Jg. 25 H. 1 2025
€ 13,-

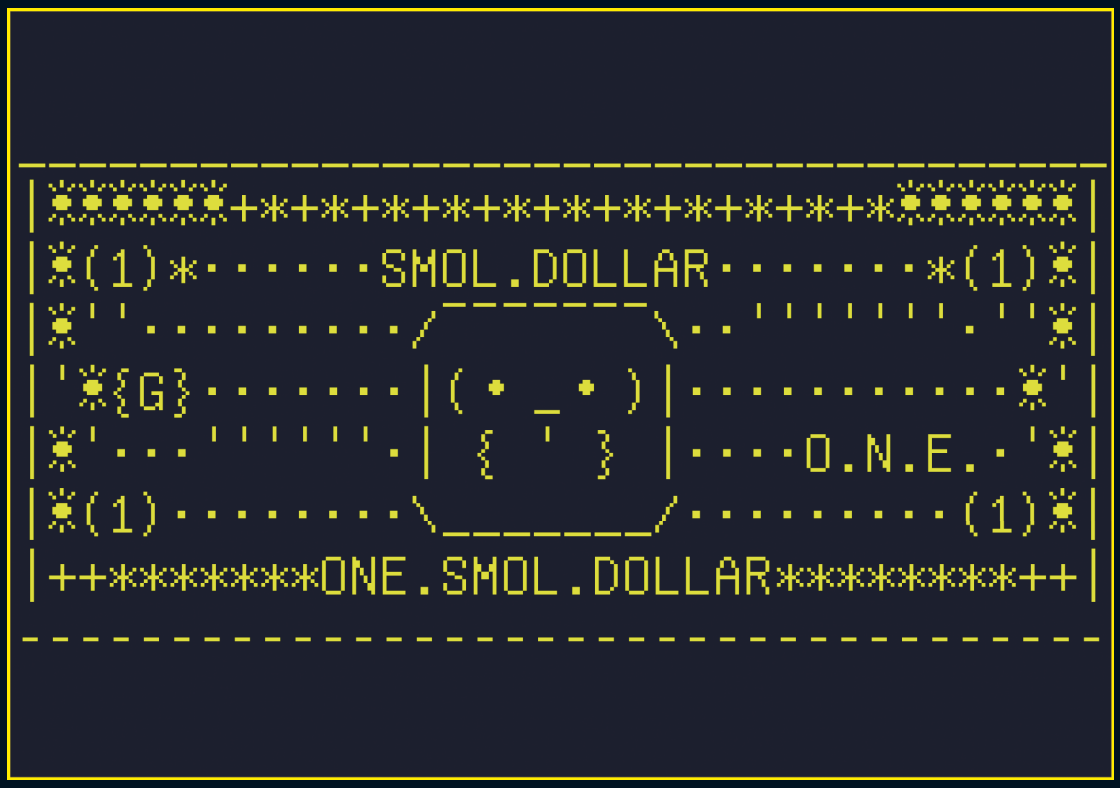
NAVIGATIONEN

Zeitschrift für Medien- und Kulturwissenschaften

Universität Siegen

Johannes Bennke / Mirjam Schaub (Eds.)

Media Cultures of Value | Economy, Politics, and Art in Web3



Jg. 25, H. 1, 2025

NAVI
GATIONEN
Zeitschrift für Medien- und Kulturwissenschaften

Johannes Bennke / Mirjam Schaub (Eds.)

MEDIA CULTURES OF VALUE: ECONOMY, POLITICS, AND ART IN WEB3

NAVIGATIONEN

Zeitschrift für Medien- und Kulturwissenschaften

IMPRESSUM

HERAUSGEBER:
Prof. Dr. Jens Schröter
Lehrstuhl für Medienkulturwissenschaft
Lennéstr. 1
53113 Bonn (Hauptherausgeber)

Christoph Borbach und Max Kanderske
Team "Science, Technology and Media Studies"
Universität Siegen
Herrengarten 3
57072 Siegen

Prof. Dr. Benjamin Beil
Institut für Medienkultur und Theater
Meister-Ekkehart-Str. 11
50937 Köln

REDAKTION FÜR DIESE AUSGABE:
Johannes Bennke / Mirjam Schaub

UMSCHLAGGESTALTUNG
UND LAYOUT:
Fanny Pokrandt
(für diese Ausgabe)
Christoph Meibom und Susanne Pütz
(Originaldesign)

BILDER:
$mol Dollar 901011745030214
(2023)| Paul Seidler, © GNU Affero General Public License

TITELBILD HINTEN:
$mol Dollar
108040115410302O4(2023) | Paul Seidler, © GNU Affero General Public License

DRUCK:
UniPrint, Universität Siegen

Erscheinungsweise zweimal jährlich

universi – Universitätsverlag Siegen
Am Eichenhang 50
57076 Siegen

Preis des Einzelheftes: € 13,-
Preis des Doppelheftes: € 22,-
Jahresabonnement: € 20,-
Jahresabonnement
für Studierende: € 14,-

ISSN 1619-1641

Johannes Bennke / Mirjam Schaub (Eds.)

MEDIA CULTURES OF VALUE

Economy, Politics, and Art in Web3

universi
UNIVERSITÄTSVERLAG SIEGEN

TABLE OF CONTENTS

MEDIA CULTURES OF VALUE: ECONOMY, POLITICS, AND ART IN WEB3

Introduction

JOHANNES BENNKE AND MIRJAM SCHAUB

1. INTRODUCTION

With a 'crypto president' in office and Bitcoin hitting a new all-time high on inauguration day, on January 20, 2025, the crypto winter has ended despite the unpleasant chill in Washington. Meanwhile, public perception of crypto remains disconnected from its growing role as an Internet layer. Since the hype of 2018 and 2021 blockchain largely faded from media discourse, resurfacing in 2025 after major exchange collapses like FTX in 2022 and NFT scams exposed flawed business models fueled by tech optimism and personality cults. While AI now dominates digital discourse, blockchain development quietly advances, reshaping data infrastructure, the attention economy, and ushering in the next phase of platform capitalism: Web3.

Web3 remains ill-defined. Some see it as an Internet evolution ("static," "interactive," "user-centric" (EBSI 2022)), while others trace it through media practices ("read, write, own" (Dixon 2024)). In this view, Web1 (1990s) was a collection of websites and blogs, Web2 (2000s) marked platform capitalism, and Web3 (2010s) promises greater user data control and digital ownership. This perspective, widely accepted, is promoted by the Ethereum Foundation and Web3 initiatives like the Brave browser.

Decentralized technologies promise users sovereignty over data and digital assets through cryptographic trust, verification, and personalized tokens. Startups building blockchain ecosystems fuel hopes for new decentralized sovereignties, but regulatory pressures – such as the EU's MiCA regulation ("Markets in Crypto-Assets Regulation (MiCA)" 2023; Feinstein and Werbach 2021) – threatens these ideals. At stake is whether "produsers" (Bruns 2008) control their data or if platforms extract it, making it opaque. Blockchain enables validated transactions and artificial scarcity (Werbach 2018), raising a key question: Does Web3 resist data extraction by platform capitalism, or does it intensify scarcity and extraction, detaching data from its sources?

Beyond external regulations, tensions exist within decentralized technologies themselves. Blockchains like Bitcoin, Ethereum, Solana, and Tezos form distinct ecosystems, each fostering unique media cultures. These differences stem from internal protocol design, shaping network coordination and interaction – what some

call "blockchain culture" (Rivero Moreno 2024). David Golumbia (2016) sees blockchain as right-libertarian, while newer artistic and activist perspectives highlight its potential for individual vs. collective good (Catlow and Rafferty 2022; Dávila 2023). Values surrounding Bitcoin, for example, are characterized by autonomy, libertarianism, and an exit from the fiat money system. Fiat money is government-issued currency that is backed by trust in the issuing authority, for example a central bank. Ethereum culture on the other hand is about contracts, rules for coordinating the network, and the production of public goods. Both Bitcoin and Ethereum share a decentralized payment system independent of centralized organizations and nations.

While Golumbia's view may overstate blockchain's ideology, Web3 platforms often dismantle the commons – while claiming the opposite – avoiding taxpayer funding. Joseph Vogl argues convincingly that since the 1970s, financial deregulation – especially post-2008 was politically driven (Vogl 2022). Crucial for platform capitalism is the systematic avoidance of taxes that fundamentally undermines the commons. If one reads the white paper by Satoshi Nakamoto, a pseudonym for the developer or development team of Bitcoin, as well as the accompanying postings and email correspondence with other cryptographers and Bitcoin developers, it becomes clear that an alternative payment system is being designed, "a peer-to-peer electronic cash system", that seeks to avoid the problems of centralized money management (Nakamoto 2008). The Bitcoin genesis block of Jan 3, 2009 reinforces this with a headline on the banking crisis: "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks." Ironically, while Bitcoin aimed to escape monopolies, cryptocurrency deregulation has fueled capital centralization, digital colonialism, and "implicit feudalism" online (Schneider 2024).

This *navigationen* issue argues that blockchain is not a mass medium but part of networked media, where information technology and financial markets have become indistinguishable. Understanding this requires rethinking values, personal rights, community, and media. While legal, political, and social sciences have extensively analyzed blockchain's impact, media studies often dismiss it, associating 'crypto' with libertarianism, greed, fraud, toxic masculinity, and NFT excesses. This has made blockchain a taboo in humanities discourse. Instead of seeing it as a solution in search of a problem, media studies should examine its operations, societal impact, value production, as well as ethical, political and epistemological dimensions adopting insights from other fields to reinterpret this "unculture of values" and its aesthetics. A genuine media studies or even media philosophical and aesthetic perspective on crypto technology has been largely lacking.

Another hypothesis is that Web3 revolves around creating, trading, and accumulating previously unavailable value, forming their own "media cultures of value." Finance has automated information, where "information itself has congealed into a form of value" (Vogl 2022, 32). Blockchain further merges financial markets and information technology through decentralized, cryptographically secured ledgers. More than a tool, blockchain generates value, processes it as a commodity, trades it,

and creates markets where trading feeds back into the technology. Tokens become assets – cryptocurrencies, smart contracts, NFTs, and memecoins – driven by speculation that shapes future events. This market dynamic interprets reality through future value, colonizing the future with past data to impact the present. Blockchain thus models a media theory of value intertwined with ethics and economic theories (Engell and Siegert 2019).

To illustrate media cultures of value, we highlight two opposing examples. Artists and collectives use NFTs and cryptocurrencies to build communities and allocate funds through new voting mechanisms. For instance, Ville Haimala's band *Amnesia Scanner* planned to sell track tokens, granting fans voting rights via a DAO (Bundeskunsthalle 2021). Similarly, Jonas Lund's JLT allows token holders to vote on his projects (Lund 2018), which still belong to the realm of conceptual art. Here, attention fosters connections and shared values between artists and fans, who are curious but critical of blockchain as a new medium for artistic production.

Conversely, memecoins exemplify value privatization, monetizing attention and popularity. On January 17, 2025, President-elect Trump announced the memecoin $ TRUMP on Truth Social. Memecoins function as digital memorabilia, feeding the blockchain's profit-driven model. After launch, $ TRUMP surged over 800% before stabilizing at 200%, a scam known as a ‚pump-and-dump scheme'. The price of a currency can be made to look higher than it really is by making false and misleading positive statements. The fraudsters sell their shares at the higher price. This can leave other investors with losses when the price falls. Since the Trump family holds a large share, its value could translate into billions (Lipton and Yaffe-Bellany 2025).

These examples reveal a political divide: artists use tokens for community-building, while other actors capitalize on attention for nonsensical actions. Since the technology can be used for different means, this dynamic prompts another hypothesis: the informatization of finance and financialization of information will shape new corporate governance structures, fostering networked citizenship beyond nation-states (De Filippi 2023; De Filippi, Reijers, and Mannan 2024).

In 1996, John Perry Barlow's *Declaration of the Independence of Cyberspace* envisioned an anarchic, privilege-free digital space beyond nation-states, contrasting with the physical world (Barlow 1996). However, this vision has not only failed but reversed: the Internet is now heavily regulated, monopolized by a few corporations, and reliant on resource-intensive infrastructure. Access is restricted by censorship, search filters, and firewalls, while exploitative labor supports its operations. Cyberspace is far from immaterial, despite efforts to obscure its physical ties. Barlow correctly foresaw its transactional nature but overlooked its susceptibility to regulation, financialization, and colonization. What remains is not just a reality check but a clash between two governance models.

With this special issue, we take up this interplay of political, economic and technical approaches and discuss it from a media studies perspective, using examples from art and aesthetics, among others. The contributions therefore deal with aspects of mediality, media practices and the culture of a government technology

MEDIA CULTURES OF VALUE

that has so far only been recognizable in outline. The special issue consists of contributions from the conference "Digital Biedermeier–or Radical Democratic Utopia? NFTs as Interfaces of Cryptocurrencies" which took place October 5, 2023 in Berlin, Hamburg and on Zoom. This event was organized in the frame of the annual conference of the *Working Group Media Philosophy* of the *German Society for Media Studies* (led by Johannes Bennke, Markus Rautzenberg, Mirjam Schaub at the time) in cooperation with the *Cluster of Excellence Matters of Activity. Image Space Material* at *Humboldt-University Berlin*. The project has been supported by the Department of Design at the Hamburg University of Applied Sciences, and in particular by its group of theoreticians.

2. THE CONTRIBUTIONS

Johannes Bennke and **Nathan Schneider** introduce *protocological governance* as a framework for Web3 balancing sovereignty and entanglement in protocol-driven interactions. While protocols are understood as patterns that organize interactions among agents, their integration also creates vulnerabilities that require safeguards. Through the concept of *protocological chiasm*, they highlight the dynamic interplay between abstract structures and material expressions, positioning the human body as a site of resistance and redefining power and knowledge relations.

Jens Schröter analyzes how values, in the Marxian sense, are socially produced and materially bound, focusing on the materiality of the media of value. Analyzing the handling of goods in supermarkets and department stores – such as price tags, surveillance systems, and entry barriers – he highlights how economic principles shape access and determine an object's value. He concludes with a critique of limitless economic accumulation, linking it to the climate crisis and calling for a post-capitalist system centered on concrete use-value rather than abstract monetary worth.

