freedom. It is fairly easy to point out the right-wing, sometimes even fascist, implications of crypto anarchism, above all in the theories of Timothy C. May, the author of "The Crypto Anarchist Manifesto" (1988) and "The Cyphernomicon" (1994), and those of Nick Szabo, the inventor of smart contracts. Both take a stand against state power and welfare politics, defend privacy and individual greed, and make some explicitly anti-democratic statements. At oft-quoted point 6.7.3 of "The Cyphernomicon", May writes: "Crypto anarchy means prosperity for those who can grab it, those competent enough to have something of value to offer for sale; the clueless 95% will suffer, but that is only just."[66]

What's less obvious is how progressive thinkers, programmers and activists have contributed to developing cryptographic technologies and the ideas behind them to improve democracy and question capitalism, rather than destroying the former and turbo-accelerating the latter, as those mentioned above seem intent on doing. In 1991, Philip Zimmermann, the inventor of PGP ("pretty good privacy", the encryption system we are still using to authenticate and protect online communications), wrote:

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[66] Timothy C. May, "THE CYPHERNOMICON: Cypherpunks FAQ and More", 1994, https://nakamotoinstitute.org/static/docs/cyphernomicon.txt

"If we do nothing, new technologies will give the government new automatic surveillance capabilities that Stalin could never have dreamed of. The only way to hold the line on privacy in the information age is strong cryptography [...] When use of strong cryptography becomes popular, it's harder for the government to criminalize it. Therefore, using PGP is good for preserving democracy. If privacy is outlawed, only outlaws will have privacy."[67]

In April 2011, free software coder and activist Denis "Jaromil" Roio wrote a short text that became popular as "The Bitcoin Manifesto", in which he claims:

"this is now the end of the *flow capitalism*, which consists of the monopoly on transactions, the hegemony of banks on the movement of values and not just their storage, this middle-man mafia strangling the world as we speak [...] the death of the flow capital is a new stage for the necrotization of capitalism."[68]

Jaromil is also the author of the longer paper "Bitcoin, the End of the Taboo on Money" (2013), later included in his PHD thesis on algorithmic sovereignty. In the paper, cryptocurrencies are described as the outcome of a participative process, and a commons, capable of reversing the way in which, for centuries, money has been the result of a process of accumulation based

[67] Philip Zimmermann, "Why I Wrote PGP", 1991 (revised 1999), https://www.philzimmermann.com/EN/essays/WhyIWrotePGP.html

[68] Denis "Jaromil" Roio, "The Bitcoin Manifesto", in *Bitcoin Talk*, 10 April 2011, https://bitcointalk.org/index.php?topic=5671.0

Tyler Hobbs, *Fidenza #997*, 2021

on violence and authoritarian power. "Bitcoin makes it possible for money to become a common and no longer a top-down convention imposed by a sovereign and its liturgy of power", he writes, adding:

> "Being involved in the community that has grown around Bitcoin I can see that the community is comprised primarily of young idealists rebelling against the status-quo, especially when it consists of a centralized administration prone to corruption. It is clear to many how unjust monopolies are often dominating various contexts, curbing the possibilities of innovation that are in the hands of younger generations. The liberation of the medium of value exchange is an act we refer to as 'breaking the Taboo on Money'. Bitcoin has a role in history: its epos coalesces

in communities, new ethical reflections, new tales of passion, the glory in all the mystery around its origins. The will for liberation, de-centralization and disintermediation is central to Bitcoin – it is ethical and should not be seen as more conflictual than the concrete need to disintermediate many of the systemic functions that are governing modern society."[69]

"The left can't meme" is a popular saying on the internet, especially in alt-right circles, "typically used to criticize the political memes created by left-leaning internet users as unfunny or cringeworthy."[70] With a few exceptions, the left seem to have developed a similar attitude toward crypto, apparently unable to understand the role that its critical contribution might have in the crypto space, were it constructive rather than dismissive. Daniel Pinchbeck writes:

"While challenging the fiat system with a vision of technologically mediated and theoretically depoliticized private money, Bitcoin and the other cryptocurrencies remain tools explicitly designed to perpetuate our current socio-economic model in which atomized individuals compete against each other for resources, some of which are actually scarce and some of which are kept artificially scarce. The prospect that we might intentionally design and deploy some kind of blockchain-based

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[69] Denis "Jaromil" Roio, "Bitcoin, the End of the Taboo on Money", 6 April 2013, pp. 8-9, https://files.dyne.org/books/Bitcoin_end_of_taboo_on_money.pdf