Mirjam Schaub examines NFTs as the visual interface of cryptocurrencies, questioning their promises of incorruptibility and independence while highlighting their speculative nature. She traces parallels between NFTs and historical financial bubbles, such as 17th-century tulip mania, showing how digital assets gain value through attention and artificial scarcity rather than exclusivity. Ultimately, she critiques the underlying economic and social mechanisms that drive the NFT hype, linking them to platform capitalism, tax avoidance, and the paradoxical nature of wasteful spending.

Paul Seidler explores the economic implications of NFTs that treat smart contracts as artworks, focusing on market dynamics and the distinction between primary and secondary marketplaces. He argues that rather than viewing NFTs purely as assets, some artists transform them into reflections on value itself, shifting from Marxist notions of exchange and use value to a framework based on symbolic and

market value, as described by Pierre Bourdieu. Through an analysis of NFT artworks that engage with financial infrastructures and market dynamics, he concludes that NFTs' commodity-like nature allows artists to critically examine value, price, and ownership as artistic concepts.

Katrin Becker's article explores how blockchain technology and NFT-based virtual fashion challenge traditional concepts of identity and self-representation. Historically, legal systems have governed the integration of the mental and physical self into institutional frameworks. However, with blockchain and its Lex Cryptographia, individuals can shape their virtual identity autonomously. The study questions whether NFTs truly empower individuals or simply introduce new forms of institutional control. Ultimately, blockchain also exposes legal gaps and limitations, particularly in the representation of the self and the physical body in virtual spaces.

Viktoria Hilsberg analyzes how blockchain-based art reshapes value creation by emphasizing immutability, digital ownership, and authenticity in NFTs. She argues that blockchain shifts focus from the artwork to artistic labor within decentralized networks and DAOs. Drawing on Mauricio Lazzarato's concept of immaterial labor, she shows how certain NFT and DAO projects resist commodification by making artistic labor explicit. This redefines value as emerging from social relations, protocols, and smart contracts rather than traditional market dynamics.

The interview focuses on the historical development and future challenges of digital medical networks in the context of Web3. **Laura Niebling** explains that while the use of decentralized technologies in healthcare theoretically promises more data protection and control for patients, it also challenges fundamental values such as trust and medical confidentiality. She discusses that every new technology always makes existing control structures visible and thus raises old media habits as well as ethical debates about the value of humans and machines in the digital age.

ACKNOWLEDGEMENTS

The publication, layout and printing of this issue of navigationen was generously supported by the Design Department of the Hamburg University of Applied Sciences (HAW), in particular the Theory Group.

Johannes Bennke's work is based on a research project supported by a postdoctoral fellowship at Bar-Ilan University's Hermeneutics and Cultural Studies Program.

REFERENCES

Barlow, John Perry. 1996. "A Declaration of the Independence of Cyberspace." Electronic Frontier Foundation. 1996. https://www.eff.org/de/cyberspace-independence.

Bruns, Axel. 2008. *Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage*. Digital Formations, v. 45. New York: Peter Lang.

Bundeskunsthalle, dir. 2021. *STUDIO BONN – Exchange Values – Krypto-Kapitalismus*. https://www.youtube.com/watch?v=btQRji5fU_8.

Catlow, Ruth, and Penny Rafferty, eds. 2022. *Radical Friends: Decentralised Autonomous Organisations and the Arts*. United Kingdom: Torque Editions.

Dávila, Joshua. 2023. *Blockchain Radicals. How Capitalism Ruined Crypto and How to Fix It*. New York: Random House. https://www.penguinrandomhouse.com/books/725770/blockchain-radicals-by-josh-davila/.

De Filippi, Primavera. 2023. "New Network Sovereignties: The Rise of Non-Territorial States?" *Global Governance Programme*, September 12, 2023. https://globalgovernanceprogramme.eui.eu/new-network-sovereignties-the-rise-of-non-territorial-states/.

De Filippi, Primavera, Wessel Reijers, and Morshed Mannan. 2024. *Blockchain Governance*. 1st ed. The MIT Press Essential Knowledge Series. Cambridge: MIT Press.

Dixon, Chris. 2024. *Read Write Own: Building the next Era of the Internet*. First edition. New York: Random House.

EBSI. 2022. "EBSI a New Trust Paradigm for Web3." 2022. https://ec.europa.eu/digital-building-blocks/sites/display/EBSI/EBSI+a+new+trust+paradigm+for+Web3.

Engell, Lorenz, and Bernhard Siegert, eds. 2019. *Schwerpunkt Blockchain*. Zeitschrift für Medien- und Kulturforschung, Heft 10, 2 (2019). Hamburg: Felix Meiner Verlag.

Feinstein, Brian D, and Kevin Werbach. 2021. "The Impact of Cryptocurrency Regulation on Trading Markets." *Journal of Financial Regulation* 7 (1): 48–99. https://doi.org/10.1093/jfr/fjab003.

Golumbia, David. 2016. *The Politics of Bitcoin: Software as Right-Wing Extremism*. Minneapolis: University of Minnesota Press.

Lipton, Eric, and David Yaffe-Bellany. 2025. "Trump's Cryptocurrency Surges to Become One of the World's Most Valuable." *The New York Times*, January 19, 2025, sec. U.S. https://www.nytimes.com/2025/01/19/us/politics/trump-cryptocurrency-surges.html.

Lund, Jonas. 2018. "Jonas Lund Token (JLT)." Jonas Lund. 2018. https://jonaslund.com/works/jonas-lund-token-jlt/.

"Markets in Crypto-Assets Regulation (MiCA)." 2023. 2023. https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica.

Nakamoto, Satoshi. 2008. "Bitcoin: A Peer-to-Peer Electronic Cash System." *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3440802.

Rivero Moreno, Luis David. 2024. "Blockchain Culture and Digital Image Precariousness. Questioning NFTs as an Art Preservation Strategy." Edited by Universitat Oberta de Catalunya. *Artnodes* 0 (33). https://doi.org/10.7238/artnodes.v0i33.416449.

Vogl, Joseph. 2022. *Capital and Ressentiment: A Brief Theory of the Present*. Translated by Neil Solomon. Cambridge: Polity Press.

Werbach, Kevin. 2018. *The Blockchain and the New Architecture of Trust*. Cambridge, MA: MIT Press.

PROTOCOLOGICAL GOVERNANCE:

Between Sovereignty and Entanglement

JOHANNES BENNKE AND NATHAN SCHNEIDER

1. INTRODUCTION

The fate of the world may rest on protocols. Efforts among countries to address the crisis of climate change take the form of agreements often referred to as protocols, while Indigenous protocols often model practices for living in more sustainable relationships with more-than-human ecosystems. Technical protocols are the conditions of possibility for the Internet, providing the enabling conditions for the World Wide Web, email, encryption, and many other vital infrastructures. It is therefore important to cultivate an understanding of how protocols function and how they differ from other kinds of organizational practices, such as governments, corporations, and markets. Protocols are also the basic building blocks of the so-called "Web3" paradigm of blockchains, smart contracts, zero-knowledge proofs, and DAOs; Web3-affiliated communities such as the "Summer of Protocols" program think of protocols as "first-class concepts" for institutional analysis and design (Rao et al. 2023). Efforts to build "network sovereignties" envision protocols taking over functions currently managed by nation states, such as currency, identity, and even defense (De Filippi 2024; Calzada 2024). If this paradigm is to become as important as its enthusiasts hope, protocols could take on a significance that exceeds their current role as primarily subject to other organizational forms.

Protocol is a term with many uses. It can be a record of a proceeding, a procedure in medicine or religious ritual, a form of diplomacy, and a recipe for networking computers. In many instances protocols are often understood in technical, diplomatic, or procedural terms without being purely bureaucratic in nature (Plener, Werber, and Wolf 2023, v). As a working definition, we understand a protocol as simply *a pattern that organizes modes of interaction among agents*. It is thus a particular class of mediation technologies, and although this definition is simple its manifestations can take many different forms. Protocols can be voluntary or obligatory for participants to adopt; they can be enforced by a certain external authority or mutually among participants; they can be formalized explicitly or operate through a more implicit understanding. A pattern is a "social structure, which becomes visible to us only in the regularity of our behaviour or in the regularity of social processes" (Nassehi 2024, 32). This social structure is also embedded in media processes, as protocols often are.

This paper outlines a framework for understanding protocols as a form of governance. It focuses specifically on the question of whether and how protocols can become themselves sites of sovereignty, even while they are entangled. Sovereignty and entanglement are not an either-or but operate in dynamic tension around protocological systems. Some degree of sovereignty is necessary in order for protocols to resist, counteract, and perhaps even replace other kinds of social logics, such as states and corporations. A protocol's entanglement with participating systems can present risks to its sovereignty, but entanglement is also a precondition of protocols' usefulness and accountability. To elucidate these dynamics, we draw on recent media anthropology, as well as examples in diverse contexts, from historical religious movements to the rule-sets that make the modern Internet possible.

Protocological governance, we propose, occurs *when protocols themselves become sites of sovereignty, governing according to a logic not reducible to any of the entities entangled with them*. It is a form of socio-technical organization, and a rule-based system for coordinating interactions, whose dominant logic operates through protocols. This stands in contrast to the logics of governmental authority, which imposes law through a monopoly on force (Weber 1946, 6), or market organization, which coordinates activity through pricing, pecuniary interests, and credit (Graeber 2014). Under protocological governance, voluntary agreements serve as the foundational principle of a social order. However, such agreements are consistently vulnerable to capture, whereby a particular agent is able to control the protocol and its participants unilaterally (Grover et al. 2021; Ferreira, Li, and Nikolowa 2019; Kharazian, Starbird, and Hill 2024). One important dimension of protocological sovereignty is the extent that a protocol is capable of mitigating malicious attacks, unwanted manipulations, or other forms of capture.

Before the advent of the nation state as the dominant source of organizational power, protocol networks appear to have been more prominent in the structure of societies than they are today (Ferguson 2018). More recently, protocols most often appear as subservient to the state and market. Diplomatic protocols arise among states, but states often decline to regard them as binding. For instance, the 1997 Kyoto Protocol was a global treaty established through the United Nations, but its effectiveness was severely weakened by the refusal of the United States Senate to adopt it. Technical protocols often operate at the behest of wealthy corporations that use them to extract value and steer their development. But there are emerging trends that point to the ascendance of sovereign protocols, which no corporation or state can fully control. The rise of digital networks as an increasingly pervasive medium of social organization may challenge the dominance of states, markets, platforms, and other established institutions. Developments such as protocol-based blockchain economies, governed by their transnational participants more than by any specific territorial government, could further elevate protocol logics in the coming years. Despite recurring crises of fluctuating value and regulatory treatment, the value of major blockchains such as Bitcoin and Ethereum continues to rise, and their digital assets are becoming increasingly integrated into mainstream finance

(Radanliev 2024). Social media may be shifting from centralized platforms to protocols that no single company controls (Kleppmann et al. 2024; Nicholson, Keegan, and Fiesler 2023). The rise (or return) of protocols holds further potential: social movements worldwide have demanded greater power for Indigenous lifeways that trace their lineages to before the incursions of colonial states, and that have survived those incursions – lifeways that often enact forms of protocological governance. We regard the ascendance of protocological governance as an ambivalent prospect, one that holds the potential for harm as well as progress; here we seek to understand the phenomenon, not necessarily to encourage the embrace of it.

The paper begins by introducing central concepts: protocological governance, sovereignty, and entanglement. It then explores those concepts in light of varied examples wherein protocols have been means of resisting capture. We then conclude by identifying the underlying dynamic of what we call the *protocological chiasm*, a dynamic tension by which protocols can resist capture by other forces through embodied performance.

2. PROTOCOLS, SOVEREIGNTY, AND ENTANGLEMENT

2.1 ON PROTOCOL AND THE PROTOCOLOGICAL

Our working definition of protocol – a pattern representing modes of interaction among agents – builds on its etymological meaning. Etymologically, *protocol* derives from the Greek *protos* (first) and *kóllon* (glue, size), indicating a particular section of a papyrus imprinted by the Egyptian manufacturer, which was glued to the beginning of the papyrus roll to validate its authenticity and protect against counterfeiting (Vismann 2008). As indicators of authenticity, protocols shift the balance of power. While a protocol might derive authenticity entirely from a single source of authority, a more far-reaching kind of authenticity becomes possible when multiple authorities choose to adopt a given protocol.

The etymological meaning ties the protocol closely to written cultures. Some archaeologists have concluded that the origin of writing is rooted in the authentication of economic transactions in the Uruk period around 4000-3100 BCE (Schmandt-Besserat 1992). Tokens were placed in clay balls (*bulla*), which represented the trade goods and were also imprinted on the cover. A trade transaction was thus not only recorded but also authenticated and protected against forgery. The means of this authentication had to be a matter of agreement among parties. Through it, a mere transaction became an authentic record of a legitimate trade, not just an individual's claim. Others who respected the protocol could check the transaction as well by validating the integrity of the *bulla*. Even in the context of a hierarchical society, acts of everyday exchange depended on this form of mutual validation.

The view of protocols as mediating among many different sources of agency and authority has become especially evident in the technology of digital networks. According to Alexander Galloway's influential account, protocols are "a set of recommendations and rules that outline specific technical standards" (Galloway 2006, 7) and "a technique for achieving voluntary regulation within a contingent environment" (Galloway 2006, 8). For example, communication protocols such as TCP/IP ensure that data packages are clearly delimited from each other and reach the right address. As forms of multi-party mediation, however, protocols did not begin with digital computation; they can be understood as a longstanding form of social organization in human history, present and even dominant in contexts ranging from religion to monetary exchange.

To recognize protocols as mediations among multiple authorities is to see how they can reshape power structures. Galloway further emphasizes that the "*protocol is a type of controlling logic that operates outside institutional, governmental, and corporate power*, although it has important ties to all three" (Galloway 2006, 122). This controlling logic is a decisive step toward a certain understanding of protocol sovereignty. For Galloway, networked protocols have come to constitute a form of control analogous to the logic of "Empire" as understood by Hardt and Negri:

> Protocological control mirrors the movements of Empire. In fact one might go so far as to say that *Empire is the social theory and protocol the technical*. Thus Hardt and Negri are accurate in their analysis of the "Symptoms of Passage." An analysis of computer protocols proves this, for it reassigns the former weapons of Leftists – celebration of difference, attack on essentialism, and so forth – as the new tools of Empire: "This new enemy not only is resistant to the old weapons but actually thrives on them, and thus joins its would-be antagonists in applying them to the fullest. Long live difference! Down with essentialist binaries." (Galloway 2006, 26)

While not discounting Galloway's emphasis on protocol as a medium of control, it is also possible to recognize protocols as strategies for escaping the control and capture of dominant power structures. The pervasive understanding in Web3 has been that protocols can aid in achieving forms of generative collective action among participants perhaps not otherwise possible. The foundational essay of the Web3-aligned Summer of Protocols program, whose authors include core developers of the Ethereum blockchain, offers this definition: "A protocol is a stratum of codified behavior that allows for the construction or emergence of complex coordinated behaviors at adjacent loci" (Rao et al. 2023). The essay marvels at the variety of contexts in which protocol-based social orders seem surprisingly effective and generative of creative action, from vehicular traffic and public health to the many wonders of online life. This outlook is aided by what may be a crucial shift in protocol design that Web3 ushers in: protocols with their own governance mechanisms built in,

allowing for the protocol itself to define the conditions for it to change. Protocols governable in this way present the opportunity, among their enthusiasts at least, to have decentralization of power on terms that are pliable and empowering to their users.

Whether participants experience it as control or coordination, the protocol's authority comes from not simply its existence in the abstract but its adoption through action. Protocols in this sense are relational and performative. They are "speech acts" that have a constitutive effect: they do something "in saying something" (Austin 1962, 91). To perform an authenticating protocol properly is precisely the act of rendering it authentic. And, as Angela Walch puts it, "a protocol system dies when people stop performing supportive protocol actions in relation to it" (Walch 2023). Our understanding of performativity involves not only a constructive act of signifying and representing, but a process that transgresses the boundaries of existing semiotic schemes and representational practices (Krämer 2003; 2015, 185). Practice takes precedence over program, and performativity denotes a kind of surplus production or excess. This excess arises through the connection of heterogeneous areas – for example, in the transfer of an abstract pattern of rules by a participant to its situated realization. The meaning contained in the set of rules is not simply transferred into concrete actions, but through the physical execution something else is inscribed into the transfer that eludes the semiotic schema.

By being performative in nature, protocols are also inherently relational. They cannot achieve validity without relationships to external actors whose participation authenticates them. A proposed technical standard becomes an Internet protocol only when developers and companies with meaningful market share actually adopt it. In the Web3 context, a transaction or a token is only meaningful if it receives validation on a widely used blockchain and adoption among wallet-holders who perceive it as valuable enough to be worth possessing. Although Bitcoin was designed to serve as a sovereign digital asset, it was not adopted on a larger scale until it could be traded with fiat money like dollars. Protocols are dependent on usage and are determined by certain criteria such as functionality, simplicity, and compatibility. When adopted, protocols become hybrid entities between the technical and the social, and their materiality consists in the forms such technical and social norms take.

Beyond government bureaucracies and technical standards, the language of protocols has been employed in various Indigenous cultures to distinguish ongoing traditional governance practices with the ones imposed through colonial processes (Lewis 2020; Aikau, Goodyear-Kaʻōpua, and Silva 2016; Theriault et al. 2020; Bowrey 2006). According to a collective position paper on *Indigenous Protocol and Artificial Intelligence*:

> Protocol can be understood in Indigenous contexts generally as guidelines for initiating, maintaining and evolving relationships. These can be relationships with other humans, and they can also be relationships with non-humans such as animals, rocks, and wind. (Lewis 2020, 7)

A contribution by Suzanne Kite in that paper, for instance, compares "the protocol for building a Lakota sweat lodge" (75) with ethical norms for developing artificial intelligence systems. An Indigenous co-author of a set of protocols for libraries among Aboriginal and Torres Strait Islander communities, Alana Garwood-Houng, distinguishes the logic of protocols from the rigidity of state-based law: "Protocols can only ever be guidelines and must be broad enough to be interpreted across a range of organisations and circumstances" (Garwood-Houng 2005, 143).

Whether for ritual practices in a colonized community or digital network, protocols propose a pattern of interaction validated by enactment. Cryptocurrencies claim little value without users, and Internet standards remain merely technical possibilities without actual adoption. Beyond governments and corporations, protocols act as social orderings, mediating among heterogeneous participants. In the process, they can develop their own sovereign logic through their entanglements.

We understand the *protocological* as the condition in which a protocol takes on a life of its own, so to speak, enacting its mediality. Mediality refers to the particular logic, operations, and functionality of a medium. Unlike mere mediation, which describes a transmission from A to B, mediality is specific to each medium (Bennke, Pinchevski 2022). For example, the mediality of taking minutes at a meeting is different from that of transmitting data packages or coordinating a diplomatic negotiation. With mediality, we can begin to see how protocols exhibit sovereignty. The protocological refers to an intrinsic logic of protocols that arises as soon as protocols enact mediality across heteronomous domains, and no one agent can determine the patterns within a given environment about forms of communication. Protocological governance, then, can be generative insofar as it breaks with expectations and develops its own forms of knowledge.

Not every protocol is protocological to the same extent. For instance, a protocol is not protocological if its logic is simply subsumed under an external governing logic. A protocol for producing standardized documentation within a software company is not likely protocological, in that its logic is fully subject to the company. However, if the company adopts a documentation protocol developed collaboratively across many companies, it will exhibit protocological behavior, in the sense that it is not subject to any one governing entity. Similarly, if a protocol is simply derivative of a state's legal system – such as a method for printing official money or a procedure for applying for a housing voucher – it is not protocological because it derives its fundamental logic and enforcement from an external system. Protocological systems may be entangled with the law, but they cannot be merely the enactment of it. A protocol confined to a specific jurisdiction has limited (or nonexistent) sovereignty and little relevance for outsiders. However, if adopted by a group of institutions, the protocol gains its own sovereignty, becoming what we consider protocological.

In the context of blockchains, the question of protocol sovereignty is roughly coterminous with the aspiration of "decentralization," a property that is both widely sought-after and ambiguously defined (Schneider 2019). Protocols such as Bitcoin and Ethereum with a large number of governing nodes may be described as

more meaningfully sovereign than ones like Tether or Solana that are more centrally controlled by guiding entities, even though all depend significantly on particular organizations to lead development (Lin et al. 2021). More sovereign protocols would be ones that further check the power of any one entity to guide its evolution.

Cultivating protocological governance can be a means of reshaping power relations. Approaches in cyberfeminism (Haraway 1985; Plant 1996), postcolonial and Black studies (Harney and Moten 2013; Robinson 2020; Warren 2018), as well as queerness (Ghaziani and Brim 2019) frequently involve developing protocols as sites of sovereignty and resistance. Protocols can crash, hack, or suspend other protocols, or they can avoid control altogether through practices that avoid protocol-codified forms of communication (Galloway, Thacker, and Wark 2014).

Even though control is an inherent part of "the new protocological era" (Galloway 2006, 209), we intend to explore forms of protocological organization that further introduce "difference without separability" (Ferreira da Silva 2016) and to focus on the decolonization of protocols – those that are sovereign and avoid capture by racial capitalism (Robinson and Gilmore 2019).

In sum: a protocol can be considered protocological to the extent that it exhibits sovereignty in its operating logic and carries out governance among its entangled entities. To understand the protocological further, let us consider the properties of sovereignty and entanglement in greater depth.

2.2 ON SOVEREIGNTY

In recent centuries, discourses of sovereignty typically have been tied to the nation-state, which is also apparent in current debates around digital, cyber-, or data sovereignty (Chin and Li 2021). Here, sovereignty "means that the political authority maintains both law and order within the boundaries of its territory, and the integrity of these boundaries against an international environment, in which competing states recognize each other under international law" (Habermas 1996, 126). Such power relations presume institutions, instruments, and populations in a defined territory (Foucault 1995). Debates on digital sovereignty tend to simply adopt elements and principles of state sovereignty (Wu 1997; Fang 2018). But important discourses of sovereignty also appear in other contexts, from non-state understandings of sovereignty among Indigenous or diasporic peoples (Deloria 1997; Coulthard 2014) to the more individualistic notion of "self-sovereignty" that is common in Web3 circles (Mühle et al. 2018). Here, we join those discourses in decoupling sovereignty from the nation-state and recognizing the possibility that sovereignty can be a property of protocols.

Vine Deloria, Jr., in the context of postcolonial Indigeneity, proposes a cultural understanding of sovereignty as opposed to a political one, which he regards as a "limiting concept" (Deloria 1997, 114). Sovereignty, he writes, "can be said to con-

sist more of continued cultural integrity than of political powers and to the degree that a nation loses its sense of cultural identity, to that degree it suffers a loss of sovereignty" (113). In other words, he suggests that sovereignty "characterizes a group of people working toward and achieving maturity" (114). This understanding of sovereignty depends on ongoing practices of maintenance more than an overriding ontology conferred through monopolistic power over a territory.

Glen Sean Coulthard (2014) stresses that Indigenous communities should reject "the colonial politics of recognition"—the reliance on colonizer-state recognition as the basis of sovereignty. Coulthard points to practices such as cultural resistance and cooperative enterprises that perform autonomy on participants' own terms rather than through external affirmation. Relatedly, June Mary Rubis and Noah Theriault (2020, 964) describe what they call "concealing protocols"—the practices through which Indigenous communities "selectively conceal and obscure important aspects of their lives in an effort to manage their relationships with the NGOs, government agencies, and other actors," particularly in the context of environmental conservation efforts that seek to draw from Indigenous practices. The concealing protocols, by this account, "also constitute world-making practices that aim to defend more-than-human relationships from dispossessory intrusions." The protocols of concealment thus protect further relational protocols. This evokes the "right to opacity" that Eduard Glissant ([1990] 1997) asserted in his decolonial "poetics of relation." The Hindi term for sovereignty, *rājya*, meanwhile emphasizes the relationship between the mastery of self and national independence (Pinch 2022). It is from this concept that Mohandas Gandhi drew *swarāj*, or self-rule, as a banner for the Indian independence movement, grounded in practices of personal asceticism and village-scale collectivism.

Some partisans of anti-colonial sovereignty have seen promise in Web3 protocols specifically. In one early case, the Oglala Lakota technologist Payu Harris developed MazaCoin, a modification of Bitcoin intended to serve as a currency under the control of Native Americans (Cordes 2022; Tekobbe and McKnight 2016). MJ Palau-McDonald has more recently argued for the use of smart-contract-enabled blockchains as a tool for asserting Indigenous sovereignty in the context of environmental stewardship in Hawai'i (Palau-McDonald 2022). Others have pointed to blockchain protocols as techniques for achieving Indigenous data sovereignty (Mackey et al. 2022; Sharma et al. 2024; Carroll, Duarte, and Liboiron 2024), food justice (Heitlinger et al. 2021), and energy sovereignty (Dobson 2021). These come alongside widespread concerns about blockchains as a vector for further colonialism (Jutel 2022; Crandall 2019)—deploying one form of sovereignty to efface another.

The dominant discourse on sovereignty in Web3 centers less on pre-existing communal groups than on the sovereignty available to individuals and the sovereignty of technical systems against human intervention. Self-sovereignty, for instance, involves the capacity of individual people to manage their identity, and by extension the resources they claim to possess, in a manner that does not require the license of governments or corporations (Mühle et al. 2018). Protocols that operate by their own institutional logic, proponents believe, can be a means of

enabling their users to become self-sovereign. In turn, protocols can themselves be sites of sovereignty. Web3 discourses such as "governance minimization" (Ehrsam 2020) and "credible neutrality" (Buterin 2020) call for protocols to tolerate as little human intervention as possible so as to prevent the technical equivalent of regulatory capture. Web3 cultures also have an interest in forms of collective sovereignty, particularly through the vision of DAOs, or decentralized autonomous organizations (Swartz 2017); however, in contrast to Indigenous discourses, the ambition is less to strengthen longstanding communities than to enable the creation of new kinds of sovereign collectivities, particularly in the context of a geopolitics where all habitable land on Earth has been claimed by nation-states. These efforts range from visions for democratic networks (Manski and Manski 2018; Dávila 2023) to "startup societies" modeled on Silicon Valley firms (Srinivasan 2022).

The meaning of sovereignty in the context of nation-states has been a matter of ongoing philosophical debate (Philpott 2020); in the context of protocols, the meanings of sovereignty are likely to be even more difficult to resolve, given that protocols are much more structurally heterogeneous than post-Westphalian states. Sovereignty might involve, for instance, control over territory, money, time, people's identities, language, collective memory, law, rights, and the acceptable range of political motion. Some of these elements, and more, may be relevant to a given protocol, while others will not be. A protocol can be designed to inherit some elements from another protocol while controlling others on its own sovereign terms. For instance, Bitcoin has its own distinct ways of accounting for time, currency, user identity, property rights, and governance. It relies on external protocols such as TCP/IP for networking. It is largely indifferent to considerations such as language and geography. It is profoundly embedded in other institutional logics, whether they be dollar-based pricing or the economics of global microchip production.

Sovereignty risks becoming meaningless if it is not somehow entangled. Protocological governance cannot be described as autopoiesis, or "autonomous, individuated and unitary entities that escape relations of input and output" (Taffel 2013, 241). For instance, Web3 experiments in self-sovereign identity bear little utility if people cannot use them for purposes such as international travel, seeking medical care, or obtaining credit. Bitcoin's sovereign currency is meaningful, for large swaths of users, precisely because it can be traded against fiat money. That a protocol is perceived by participants as meaningfully sovereign – about the elements of sovereignty they perceive to matter – is a basic prerequisite for protocological governance. But so also is a protocol's entanglement.

2.3 ON ENTANGLEMENT

The term *entanglement*, by the mid-1930s, became a scientific term of art in quantum mechanics (Boughn 2022), rather than a more general-purpose gesture toward interrelation. In quantum theory's radical departure from Newtonian or intuitive

physics, the word bears with it connotations of both affirmative relation and irreducible mystery. More recently the term has come into use in biological contexts, such as the interrelations in fungal networks (Sheldrake 2020). By extension, fungal entanglement has increasingly served as a model for a kind of social and political theory more attuned to human participation in the more-than-human world (Aslam, McIvor, and Schlosser 2024; brown 2017). Media scholars have adopted the language of entanglement to describe transnational and transmedia historiography (Hilgert, Cronqvist, and Chignell 2020), complex interactions among social media users (Theunissen 2015), the practices of media labs (Thayne and West 2019), and ecological approaches to media theory (Taffel 2013).