[70] Cf. "The Left Can't Meme", in *Know Your Meme*, https://knowyourmeme.com/memes/the-left-cant-meme

substitute for the current monetary system to make a world that is more cooperative and regenerative may be very faint, but it cannot be dismissed out of hand."[71]

This paragraph opens with a quote from economist, writer and former Greek finance minister Yanis Varoufakis, interviewed by Morozov. Taken out of context and at a cursory glance, his statement could easily be interpreted as an outright condemnation of the crypto economy, but this is not the case. In line with how Marx and Engels viewed technology, Varoufakis acknowledges "the genuine ingenuity of blockchain" and its emancipatory potential, but he also believes that no technology alone can emancipate us. "Indeed, any digital service, currency, or good that is built on it within the present system will simply reproduce the present system's legitimacy." In the past, "liberation required a political movement that first overthrows the bourgeoisie and only then presses these magnificent technologies into the service of the many." And now, "blockchain will be useful in societies liberated from the patterned extractive power of the few."[72]

THE BYZANTINE
GENERALS PROBLEM

Several generals are besieging Byzantium. They have surrounded the city, but together they must decide whether to attack, and when. Some generals might prefer to attack, others to retreat: whatever

71   Daniel Pinchbeck, "What Revolution Will Be Tokenized?", cit.
72   Yanis Varoufakis in Evgeny Morozov, "Yanis Varoufakis on Crypto & the Left", cit.

they decide, an agreement has to be reached, as a halfhearted attack by a few generals would be worse than either a coordinated attack or a coordinated retreat. The generals are isolated, and there isn't a secure communication channel they can rely on. Some generals might not even be on side. They can only send their votes via messengers who might not deliver them, or might forge them; some messages might get intercepted, or have been formulated by the opposing side. How can the generals agree to attack or retreat all together, at the same time?

The Byzantine Generals Problem is a game theory problem, an analogy for "the difficulty decentralized parties have in arriving at consensus without relying on a trusted central party."[73] The Byzantine Generals Problem doesn't affect centralised systems: if the generals were coordinated by an emperor or king, a trusted, central authority would be responsible for sending the messages and providing correct information. Centralised systems sacrifice trustlessness for efficiency, and can only be corrupted by the central authority. Decentralised systems, on the other end, require that truth and consensus be established trustlessly.

Blockchains solve the Byzantine Generals Problem in a secure, reliable way, and make cryptocurrencies a revolution in the centuries-long history of money. What really appeals to me about the analogy, however, is the role played by the generals who disagree. If all the generals agreed on the same solution, operating like a hive mind, there wouldn't be so
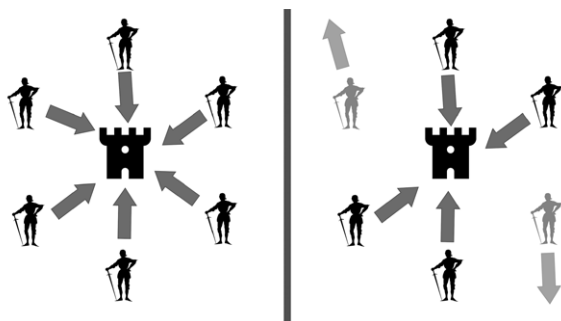
Illustration of the Byzantine Generals Problem

great a need for a secure, strong, tamper-proof com-
munication system. The system has to be strong and
reliable because in a democratic, horizontal society,
consensus is arguably difficult to reach. Coming up
with a solution that makes everybody happy, with a
shared truth, requires time, energy, negotiation. In
this process, the dissenters, the critical voices, are
much more important than the dependable generals,
because they make the group stronger, and the infra-
structures it relies on more robust.

As the planets suggest, 2022 might see us
entering the phase of cultural absorption and wide-
spread adoption of blockchain technologies, but con-
sensus about them has not yet been reached. This is
definitely a good thing: it means that what Morozov
calls "common sense" has not yet prevailed, and that
the system can still be enhanced and improved. It
also means that, now more than ever, critical voices
need to step up and make their presence felt. It is my
hope that, by questioning technological values (Tina

Rivers Ryan),[74] and acting as a "zone of resistance" (Martin Zeilinger),[75] art and art professionals will take advantage of the central role that the crypto space has granted them to remedy its present snafus and help determine its future developments.

Domenico Quaranta, 6 March 2022

[74] Tina Rivers Ryan, "Will the Artworld's NFT Wars End in Utopia or Dystopia?", in *Art Review*, 2 December 2021, https://artreview. com/will-the-artworld-nft-wars-end-in-utopia-or-dystopia

[75] Martin Zeilinger, "Digital Art as 'Monetised Graphics'", cit., p. 17.