Web3 participates in these metaphors as well. As distributed ledgers, blockchains perform exchanges of value with a simultaneity that can seem akin to the behavior of quantum particles; meanwhile, some thought leaders have adopted entangled fungal networks as a design pattern for Web3 systems (Zartler and Emmett 2024). Proposals for future blockchain designs rely directly on quantum entanglement (Li et al. 2022).

We understand entanglement as describing relations that are mutually constitutive in protocological performances. Media and technology are not mere instruments mediating between entities or systems with distinct logics; instead, we follow a recent account in media anthropology that refers to mediated entanglement as "*relations* between human existences, experiences and media, nature, or technology [that] exist prior to their distinction and differentiation. The relations precede the relata" (Voss, Engell, and Othold 2023, 2). Both the founding and maintenance of protocols, too, involve interactions among participants that shape the participants and the protocols themselves; unless participants validate a protocol by entangling themselves through their adoption of it, it remains an unperformed script, an empty abstraction. (The convention of referring to a proposed technical standard as merely a "request for comments" (Cath and Floridi 2017) reflects this provisionality of the protocol without adoption.) Protocols can only succeed when their entanglements include certain prerequisites for a successful performance – such as what Austin (1962) called "felicity conditions" or Bourdieu (1977) called the "field" upon which social performances occur. Protocols gain significance less through their intrinsic elegance than through their acquisition of network effects (Katz and Shapiro 1994).

In art, consider Sol LeWitt's series of "wall drawings" between 1968 and 2007, which consist solely of written instructions and diagrams for execution by others. Several scholars have compared Sol LeWitt's protocol art to blockchain-based NFTs (Wilson 2022; Whitaker and Abrams 2023), recognizing the dynamic relationship between an abstract representation (i.e., LeWitt's diagrams or a digital certificate) and its phenomenal manifestation for those who experience it. LeWitt's original instructions are precise and resist arbitrariness in order that the work "becomes a machine that makes the art" (LeWitt 1967, 79). Yet the realization of his protocol depends on entanglement with material conditions such as the architectural envi-

ronment and humans whose bodies carry out the instructions. During its machine-like and yet necessarily human realization, one of LeWitt's wall drawings exhibits the entangled interplay of abstract representation and embodied manifestation that protocol adoption involves.

Entanglement is necessary for protocols to claim any meaningful kind of sovereignty. But entanglement also poses a risk to protocological sovereignty when it represents a vector for capture.

The scholarly literature on capture – at least beyond the physical sciences, which concern themselves with the capture of, for instance, subatomic particles, planetary bodies, and atmospheric carbon – has tended to focus on the dynamics of regulatory capture. According to one survey of the topic, regulatory capture is "the process through which special interests affect state intervention in any of its forms" (Dal Bó 2006, 203). A condition of such capture occurs when the determined effort of private industry gains control over a governmental regulator that was established to wield power over that industry on behalf of the public. Capture in this sense is an erosion of sovereignty.

We consider capture here to be a much broader social phenomenon, operative far beyond just industry-governmental relations. It bears resemblances to other concepts, such as recuperation (Delfanti and Söderberg 2018) and appropriation (Young 2010). In this broader sense, *capture is when one entity cedes its capacity to self-govern to another entity.* When capture occurs, crucial characteristics of the captured entity change. Its former sovereign actions become mere expedient practices on behalf of the capturing agent. Capture changes the milieu from sovereign protocols to the imposition of sovereignty over protocols. In the idiom of Web3, the aspiration of "decentralization" (Schneider 2019) refers to an optimal dynamic of entanglement among heterogeneous participants that protects a protocol's sovereign logic against capture, while "centralization" refers to the specter of a protocol becoming wholly or largely subject to the power of a certain external participant. According to the Summer of Protocols manifesto, a protocol must be "sufficiently defensible" against "capture by particular groups, endemic exploitation by hostile parasitic elements, cronyism, 'gaming,' runaway extraction, and active ideological hostility" (Rao et al. 2023).

The capture of protocols through their entanglements may occur in various ways. Often, capture occurs when participants aggregate and deploy power in ways invisible to the protocol's design, such as flows of capital around a technical protocol or political flows around an economic protocol. Protocols may also find vulnerabilities in their frequent role as infrastructures – a type of media often hidden from view and attention (Parks 2007). Their hiddenness means that the capture of protocols may not be widely evident to participants until the capture has already occurred; as in other infrastructural contexts, the medium only becomes visible when it has become dysfunctional. Because their heterogeneous entanglements complicate responsive governance, protocols may also be slow to adapt against incursions.

Protocological governance becomes possible when a patterned interaction is sufficiently sovereign to resist capture but also sufficiently entangled to be legitimate and to operate according to a logic not reducible to any of its participants.

3. MOMENTS OF CAPTURE AND RESISTANCE

We have introduced a series of concepts surrounding protocological governance. Protocols are instantiated through performances of adoption among entangled participants. They are protocological to the extent that they exhibit a sovereign logic among their entanglements. These dynamics are important to name due to anxieties about protocol capture that pervade Web3 and earlier Internet technologies.

This section brings the concepts discussed above together with a series of brief examples from Web3 and beyond. Its purpose is first of all to aid in clarifying the concepts.

3.1 MOMENTS IN WEB3 AND ITS PREDECESSORS

The threat of capture has been a longstanding anxiety around Internet protocols, going back to the earliest incursions of institutional authorities, such as corporations and universities, on hobbyist networks. Tim Berners-Lee designed the World Wide Web protocols in order to enable decentralized participation, but he failed to design *against* the accumulations of wealth that would accrue to a small number of highly capitalized network nodes (Brooker 2018). Through their market power, large tech platforms have been able to wield control over protocols (Benkler 2016; Zhang and Carpano 2023). Cultural inertia among dominant demographic groups has also been described as having captured standards-development processes for the Internet (Cath 2021). To the extent that protocols are voluntary agreements, powerful actors can threaten to withdraw their participation – and thus undermine the protocol's utility – unless their demands are met. If certain economic and cultural interests are too strong, their entanglement with a protocol dominates its logic and suppresses its capacity to generate relations on its own terms.

The earliest "killer app" on what would become the Internet, email, depends on a set of open protocols – primarily the Simple Mail Transfer Protocol (SMTP). On the one hand, its protocological properties have secured the persistence of email as both a communication and authentication tool; because no one institution controls it, email serves as an independent, trusted tool for bridging across proprietary networks. On the other hand, major platform companies such as Google, Microsoft, and Yandex have come to control significant portions of email traffic by providing convenient user interfaces for the aging email protocols (Zembruzki et al. 2023).

Consequently, companies such as these have the power to set filtering rules that may block messages from smaller service providers. A parallel pattern of concentration and capture has occurred among Web browser engines, the crucial software utility that implements the World Wide Web protocols for users; through the dominance of Google's Chrome browser – and its funding relationships to Apple's Safari and Mozilla's Firefox browsers – a single company has extensive power over the development of Web standards (Zhang and Carpano 2023). These precedents inform current anxieties about the threat of corporate capture on emerging protocol-based social networks such as Mastodon and Bluesky, as well as Web3 efforts such as Farcaster and Nostr (Barber 2023).

Despite significant patterns of capture among core Internet protocols, the protocols also exhibit protocological dynamics. Their entanglements involve considerable imbalances of power. But some protocols also retain enough sovereignty to keep powerful participants in check. Email users can still switch away from a certain corporate provider if they see fit. Google's monopoly on browser engines is not absolute, and in principle it is still possible to build competitors. Because critical Internet protocols like these are not the property of any one entity, but are established through standards bodies and performative practice, they have maintained some resistance to capture for decades.

Still, by the second decade of the 21st century, there was a widespread perception that the interactive technologies of "Web 2.0" had enabled a small number of entities to gain outsized power over the Internet, its protocols, its users' data, and its economic flows. Ethereum co-founder Gavin Wood first coined the term "Web 3.0" in a blog post premised on the threat of capture that users face in the "Web 2.0" environment – specifically in the context of Edward Snowden's whistleblowing revelations about the surveillance activities of corporate platforms and the US government:

> As we move into the future, we find increasing need for a zero-trust interaction system. Even pre-Snowden, we had realised that entrusting our information to arbitrary entities on the internet was fraught with danger. However, post-Snowden the argument plainly falls in the hand of those who believe that large organisations and governments routinely attempt to stretch and overstep their authority. (Wood 2014)

The remedy for capture, according to Wood, is a new generation of protocols that combines cryptography, distributed control, and a native economy, with the goal of "massively reducing the amount of trust one must place in the hands of any given single entity." Wood's intent is not to entirely remove entities such as corporations and governments from the Internet; their entanglement with it is part of what makes the network useful. Rather, he proposes that Web3 technologies can enable entanglement while preventing capture, thereby ensuring the sovereignty of "our data" through protocological governance.

Blockchains have proved to some extent vulnerable to capture. For instance, innovations in hardware design for cryptocurrency "mining" have moved more rapidly than protocol designers can adapt, resulting in the rapid centralization of mining power and the decline of viable small-scale mining by less-capitalized users (Sui, Ricci, and Pfeffer 2018). As large miners obtain market share, in turn, they resist protocol changes that would diminish their power. Web3 has attempted to counteract this vulnerability through protocols with built-in governance, streamlining decision and iteration (Reijers et al. 2018), albeit with mixed results. As Web3 organizations seek capital for growth, they have frequently turned over economic and governance rights to wealthy investors (Merk 2024).

Still, there are respects in which Web3 has exhibited resistance to capture – which is to say, retaining protocological sovereignty amid dense entanglements, thus preventing any one entanglement from controlling the protocol. Proponents of blockchains such as Bitcoin and Ethereum present their tokens' value proposition as being capture resistance; consequently, network actors must balance their pursuit of dominance with the recognition that achieving too much dominance might lessen the value of the tokens they earn. Further, blockchains and the Web3 projects built atop them have secured some measure of regulatory clarity by virtue of seeking to perform "sufficient decentralization" in the distribution of control (Hinman 2018).

Other initiatives, such as the community-led project GnosisDAO, allow participants to make decisions about funded projects within its ecosystem. The developers present GnosisDAO as an expression of a "new economy" with an "inclusive infrastructure" in which users have "control over their own lives" and in which there is "open financial tooling" (Gnosis 2024). A service provider for decentralized data storage, on the other hand, offers the promise of privacy, freedom, and security (Safe Network 2024). The emphasis of these projects on highly affective values shows an attempt to materialize these values through protocol performances and implement them as part of a larger infrastructure. Making affective commitments thus serves to extend the affordances of a technical system for capture resistance.

As Web3 protocols evolve, thanks to governance mechanisms that enable software updates, designers and users have frequently sought to counteract emergent threats of capture. The viability of the protocols depends on the success of their participants' performance as effectively both enticing and resisting the power of technological and financial elites.

3.2 PRE-DIGITAL MOMENTS

The threat of capture with respect to protocols also long precedes the rise of digital networks. Religious institutions, for example, often hold tension between protocols and other institutional logics, such as hierarchical organization and alliances with state or colonial power. One might consider several examples of such tensions in

the history of the Roman Catholic Church, though the patterns described here are hardly limited to that tradition.

Giorgio Agamben, in *The Highest Poverty*, documents the rise of the Franciscan movement, and in particular its effort to achieve a "form-of-life" entirely free from property ownership (Agamben 2013). In this sense, the order sought to inhabit a protocological regime, defined by its own rules but apart from one of the central entanglements that would bind it to the logic of the surrounding society. Ultimately papal authority compelled the order to adopt property holding as the price of official recognition – recognition which was a necessary entanglement for any religious protocol to survive in Catholic-dominated Western Europe. But the order's rules meanwhile established practices that disassociated friars and nuns from their collective property and enabled a largely protocological lifeworld of poverty, within bounds protected by the order's property holdings. Through the sovereignty of distinctive rules and authority structures, along with entanglements among outside institutions, the Franciscans and other orders found a protocological balance.

Later, as European Catholics colonized what they called the Americas and imposed their religion on Indigenous inhabitants, practices known as "syncretism" emerged to maintain pre-contact beliefs and practices within the colonial power structure. Syncretic performances enable Indigenous protocols to resist and survive under the guise of being at least plausibly Catholic, adopting colonial entanglements while retaining certain important forms of sovereignty against colonial dominance. These performances include many small, daily ritual practices, or more involved activities such as the cult of Maximón in Guatemala and southern Mexico, which depicts an Indigenous trickster figure as a Catholic saint (MacKenzie 1999).

Perhaps the most famous syncretic figure is that of Our Lady of Guadeloupe, a devotion to an apparition of the Virgin Mary as an Indigenous woman, attributed to an Indigenous man, Juan Diego Cuauhtlatoztzin, in 1531. He attested that Mary requested the construction of a church at the hill of Tepeyac, a site previously associated with the Aztec mother-goddess Tonantzin. The church and the cult centered there have served various ideological and spiritual functions in the centuries since (Poole 2017; Sorrentino 2024). Nichole M. Flores (2021) argues that, today, Our Lady of Guadeloupe represents an "aesthetics of solidarity" that enables spiritual and political bonds among communities spread across the often violent borders that divide the Americas. This is a performance deeply entangled with forces such as Mexican nationalism and Catholic authority, and yet it also challenges those logics so as to maintain a protocological logic of its own.

Designers of protocological governance can learn from history, particularly the specific resistance practices directed against certain centralized hierarchies. In Uruk, accounting protocols emerged as a media-technical form of economic accountability in a hierarchical society. European religious orders have had to develop rules that assure their distinctiveness while retaining their entanglement with the power structure of the Catholic Church. For Indigenous peoples in Latin America, protocols serve as a means of self-assertion in and against colonial society. These

are in a continuum with the context of the Internet, where developers have sought to inscribe capture resistance into communications protocols that are nevertheless appealing enough that profit-hungry corporations will voluntarily adopt them.

There are many more cases that might be considered here. They range from customs of daily etiquette to human rights regimes and climate accords, from systems of credit scoring to the many thousands of technical standards that co-orchestrate industrial life. The material forms of these protocols consist of different symbolic systems, different instruments and techniques. While Web3 cultures have felt with a certain acuity the tensions between capture and resistance, between entanglement and sovereignty, such tensions are hardly unique to that context.

4. CONCLUSION: IRREDUCIBLE PATTERNS

In this article, we have proposed a sequence of keywords to outline the concept of protocological governance. First, we understand protocols as patterns that mediate certain modes of situated interaction. A protocol becomes meaningful through the embodied performances of mutual entanglement among its participants. In turn, protocols generate a kind of sovereignty when their logic is not reducible to any one participant's control. Sovereignty, here, is not constituted by a link to the nation state but by the capacity for a protocol to resist subjugation to any external force. Such resistance might, for example, help to preserve cultural integrities, coordinate collective ventures, or establish more-than-human relationships. Protocological governance thus bears promise for the formation of new sovereign communities and the maintenance of threatened ones.

Protocological governance occurs when sovereignty and entanglement approach a mutually reinforcing equilibrium. This equilibrium can be challenging to achieve. However, once protocols reach meaningful entanglement among heterogeneous participants, as Bitcoin and Ethereum have to a considerable degree, they can serve as infrastructures for open innovation. The pattern's stability enables new kinds of generativity, which can enable protocols to transgress an existing order and break with the expectations of their original designers.

Sensory and phenomenological experience often tends to be neglected in the description of protocol-mediated organizational systems. However, the human body, and sensations such as a feeling of injustice, fear, hope and longing, also play an important role in the development of protocols. In order to better understand the interplay between these supposedly soft, intangible human factors and the hard, tangible operations, we conclude by thinking of protocological governance as a *chiasm*. Maurice Merleau-Ponty introduced the concept of chiasm to describe the transition from the self to the world and to the other in a philosophy of sensory perception (Merleau-Ponty 1968, 130). The term comes from the Greek letter *chi* (χ),

represented by two lines crossing in the middle. Each line connects two elements, so that we are dealing with a total of four elements that are interconnected (A↔b | B↔a).

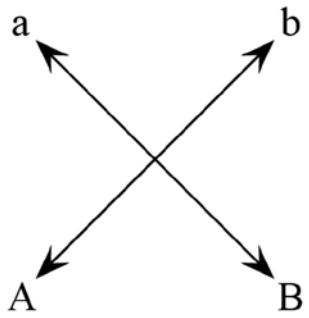


Figure 1: Chiasm with two asymmetric relations.

If we take the chiasm as a concept to relate sovereignty and entanglement in protocological governance, two more elements similarly intersect there: the protocol's dual nature as both abstraction and materiality. The chiasm arises through the intersection of (A) sovereignty and (b) entanglement, along with (a) abstract pattern and (B) embodied performance. Each set of opposing tendencies is mutually dependent, and they cross in the middle. However, the elements of the chiasm are irreducible to each other. Their roles and positions cannot simply be inverted, a quality of relation that Emmanuel Alloa refers to as "asymmetric" (Alloa 2017, 72). Despite the top-and-bottom arrangement of elements, no clear hierarchy can be distinguished, which is why the capital letters in Figure 1 have been placed at the bottom.

This ontology of chiasm describes the entangled, noncoincidental nature of sensible experience, where beings co-belong without fully coinciding (Alloa 2017, 72). For Merleau-Ponty, the body is a site of sensible resistance within this chiasm. Alloa further extends chiasm to the "untouchable"—what escapes any one epistemic perspective, existing between the visible and the invisible, touching and being touched. "It is as if touching contained a dimension of imperception, an irreducible *punctum caecum*, a blind spot" (Alloa 2017, 73; Merleau-Ponty 1968, 255). The chiasm signifies embodied heteronomy, where indeterminate forces emerge through entanglements.

Such a mediality of the protocol cannot simply be reduced to a logic of reference in which A refers to b—for example a token to an object of value. Instead, the chiasm indicates an interdependence, co-creation, and hybridization in the entanglement among its members. Values such as openness, privacy, freedom, and security are not conferred by the protocol in the abstract, they also must be put into practice through performance. In turn, the protocol inscribes its logic back into those values. In this way, the cultures surrounding Bitcoin and Ethereum have come to understand the value of decentralization differently, inflected by the design

of their respective protocols. While the culture of value around Bitcoin is driven by autonomy, libertarianism and exit from dominant money systems, the Ethereum culture performs an emphasis on contracts, coordination, and the production of public goods.

Protocological governance describes a generative dynamic of protocols capable of developing new forms of organizing the social, of living together and of the sensual world, with which they are intertwined. In this light, in its aspirations for protocological governance, Web3 cannot be understood merely as a technical domain. Rather, in order to attain the sovereignty that participants aspire toward, protocological systems must also be understood as spaces of entanglement and embodiment, never fully describable or possible to separate from the lived experience of their participants.

ACKNOWLEDGEMENTS

Johannes Bennke's work is based on a research project supported by a postdoctoral fellowship at Bar-Ilan University's Hermeneutics and Cultural Studies Program. Nathan Schneider wishes to thank Primavera De Filippi and collaborators who participated in the "network sovereignties" discussions, particularly the meetings on "Network Nations" at the Edge Esmeralda event in summer 2024. His contributions also include work supported by the National Science Foundation under Grant No. 2217654.

REFERENCES

Agamben, Giorgio. 2013. *The Highest Poverty: Monastic Rules and Form-of-Life*. Stanford, Calif.: Stanford University Press.

Aikau, Hōkūlani K., Noelani Goodyear-Ka'ōpua, and Noenoe K. Silva. 2016. "The Practice of Kuleana: Reflections on Critical Indigenous Studies through Trans-Indigenous Exchange." In *Critical Indigenous Studies: Engagements in First World Locations*, edited by Aileen Moreton-Robinson. Tucson, AZ: University of Arizona Press.

Alloa, Emmanuel. 2017. *Resistance of the Sensible World: An Introduction to Merleau-Ponty*. First edition. Perspectives in Continental Philosophy. New York: Fordham University Press.

Aslam, Ali, David W. McIvor, and Joel Alden Schlosser. 2024. *Earthborn Democracy: A Political Theory of Entangled Life*. New York: Columbia University Press.

Austin, John L. 1962. *How To Do Things With Words*. Oxford: Oxford University Press.

Barber, Gregory. 2023. "Meta's Threads Could Make – or Break – the Fediverse." *Wired*, July 18, 2023. https://www.wired.com/story/metas-threads-could-make-or-break-the-fediverse/.

Benkler, Yochai. 2016. "Degrees of Freedom, Dimensions of Power." *Daedalus* 145 (1): 18–32. https://doi.org/10.1162/DAED_a_00362.

Boughn, Stephen. 2022. "There Is No Spooky Action at a Distance in Quantum Mechanics." *Entropy* 24 (4): 560. https://doi.org/10.3390/e24040560.

Bourdieu, Pierre. 1977. *Outline of a Theory of Practice*. Translated by Richard Nice. Cambridge Studies in Social and Cultural Anthropology. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511812507.

Bowrey, Kathy. 2006. "Alternative Intellectual Property? Indigenous Protocols, Copyleft and New Juridifications of Customary Practices." *Macquarie Law Journal* 6 (January):65–95. https://doi.org/10.3316/agis_archive.20071443.

Brooker, Katrina. 2018. "'I Was Devastated': The Man Who Created the World Wide Web Has Some Regrets." Vanity Fair. July 1, 2018. https://www.vanityfair.com/news/2018/07/the-man-who-created-the-world-wide-web-has-some-regrets.

brown, adrienne maree. 2017. *Emergent Strategy: Shaping Change, Changing Worlds*. Chico, CA: AK Press.

Buterin, Vitalik. 2020. "Credible Neutrality As A Guiding Principle." *Nakamoto*, January 3, 2020. https://nakamoto.com/credible-neutrality/.

Calzada, Igor. 2024. "Decentralized Web3 Reshaping Internet Governance: Towards the Emergence of New Forms of Nation-Statehood?" *Future Internet* 16 (10): 361. https://doi.org/10.3390/fi16100361.

Carroll, Stephanie Russo, Marisa Duarte, and Max Liboiron. 2024. "Indigenous Data Sovereignty." In *Keywords of the Datafied State*. Data & Society. https://datasociety.net/wp-content/uploads/2024/04/Keywords_Indigenous_Data_Sovereignty_Carroll_Duarte_Liboiron_04242024.pdf.

Cath, Corinne. 2021. "The Technology We Choose to Create: Human Rights Advocacy in the Internet Engineering Task Force." *Telecommunications Policy*, Norm entrepreneurship in Internet Governance, 45 (6): 102144. https://doi.org/10.1016/j.telpol.2021.102144.

Cath, Corinne, and Luciano Floridi. 2017. "The Design of the Internet's Architecture by the Internet Engineering Task Force (IETF) and Human Rights." *Science and Engineering Ethics* 23 (2): 449–68. https://doi.org/10.1007/s11948-016-9793-y.

Chin, Yik Chan, and Ke Li. 2021. "SOVEREIGNTY IN THE CYBERSPACE: CONTESTATION OF CONCEPTS AND POLICIES." *AoIR Selected Papers of Internet Research*, September. https://doi.org/10.5210/spir.v2021i0.12153.

Cordes, Ashley. 2022. "Storying Indigenous Cryptocurrency: Reckoning with the Ghosts of US Settler Colonialism in the Cultural Economy." *Journal of Cultural Economy*, August, 1–18. https://doi.org/10.1080/17530350.2022.2110924.

Coulthard, Glen Sean. 2014. *Red Skin, White Masks: Rejecting the Colonial Politics of Recognition*. Minneapolis, MN: University of Minnesota Press. https://muse.jhu.edu/book/35470.

Crandall, Jillian. 2019. "Blockchains and the 'Chains of Empire': Contextualizing Blockchain, Cryptocurrency, and Neoliberalism in Puerto Rico." *Design and Culture* 11 (3): 279–300. https://doi.org/10.1080/17547075.2019.1673989.

Dal Bó, Ernesto. 2006. "Regulatory Capture: A Review." *Oxford Review of Economic Policy* 22 (2): 203–25. https://doi.org/10.1093/oxrep/grj013.

Dávila, Joshua. 2023. *Blockchain Radicals: How Capitalism Ruined Crypto and How to Fix It*. London: Repeater.

De Filippi, Primavera. 2024. "New Network Sovereignties: The Rise of Non-Territorial States?" In EUI Global Governance Programme. https://web.archive.org/web/20240621103254/https://globalgovernanceprogramme.eui.eu/new-network-sovereignties-the-rise-of-non-territorial-states/2/.

Delfanti, Alessandro, and Johan Söderberg. 2018. "Repurposing the Hacker: Three Cycles of Recuperation in the Evolution of Hacking and Capitalism." *Ephemera: Theory and Politics in Organization* 18 (3): 457–76.

Deloria, Vine. 1997. "Self-Determination and the Concept of Sovereignty." In *Native American Sovereignty*, edited by John R. Wunder, 107–114. New York, London: Routledge.

Dobson, Dillon. 2021. "Sustainable Red Power: Tribal Energy Sovereignty and the Way Forward." *Arizona Journal of Environmental Law and Policy* 12:40.

Ehrsam, Fred. 2020. "Governance Minimization." November 28, 2020. https://www.fehrsam.xyz/blog/governance-minimization.

Fang, Binxing. 2018. *Cyberspace Sovereignty: Reflections on Building a Community of Common Future in Cyberspace*. 1st ed. 2018. Singapore: Springer Singapore : Imprint: Springer. https://doi.org/10.1007/978-981-13-0320-3.

Ferguson, Niall. 2018. *The Square and the Tower: Networks, Hierarchies and the Struggle for Global Power*. London: Penguin Books.

Ferreira da Silva, Denise. 2016. "On Difference Without Separability." In *Incerteza Viva of the 32a São Paulo Art Biennia*, 57–65. https://issuu.com/amilcarpacker/docs/denise_ferreira_da_silva.

Ferreira, Daniel, Jin Li, and Radoslawa Nikolowa. 2019. "Corporate Capture of Blockchain Governance." 593/2019. Finance Working Paper. European Corporate Governance Institute. https://www.ssrn.com/abstract=3320437.

Flores, Nichole M. 2021. *The Aesthetics of Solidarity: Our Lady of Guadalupe and American Democracy*. Moral Traditions Series. Washington, DC: Georgetown University Press.

Foucault, Michel. 1995. *Discipline and Punish: The Birth of the Prison*. Translated by Alan Sheridan. 2nd ed. New York, NY: Vintage Books.

Galloway, Alexander R. 2006. *Protocol: How Control Exists after Decentralization*. 1. MIT Press paperback ed. Leonardo. Cambridge, Mass.: MIT Press.

Galloway, Alexander R., Eugene Thacker, and McKenzie Wark. 2014. *Excommunication: Three Inquiries in Media and Mediation*. Trios. Chicago, Ill. London: The University of Chicago Press.

Garwood-Houng, Alana. 2005. "Protocols: Meeting the Challenges of Indigenous Information Needs." *Australian Academic & Research Libraries* 36 (2): 143–51. https://doi.org/10.1080/00048623.2005.10721254.

Ghaziani, Amin, and Matt Brim. 2019. *Imagining Queer Methods*. New York: New York University Press.

Glissant, Édouard. (1990) 1997. *Poetics of Relation*. Translated by Betsy Wing. Ann Arbor: University of Michigan Press.

Gnosis. 2024. "Gnosis." Gnosis. 2024. https://www.gnosis.io/.

Graeber, David. 2014. *Debt: The First 5,000 Years*. Brooklyn: Melville House.

Grover, Bhavya Ahuja, Bhawna Chaudhary, Nikhil Kumar Rajput, and Om Dukiya. 2021. "Blockchain and Governance: Theory, Applications and Challenges." In *Blockchain for Business*, edited by S.S. Tyagi and Shaveta Bhatia, 1st ed., 113–39. Wiley. https://doi.org/10.1002/9781119711063.ch6.

Habermas, Jürgen. 1996. "The European Nation State. Its Achievements and Its Limitations. On the Past and Future of Sovereignty and Citizenship." *Ratio Juris* 9 (2): 125–37. https://doi.org/10.1111/j.1467-9337.1996.tb00231.x.

Haraway, Donna. 1985. "A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the 1980s." *Socialist Review* 80:65–108.

Harney, Stefano, and Fred Moten. 2013. *The Undercommons: Fugitive Planning & Black Study*. Wivenhoe: Minor Compositions.

Heitlinger, Sara, Lara Houston, Alex Taylor, and Ruth Catlow. 2021. "Algorithmic Food Justice: Co-Designing More-than-Human Blockchain Futures for the Food Commons." In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*, 1–17. CHI '21. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3411764.3445655.

Hilgert, Christoph, Marie Cronqvist, and Hugh Chignell. 2020. "Introduction: 'Tracing Entanglements in Media History.'" *Media History* 26 (1): 1–5. https://doi.org/10.1080/13688804.2019.1688142.

Hinman, William. 2018. "Digital Asset Transactions: When Howey Met Gary (Plastic)." Presented at the Yahoo Finance All Markets Summit: Crypto, San Francisco, June 14. https://www.sec.gov/news/speech/speech-hinman-061418.

Jutel, Olivier. 2022. "Blockchain Humanitarianism and Crypto-Colonialism." *Patterns* 3 (1). https://doi.org/10.1016/j.patter.2021.100422.

Katz, Michael L., and Carl Shapiro. 1994. "Systems Competition and Network Effects." *Journal of Economic Perspectives* 8 (2): 93–115. https://doi.org/10.1257/jep.8.2.93.

Kharazian, Zarine, Kate Starbird, and Benjamin Mako Hill. 2024. "Governance Capture in a Self-Governing Community: A Qualitative Comparison of the Croatian, Serbian, Bosnian, and Serbo-Croatian Wikipedias." *Proc. ACM Hum.-Comput. Interact.* 8 (CSCW1): 61:1-61:26. https://doi.org/10.1145/3637338.

Kleppmann, Martin, Paul Frazee, Jake Gold, Jay Graber, Daniel Holmgren, Devin Ivy, Jeromy Johnson, Bryan Newbold, and Jaz Volpert. 2024. "Bluesky and the AT Protocol: Usable Decentralized Social Media." In *Proceedings of the ACM Conext-2024 Workshop on the Decentralization of the Internet*, 1–7. DIN '24. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/3694809.3700740.

Krämer, Sybille. 2003. "Was Tut Austin, Indem Er Über Das Performative Spricht? Ein Anderer Blick Auf Die Anfänge Der Sprechakttheorie." In *Performativität Und Praxis*, edited by Dieter Mersch and Jens Kertscher, 19–33. München: Fink.

——. 2015. *Medium, Messenger, Transmission: An Approach to Media Philosophy*. Amsterdam University Press. https://doi.org/10.1515/9789048524990.

Lewis, Jason Edward. 2020. "Indigenous Protocol and Artificial Intelligence Position Paper." Honolulu, HI: The Initiative for Indigenous Futures and the Canadian Institute for Advanced Research (CIFAR). https://spectrum.library.concordia.ca/id/eprint/986506.

LeWitt, Sol. 1967. "Paragraphs on Conceptual Art." *Artforum*, 1967. https://www.artforum.com/features/paragraphs-on-conceptual-art-211354/.

Li, Qin, Jiajie Wu, Junyu Quan, Jinjing Shi, and Shichao Zhang. 2022. "Efficient Quantum Blockchain With a Consensus Mechanism QDPoS." *IEEE Transactions on Information Forensics and Security* 17:3264–76. https://doi.org/10.1109/TIFS.2022.3203316.

Lin, Qinwei, Chao Li, Xifeng Zhao, and Xianhai Chen. 2021. "Measuring Decentralization in Bitcoin and Ethereum Using Multiple Metrics and Granularities." In *2021 IEEE 37th International Conference on Data Engineering Workshops (ICDEW)*, 80–87. https://doi.org/10.1109/ICDEW53142.2021.00022.

MacKenzie, C. James. 1999. "The Priest, the Shaman and 'Grandfather Judas': Syncretism and Anti-Syncretism in Guatemala." *Religious Studies and Theology* 18 (2): 33–65. https://doi.org/10.1558/rsth.v18i2.33.

Mackey, Tim K., Alec J. Calac, B. S. Chenna Keshava, Joseph Yracheta, Krystal S. Tsosie, and Keolu Fox. 2022. "Establishing a Blockchain-Enabled Indigenous Data Sovereignty Framework for Genomic Data." *Cell* 185 (15): 2626–31. https://doi.org/10.1016/j.cell.2022.06.030.

Manski, Sarah, and Ben Manski. 2018. "No Gods, No Masters, No Coders? The Future of Sovereignty in a Blockchain World." *Law and Critique* 29 (2): 151–62. https://doi.org/10.1007/s10978-018-9225-z.

Merk, Tara. 2024. "Why to DAO: A Narrative Analysis of the Drivers of Tokenized Exit to Community." arXiv. https://doi.org/10.48550/arXiv.2407.14327.

Merleau-Ponty, Maurice. 1968. *The Visible and the Invisible: Followed by Working Notes*. Translated by Claude Lefort. Studies in Phenomenology and Existental Philosophy. Evanston, Ill: Northwestern Univ. Press.

Mühle, Alexander, Andreas Grüner, Tatiana Gayvoronskaya, and Christoph Meinel. 2018. "A Survey on Essential Components of a Self-Sovereign Identity." *Computer Science Review* 30:80–86.

Nassehi, Armin. 2024. *Patterns: Theory of the Digital Society*. Translated by Mirko Wittwar. Medford: Polity Press.

Nicholson, Matthew N., Brian C Keegan, and Casey Fiesler. 2023. "Mastodon Rules: Characterizing Formal Rules on Popular Mastodon Instances." In *Computer Supported Cooperative Work and Social Computing*, 86–90. Minneapolis MN USA: ACM. https://doi.org/10.1145/3584931.3606970.

Palau-McDonald, M. J. 2022. "Blockchains and Environmental Self-Determination for the Native Hawaiian People: Toward Restorative Stewardship of Indigenous Lands." *Harvard Civil Rights-Civil Liberties Law Review* 57:393.

Parks, Lisa. 2007. "Around the Antenna Tree: The Politics of Infrastructural Visibility." In *ACM SIGGRAPH 2007 Art Gallery*, 345. SIGGRAPH '07. New York, NY, USA: Association for Computing Machinery. https://doi.org/10.1145/1280120.1280266.

Philpott, Daniel. 2020. "Sovereignty." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta, Fall 2020. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/fall2020/entries/sovereignty/.

Pinch, William R. 2022. "Rajo Guṇa." In *Changing Theory: Concepts from the Global South*, edited by Dilip M. Menon. Transdisciplinary Souths. London: Routledge.

Plant, Sadie. 1996. "Feminisations: Reflections on Women and Virtual Reality." In *Clicking In: Hot Links to a Digital Culture*, 37–38. Seattle: Bay Press.

Plener, Peter, Niels Werber, and Burkhardt Wolf, eds. 2023. *Das Protokoll*. Berlin, Heidelberg: Springer. https://doi.org/10.1007/978-3-662-66896-2.

Poole, Stafford. 2017. *Our Lady of Guadalupe: The Origins and Sources of a Mexican National Symbol, 1531–1797*. University of Arizona Press.

Radanliev, Petar. 2024. "The Rise and Fall of Cryptocurrencies: Defining the Economic and Social Values of Blockchain Technologies, Assessing the Opportunities, and Defining the Financial and Cybersecurity Risks of the Metaverse." *Financial Innovation* 10 (1): 1. https://doi.org/10.1186/s40854-023-00537-8.

Rao, Venkatesh, Tim Beiko, Danny Ryan, Josh Stark, Trent Van Epps, and Bastian Aue. 2023. "The Unreasonable Sufficiency of Protocols." Summer of Protocols. https://summerofprotocols.com/the-unreasonable-sufficiency-of-protocols-web.

Reijers, Wessel, Iris Wuisman, Morshed Mannan, Primavera De Filippi, Christopher Wray, Vienna Rae-Looi, Angela Cubillos Vélez, and Liav Orgad. 2018. "Now the Code Runs Itself: On-Chain and Off-Chain Governance of Blockchain Technologies." *Topoi*, December. https://doi.org/10.1007/s11245-018-9626-5.

Robinson, Cedric J. 2020. *Black Marxism: The Making of the Black Radical Tradition*. Third edition, Revised and Updated. Chapel Hill: The University of North Carolina Press.

Robinson, Cedric J., and Ruth Wilson Gilmore. 2019. *On Racial Capitalism, Black Internationalism, and Cultures of Resistance*. Edited by H. L. T. Quan. Black Critique. London: Pluto Press.

Rubis, June Mary, and Noah Theriault. 2020. "Concealing Protocols: Conservation, Indigenous Survivance, and the Dilemmas of Visibility." *Social & Cultural Geography*, September. https://www.tandfonline.com/doi/abs/10.1080/14649365.2019.1574882.

Safe Network. 2024. "Safe Network." 2024. https://safenetwork.tech/.

Schmandt-Besserat, Denise. 1992. *From Counting to Cuneiform*. Austin, Tex: University of Texas Press.

Schneider, Nathan. 2019. "Decentralization: An Incomplete Ambition." *Journal of Cultural Economy* 12 (4): 1–21. https://doi.org/10.1080/17530350.2019.1589553.

Sharma, Pankajeshwara, Michael Martin, David Swanlund, Cecilia Latham, Dean Anderson, and Waitangi Wood. 2024. "A Cloud-Based Solution for Trustless Indigenous Data Sovereignty: Protecting Māori Biodiversity Management Data in Aotearoa New Zealand." *Transactions in GIS* 28 (4): 836–57. https://doi.org/10.1111/tgis.13153.

Sheldrake, Merlin. 2020. *Entangled Life: How Fungi Make Our Worlds, Change Our Minds & Shape Our Futures*. New York, NY: Random House.

Sorrentino, Joseph. 2024. "Pilgrimage to Villa Guadalupe." *Commonweal*, February 7, 2024. https://www.commonwealmagazine.org/pilgrimage-villa-guadalupe.

Srinivasan, Balaji. 2022. *The Network State*. self-published. https://thenetworkstate.com.

Sui, Danning, Saulo Ricci, and Johannes Pfeffer. 2018. "Are Miners Centralized? A Look into Mining Pools." ConsenSys Media. May 9, 2018. https://media.consensys.net/are-miners-centralized-a-look-into-mining-pools-b59442541 1dc.

Swartz, Lana. 2017. "Blockchain Dreams: Imagining Techno-Economic Alternatives After Bitcoin." In *Another Economy Is Possible: Culture and Economy in a Time of Crisis*, edited by Manuel Castells, 82--105. Cambridge, UK: Polity.

Taffel, Sy. 2013. "Scalar Entanglement in Digital Media Ecologies." https://doi.org/10.25969/MEDIAREP/15082.

Tekobbe, Cindy, and John Carter McKnight. 2016. "Indigenous Cryptocurrency: Affective Capitalism and Rhetorics of Sovereignty." *First Monday* 21 (10). https://doi.org/10.5210/fm.v21i10.6955.

Thayne, Martyn, and Andrew West. 2019. "'Doing' Media Studies: The Media Lab as Entangled Media Praxis." *Convergence* 25 (2): 186–208. https://doi.org/10.1177/1354856519834960.

Theriault, Noah, Timothy Leduc, Audra Mitchell, June Mary Rubis, and Norma Jacobs Gaehowako. 2020. "Living Protocols: Remaking Worlds in the Face of Extinction." *Social & Cultural Geography* 21 (7): 893–908. https://doi.org/10.1080/14649365.2019.1619821.

Theunissen, Petra. 2015. "The Quantum Entanglement of Dialogue and Persuasion in Social Media: Introducing the Per–Di Principle." *Atlantic Journal of Communication* 23 (1): 5–18. https://doi.org/10.1080/15456870.2015.972405.

Vismann, Cornelia. 2008. *Files: Law and Media Technology*. Translated by Geoffrey Winthrop-Young. Stanford, Calif: Stanford Univ. Press.

Voss, Christiane, Lorenz Engell, and Tim Othold. 2023. "Anthropologies of Entanglements: An Introduction." In *Anthropologies of Entanglements: Media and Modes of Existence*, 1–11. New York London Oxford New Delhi Sydney: Bloomsbury Academic.

Walch, Angela. 2023. "The Fundamentals of Protocol Systems." Summer of Protocols. https://summerofprotocols.com/research/the-protocol-system-experience.

Warren, Calvin L. 2018. *Ontological Terror: Blackness, Nihilism, and Emancipation*. Durham: Duke University Press.

Weber, Max. 1946. *Politics As a Vocation*. Oxford University Press, New York. http://archive.org/details/weber_max_1864_1920_politics_as_a_vocation.

Whitaker, Amy, and Nora Burnett Abrams. 2023. *The Story of NFTs: Artists, Technology, and Democracy*. New York: Rizzoli Electa.

Wilson, Shaun. 2022. "Situating Conceptuality in Non-Fungible Token Art." *M/C Journal* 25 (2). https://doi.org/10.5204/mcj.2887.

Wood, Gavin. 2014. "ĐApps: What Web 3.0 Looks Like." April 17, 2014. https://gavwood.com/dappsweb3.html.

Wu, Tim. 1997. "Cyberspace Sovereignty? – The Internet and the International System." *Harvard Journal J. L. & TECH. 647 (1997)*. 10 (647).

Young, James O. 2010. *Cultural Appropriation and the Arts*. John Wiley & Sons.

Zartler, Jessica, and Jeff Emmett. 2024. *Exploring MycoFi: Mycelial Design Patterns for Web3 and Beyond*. Supermodular. https://mycofi.art/.

Zembruzki, Luciano, Arthur Selle Jacobs, Lisandro Zambenedetti Granville, and Ricardo Jose Pfitscher. 2023. "Examining the Centralization of Email Industry: A Landscape Analysis for IPv4 and IPv6." In *2023 IEEE Symposium on Computers and Communications (ISCC)*, 360–66. https://doi.org/10.1109/ISCC58397.2023.10217834.

Zhang, Bolun, and Davide Carpano. 2023. "Chromium as a Tool of Logistical Power: A Material Political Economy of Open-Source." *Big Data & Society* 10 (1): 20539517231182399. https://doi.org/10.1177/20539517231182399.

THE PRISON OF THINGS

JENS SCHRÖTER

1. INTRODUCTION

To start with some limitations: I will not discuss what value 'really is' or how it relates to price. These are complicated questions of economic theory.[1] This essay tries to show instead that 'value' is, as already Marx insisted,[2] not an *intrinsic* property of a commodity. It is socially ascribed and can change. Commodities "only appear as commodities, or have the form of commodities, in so far as they possess a double form, i.e. natural form and value form" (Marx 1976, 138).

From a media studies perspective, I would like to ask: In which medium does this 'value form' appear? In a materialist theory a form cannot exist independently from a material support – therefore a social relation, a social form like value must be embodied and materialized. A 'social form' needs a material support or, to be more precise, presupposes a complicated assemblage of materials and processes. I want to sketch some elements of the media and materiality of value in this paper. Media are understood as techniques of storage, transmission, processing and representation of information. Which techniques of storage, transmission, processing and representation of information go along with 'value'?

As one would assume these media and materialities are not only used *to assign a value to an object*, but also to secure and stabilize *property* and *scarcity* – because these two factors are essential for an object to have value. Something that does not belong to anyone cannot have a value in the sense that it cannot be sold for a price; something that is not scarce cannot have value anyway (because it is available in abundance and no one would be willing to pay a price). So, discussing the media and materiality of value means discussing media and materiality of property and scarcity too. Property is a legal title – but what is a legal title without media to indicate ownership or to ensure, for example, that a file cannot be illegally copied? And multiplying files, to stay with that example, means also that the data are no longer scarce. Therefore, capitalist modernity not only drastically increased the possibilities of technological reproduction, as e.g. Benjamin and Baudrillard underlined, but also led to a plethora of technologies, practices and industries of *non-reproducibility* (see Schröter 2012).

---

1 On the history of the so-called 'transformation problem' between value and price in Marx and a solution in favor of Marx see Kliman (2007).

2 Marx emphasized that "not an atom of matter enters into the objectivity of commodities as values" (1976, 138).

Another limitation of this paper is that I do not focus on digital media and how this non-reproducibility and the production of scarcity is realized there. It is true: Especially products that are non-rival, such as digital data, have to be made scarce to have value at all. On the one hand, drastic laws are enacted that criminalize the sharing of data such as music, films, etc.; on the other hand, technical measures are taken to make it difficult or impossible to copy such data (copy protection procedures, digital rights management etc.). The currently much-discussed non-fungible tokens (NFTs) are exactly that: by resorting to blockchain procedures, a given digital data record becomes uniquely identifiable and thus scarce. This suddenly gives the data record the status of a unique specimen. Unsurprisingly, the digital art market has discovered these processes in order to produce unique digital pieces that are cryptographically verified by the artists' hash signatures. In some cases, absurdly high prices could be achieved (see Schröter 2023).

But these processes of giving digital data value by managing their reproducibility are well researched.[3] I want to focus on something else, which has received comparatively little attention, namely the media and materialities that are necessary to stabilize the value of material commodities. A whole ecosystem of apparatuses and practices is necessary to perform the value of, let's say, an ordinary apple in a supermarket.

2. THE PRICE TAG

Let's buy an apple in a supermarket. As long as it is in the supermarket, it is the property of the supermarket. There are several ways to show the ownership and the value of the apple: A price tag can be attached to the apple. But there can also be a sign in front of the box with the apples – then it is only necessary to somehow ensure that the cashiers can assign the apple to the price noted on the sign. This can be done, for example, by affixing a small label to the apple that does not show the price, but a unique product name or number. Barcodes or QR codes are often used for this purpose. Such tags are simple media of value. They materially connect an exchange value and a (potential) use value. In his interesting phenomenological analysis of the 'store' (Geschäft) as a medium, Walter Seitter writes: "The store is also a meeting place for a wide variety of media […]. Since the store is the center of consideration here, it is necessary to refer to the media – at least the most elementary ones with which a store makes itself visible and recognizable as such: *Writing, image, decoration* and *example* (2002, 168; translated by author)." Seitter only speaks of the media with which the store shows himself *as a store*, but he does not speak of the media within the store that secure its barriers and the value of the commodities like the price-tag.

3 How big companies like Google etc. have managed to make 'un-scarcity' (Unknappheit) profitable is the main topic of Staab (2019).

Concerning materiality, it is interesting that price-tags, of which there are of course many different forms, are often made of very low durability materials. Some price tags affixed to products are not one piece, but three small pieces that are only loosely connected. They are applied to the product with a special device. Thus, they cannot be transferred illegally by the costumer from a cheaper product to a more expensive one, as the tag would tear and the attempt of manipulation would become obvious. Very low durability is used as a protection against changing the attached value.

Coming back to our example of the apple. The apple then goes into a basket or a shopping cart. The shopper goes to the checkout. There, the price is typed in manually by a cashier or, if there is a corresponding code on the tag, read in with an appropriate reader. In the background there is a database, in which the tags and the prices are correlated. More and more self-service check outs are used, automating the process of assigning value. The apple is put back into the basket or another bag. One hands over a corresponding amount of money – money is of course another central medium of value, if not the appearance of value *as such* in medial form.[4] The operation of buying most often results in a receipt. One does not only get the product but also a record, a documentation of the buying process. The receipt can be important e.g. one wants to return the purchased commodity or perhaps for tax purposes.

Anyway: By this sequence of operations involving different media and learned practices (we know that we have to pay in a shop, we were taught that since we were children) the property of the apple has changed. The apple can now be consumed or used in any other way. The price tag attached to it (if there was one) is removed before consumption – it is now superfluous. The apple will be consumed and therefore its value disappears; but of course, it can also be used in a capitalist company to bake apple pies, then its value is part of a production producing surplus value.

3. ELECTRONIC ARTICLE SURVEILLANCE

But it is not always as simple as buying an apple. Products that are higher priced or easier to steal, such as clothing that can easily be put on in a big and not easily over seeable store, are often protected by an additional technical application, an RFID tag for instance, that must be removed at the checkout before leaving the

4 I will not go here deeper into the theory of money, or the analysis of money as a medium (of value), this would be an article for itself. Just see on the many different theories of money: the helpful anthology of Ingham (2005), our discussion on the role that the notion of medium plays in the description of money (Lohoff, Pahl, and Schröter 2019) and finally a paper, in which I describe the complex materiality of money (and of ID-cards) to avoid their unauthorized reproduction (Schröter 2015).

store, otherwise an alarm will go off.[5] Sometimes already the sheer presence of the security tag is a hindrance for stealing – somewhat similar to the much-cited "Panopticon" (Foucault 1995, 195–228). It is in this respect not even necessary that the tag really works, solely the possibility that it could work already works. The electronic tags are sometimes even invisibly attached inside the clothes. But other than the visually centered pan-optical model – Foucault (ibid., 201) speaks of "permanent visibility" – electronic article surveillance is just about registering if a commodity leaves the store unauthorized. It is not about observing every move of the costumer, thereby it is also not about tracking the consumer – in difference to visual surveillance, as Agre (1994) argues. Although there is often an additional panoptical regime by video cameras in stores,[6] it is important that customers do feel well. They are not prisoners; they should have fun in the shop. Not being a too obvious form of surveillance is a further advantage of security tags. In 1970 a patent by a certain Arthur J. Minasy was filed:

> This invention relates to the protection of merchandise and more particularly it concerns a novel method and apparatus for [signaling] the unauthorized passage of articles of merchandise past given checkpoints. Shoplifting and other forms of pilfering account for considerable losses each year to a great many businesses. Unfortunately, the cost of floorwalkers, guards, checkers, etc., is generally so expensive that even where effective, these expedients tend to cost as much or more than the pilferage loss itself. Also, the presence of guards, etc., and the high chance of their mistakenly apprehending an innocent customer often results in considerable loss of a company's good will. (Minasy 1970, column 1)

Figures 1 and 2 from the patent show the dispositive that is basically used still today. In Figure 1 we see the schematic representation of the checkpoint. In a Shannon-like arrangement the shoplifter leaves the shop and enters the channel between sender and receiver. He or – to be more precise – the electronic tag operates like Shannon's famous source of noise and an alarm starts. Figure 2 shows technical details of the tag and how it is hidden behind a name tag of the store (or producer) and how it is attached to the clothes.

5 For a short overview focusing the technical aspects see Herzer (2001).

6 And perhaps even an additional human actor: the store detective, sometimes called 'Asset Protection Specialist'.

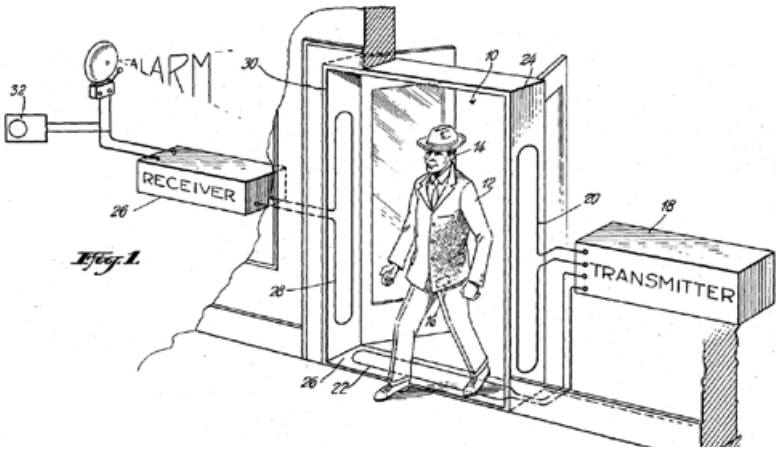


Figure 1: Figure 1 from Minasy (1970).

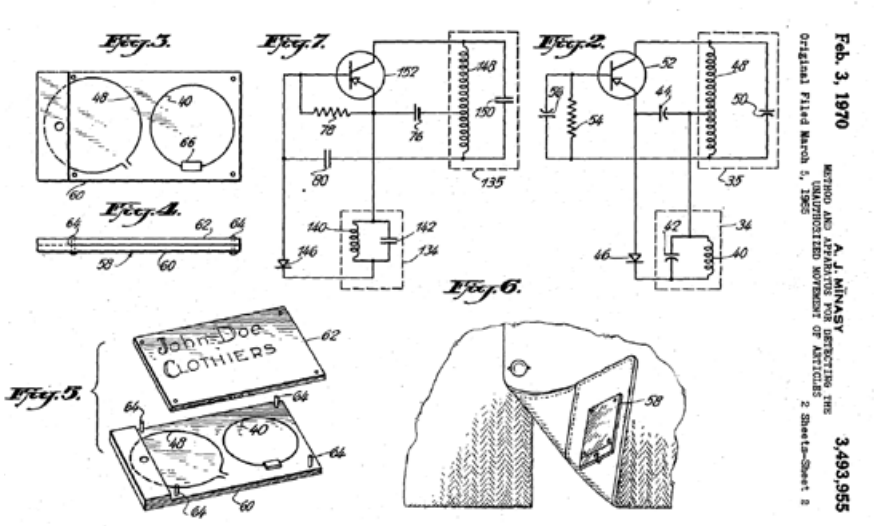


Figure 2: Figure 2 to 7 from Minasy (1970).

The system is not about the surveillance of humans (unless they take things illegally, that is without having paid, through the checkpoint), but of things – these should not pass past a given checkpoint. The patent is explicitly called "Method and Apparatus for Detecting the Unauthorized Movement of Articles" (see also Lichtblau 1974; Welsh and Vaughan 1977). The electronic tags are an answer to a specific economic problem. The theft of commodities is a problem, but having several security people in the shop is expensive and may also cause discomfort for the shoppers.

These protection tags have a different materiality compared to many usual price tags. They are very robust and cannot be removed from the clothes without special tools, which the cashiers have at hand. On the Internet one can find several discussions, information and even videos on how to remove such security tags without destroying the clothes in case the cashier forgot to remove it, what happens

once in a while.[7] But this information can of course also be (mis)used to remove illegally the security tags in the shop. By illegally removing the tag and stealing the clothes, their value drops to zero – at least seen from the perspective of the shopkeeper. Figures 3 to 5 show different forms of security tags, figure 4 shows a mechanical one and the little capsule containing the colored liquid.

Figure 3: Product alarm system, anti-theft protection, Spider Wrap from 2 alarm, with siren and a light-emitting diode, Lupus in Saxonia.

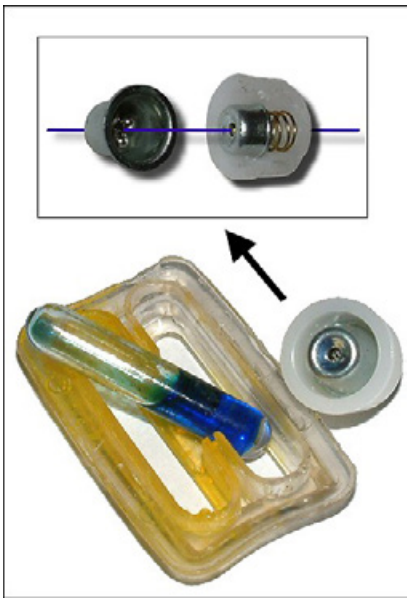


Figure 4: Mechanical anti-theft protection, Anton.

Figure 5: RF-Tag, Anton.

The security tag should be removed before leaving the store, because usually at the exit door there is a security barrier, a scanning system that detects signals coming from the security application. If one tries to pass this security barrier without having

7 Some of these security tags contain a colored liquid that ruins the clothes when one tries to break the tag – therefore the recommendation is to put the clothes into the freezer for a while to freeze this liquid.

removed the tag shrill noises will sound and the security personnel will seize the thief, who will be immediately handed over to the police. By the way, this begs the question of how security tags can be forgotten on clothing without triggering the alarm at the exit in the first place – presumably all the information on the Internet about how to remove the security tags is primarily concerned with stealing the clothes.[8] Professional shoplifters, of course, have developed their own methods to deal with the tags. Some use so-called 'booster bags':

> A common practice is to conceal stolen items in a booster bag, a backpack, purse, or loose-fitting clothing (sometimes a woman wearing maternity clothing), any of which can be lined with aluminum foil secured with duct tape, allowing the booster to pass electronic security detectors. Items are targeted for their resale value with the booster team often taking the items, with their electronic security tags intact, to another store for a full-cash return. This practice typically targets the major chain stores with numerous locations within a given region. (French 2013, 377)[9]

Unsurprisingly, the media to secure value provoke counter-practices to disrupt the disciplinary system of the store.

4. THE DOOR

The checkpoint at the entrance and exit is a medium of value but so is the door itself. It is all too often forgotten: stores are locked at night because in the absence of security personnel, products could simply be stolen. Property, scarcity, the value of the products, and thus the possibility of exchanging them for money would be meaningless if the possibility of simply taking the commodities could also not be prevented. This fundamental function of doors and therefore of keys and locks are not mentioned explicitly in Siegert's description of doors as a cultural technique (2015, 192-206). He speaks of "opening and closing operations" (ibid., 193), but to close a door is not the same as to lock it. That Siegert doesn't mention locks is problematic, because doors that cannot be locked (and unlocked) are not useful for at least most purposes. This suppression of the basic function of doors (seen as media of property and value) is symptomatic for the repression of economic operations in most of media theory (see Schröter 2022). This is already evident in Lacan, which is an important source for Siegert. Lacan writes about "a simple,

8 Although this cannot apply to the idea of the freezing of the clothes.

9 Another problem for shops is 'tag pollution', where tags that have not been deactivated are carried around the shop causing false alarm (Wikipedia 2024).

commonplace apparatus, which anyone can use, an apparatus where all you need do is turn the handle – a door" (1991, 300). Lacan does not consider that the door could be locked and using the handle does not help. This suppression of economic aspects is also visible in Seitter, who describes the store as a site of different media, but does not mention the media of value at all. Latour (2000) discusses an example of a key and a lock, but without explicitly addressing the economic dimension, since the discussed key is only intended for private apartments.

Doors and the keys connected with them are eminent media of value. In what way are they media? The structure of keys and locks is a certain informational form – only this key fits that lock (see Latour 2000, 12–13). And only that person can have those keys and no other. Access is granted (or not) through the distribution of keys. And property would not be property if access to it could not be denied. From this point of view, property and privacy are equally fundamental to private property (but not all privacy must be based on property). All property requires the simultaneity of access and inaccessibility. A technical application that can be removed; a door, with a lock that makes it possible for some to open it; a wall that closes off the inside – but without a door, the fenced property would also be inaccessible. Forging keys or somehow otherwise entering the enclosed property space is a criminal offense. Therefore, it is not surprising that in addition to the devices and persons mentioned, warning signs are repeatedly placed that refer to the presence of the corresponding devices. They are part of the paratexts of property – and therefore of value. Property is often indicated by signs: This is private property, etc. So, the information of what is not allowed to do is present. One cannot pretend to have not known. Moreover, these relations and the use of these media are part of the education of children in capitalist societies – always ask yourself, neurotically: is the door locked? The neurotic fear that the door might not be locked is also a precondition for value. Incidentally, prison sentences mean nothing more than being locked in a building to which you do not have the keys. Famously Foucault stated, at the end of the chapter on the Panopticon: "Is it surprising that prisons resemble factories, schools, barracks, hospitals, which all resemble prisons" (1995, 228)? But Foucault does not mention stores, shops, supermarkets and it is easy to see why: He focuses on the surveillance of people, not on the surveillance of things. The store, the shop, the supermarket also resemble prisons – but they are *prisons of things*. They can only be liberated when humans buy them out. Before we erect a "parliament of things" (Latour 2004, 227), things have to be liberated from value, because value necessarily leads to regime of property and scarcity that imprisons things – at least that would be a radical perspective from the so-called "critique of value", an important neo-Marxist strand of discussion (Larsen et al. 2014). In this approach, economic value is heavily criticized as the reign of an abstract form that leads to an ever-increasing circle of valorization and accumulation, in principle limitless. Value wants to become ever more value, subsuming the whole world. One result is climate crisis, because value and its accumulation are in principle infinite, while the physical world is finite. This radical critique calls for an evaluation of objects not in terms of

economic, monetary abstract value but in terms of their concrete use-value – and it calls for a new economic, post-capitalist order which is organized around use-value. This theoretical and political project might seem radical, utopian and perhaps even illusory, but it calls attention to the fact that economic value (expressed in monetary prices), and its media to control things, are not God-given and natural. There might be other possibilities that have to be considered, if humanity wants to avoid ecological collapse.

Be that as it may: The price tag, electronic article surveillance, the door and its locks (and perhaps many more) are media of value – without which (in the existing capitalist society) the value of things could not be stabilized. They are infrastructures of value.

Figure 6: Australian Made CMI H2D Home Safe With La Gard 3750 Digital Electronic Lock, Binarysequence.

REFERENCES

Agre, Philip E. 1994. "Surveillance and Capture: Two Models of Privacy." *The Information Society* 10 (2): 101–127.

Foucault, Michel. 1995. *Discipline and Punish. The Birth of the Prison*. Translated by Alan Sheridan. New York: Vintage Books.

French, Laurence Armand. 2013. "Shoplifting." In *Encyclopedia of Street Crime in America*, edited by Jeffrey Ian Ross, 376–377. Los Angeles a.o.: SAGE.

Herzer, Giselher. 2001. "Der große Lauschangriff auf Ladendiebe. Waren lassen sich durch weichmagnetische Sensorstreifen oder elektrische Schwingkreise vor Diebstahl sichern." *Physikalische Blätter* 57 (5): 43–48.

Ingham, Geoffrey, ed. 2005. *Concepts of Money. Interdisciplinary Perspectives from Economics, Sociology and Political Science*. Cheltenham/UK: Elgar.

Kliman, Andrew. 2007. *Reclaiming Marx's Capital: A Refutation of the Myth of Inconsistency*. Lanham: Lexington Books.

Lacan, Jacques. 1991. *The Seminar of Jacques Lacan. Book II*. Translated by Sylvana Tomaselli. New York and London: W.W. Norton & Company.

Larsen, Neil et al. 2014. Eds. *Marxism and the Critique of Value*. Chicago: M-C-M*.

Latour, Bruno. 2004. *Politics of Nature. How to Bring the Sciences into Democracy*. Translated by Catherine Porter. Cambridge/MA and London: Harvard University Press.

Latour, Bruno. 2000. "The Berlin Key or how to Words with Things." In *Matter, Materiality and Modern Culture*, edited by Paul M. Graves-Brown, 10–21. London: Routledge.

Lichtblau, George Jay. 1974. "Electronic Security System." *US Patent 3.810.147*.

Lohoff, Ernst, Hanno Pahl, and Jens Schröter. 2018. "Trialogue: Money as Medium or as General Commodity?" In *Society After Money. A Dialogue*, by Project Society after Money, 159–184. New York a.o.: Bloomsbury.

Marx, Karl. 1976. *Capital: A Critique of Political Economy*, vol. 1. Translated by Ben Fowkes. London: Penguin and New Left Books.

Minasy, Arthur J. 1970. "Method and Apparatus for Detecting the Unauthorized Movement of Articles." *US Patent 3.493.955*.

Schröter, Jens. 2023. "Reproduzierbarkeit, Eigentum, Wert. Die NFTs in der Kunst." In *Eigentum, Medien, Öffentlichkeit*, edited by Selma Güney, Lina Hille, Juliane Pfeiffer, Laura Porak, and Hendrik Theine, 407–419. Frankfurt: Westend.

Schröter, Jens. 2022. "Kittlers Ökonomien." In *Friedrich Kittler. Neue Lektüren*, edited by Jens Schröter, and Till. A. Heilmann, 215–222. Wiesbaden: Springer VS.

Schröter, Jens. 2015. "Das mediale Monopol des Staates und seine Verteidigungslinien." *Zeitschrift für Medien- und Kulturforschung* 6 (2): 13–24.

Schröter, Jens. 2012. "The Age of Non-Reproducibility." *Acta Universitas Sapientiae, Film and Media Studies* 5: 7–20.

Seitter, Walter. 2002. *Physik der Medien. Materialien, Apparate, Präsentierungen*. Weimar: VDG.

Siegert, Bernhard. 2015. *Cultural Techniques. Grids, Filters, Doors, and Other Articulations of the Real*. Translated by Geoffrey Winthrop Young. New York: Fordham University Press.

Staab, Phillip. 2019. *Digitaler Kapitalismus. Markt und Herrschaft in der Ökonomie der Unknappheit*. Berlin: Suhrkamp.

Welsh, John and Richard N. Vaughan. 1977. "Article Surveillance." *US Patent 4.063.229*.

Wikipedia. 2024. “Electronic Article Surveillance.” Accessed May 26, 2024. https://en.wikipedia.org/wiki/Electronic_article_surveillance#cite_note-2.

Figure 3: https://commons.wikimedia.org/wiki/File:Produktalarmsytem_-_Diebstahlssicherung_-_Bild_002.jpg, licence: https://creativecommons.org/licenses/by-sa/4.0/deed.en, no changes made.

Figure 4: https://creativecommons.org/licenses/by-sa/2.5/ , no changes were made.

Figure 5: https://creativecommons.org/licenses/by-sa/2.5/ , no changes were made.

Figure 6 : Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Australian_Made_CMI_H2D_Home_Safe.JPG, licence: https://creativecommons.org/licenses/by-sa/4.0/deed.en

NFTS AS THE INTERFACE OF CRYPTOCURRENCIES:

Utility Values and the Act of Wasteful Spending

MIRJAM SCHAUB

1. INTRODUCTION

The first NFTs (non-fungible tokens) to attract the attention of a wider public were profile pictures that aesthetically exhibited their pixelated nature and black humor. During the coronavirus pandemic, they were created as a series and generated algorithmically and initially given away for free to popularize digital wallets. In fact, NFTs make the technology of blockchain currencies, which remains comparatively abstract and obscure, much more understandable today. They also clothe it in an attractive narrative of incorruptibility. This narrative therefore draws on a radicalism, which promises independence from financial expertise and decoupling from a crisis-prone banking system as the result of an automated process free from human intervention and aggravation.

One rubs one's eyes in amazement: How does this furious narrative go hand in hand with the first 15 years of practical use of cryptocurrencies, which was trusted only by a minority: core developers, early adopters, but also nameless drug dealers and faceless arms dealers who, thanks to the anonymity of the digital numbered account, were able to conduct their deals in public without ever being prosecuted by law enforcement?

But that's not all the cheek: NFTs are the–not always successful–attempt to subject digital goods, which in themselves are not scarce because they can be reproduced infinitely, to a logic of capitalization. To this end, their momentary appearance as a one-off process on the blockchain is authenticated and signed by an image that can still be infinitely reproduced and manipulated. The trick, which also causes so much head-scratching, is that these signet images never leave the cycle of infinite technical reproducibility. At no point are they withdrawn from ubiquitous use by others. On the contrary, it is precisely their continued circulation that makes them so valuable. This is the only way they generate attention (for cryptocurrencies) and entice viewers to take subsequent action (such as starting trading cryptocurrencies).

How is it that people spend millions on an NFT which, as a pictorial, digital clone, can continue to be used unprotected and freely by millions of other people? Owning an NFT does not mean securing exclusive use of the image file associated

with it. On the contrary: owning NFTs means using the associated signature and signet images as bragging rights, in the full knowledge that the associated images are *not exclusive*. On the contrary, they should remain maximally interchangeable and ubiquitously reusable, even though they technically belong to one person who graciously and anonymously allows everyone else to participate in its use.

This raises the question of a scandalously counterintuitive concept of value. After all, the appeal of crypto investments seems to lie precisely in gaining social distinction and recognition through ostentatious waste, as in a potlatch described by George Bataille. (More on this later.) Another aspect of playing with unorthodox, if not even contradictory, value judgements is that NFTs themselves aesthetically exhibit the instantaneous transience and futility of stable value judgements. Under their banner, their owners can thus anticipate and affirm the ever-present threat of a price collapse – and savor their knowledge of it. Whoever laughs last, obviously laughs best here: "In the year 2031, so goes the narrative that the founders [of the Bored Ape Yacht Club, M.S.] came up with, the people who got into the crypto world early have all become billionaires. Now they're bored and have nothing else to do but hang out in their clubhouse. The fact that they are monkeys is an inside joke. In the crypto community, 'aping in' means plunging a breakneck sum into a crypto investment." (Bovermann 2021, 20).

2. THE (IN)FAMOUS TULIPOMANIA IN THE 17TH CENTURY

Making a fool of yourself, that rings a bell. It is no coincidence that the real risks of going crypto are associated with the worldwide euphoria surrounding a handful of particularly fine Dutch tulip bulbs in the 17th century. An expert of the epoch recalls:

> Jan Brueghel the Elder remarks in his letters that the flowers were too expensive to paint picked, he would even travel to Brussels to paint the flowers in the Archdukes' park on the spot. As the title *Tulipomania* suggests, the painter depicts a *mania* of the time, which in the Netherlands at the beginning of the 17th century [...] led to a collapse of the market and trade [...]. Tulip bulbs (but also other flower bulbs such as hyacinths) were traded on the stock exchanges like shares at unbelievable prices. At the peak of this market bubble in February 1637, the price paid for a tulip bulb was around 4000 guilders–by comparison, the annual income of a good craftsman was around 350 guilders! When the market suddenly collapsed, many investors who had succumbed to this mania found themselves ruined. (Ertz 2012)

The Breughels' painting workshop poured this madness into a series of allegorical oil paintings that have one thing in common: People exist only as decoration on the pictures on the wall. The protagonists in the room are all coiffed, neatly dressed and

apparently talking monkeys who are devotedly painting tulip bulbs, robbing, burying or hunting them down to hopefully exchange them for gold coins. (Provided they aren't beaten black and blue by their angry monkey wife, who doesn't want to see them all drive each other to ruin or instigate criminal activities).

Figure 1: Jan Breughel II: Allegory of Tulipomania, oil on wood, 25.5 x 36 cm, Antwerp, 1640s.

How new, how old are these paradoxical value judgements that spread like wildfire through mere hearsay, finally triggering a hype that unfolds ruinous effects in an alarmingly short time?

In a two-part magazine article, Jörg Heiser patiently lays out a web of references to show surprising similarities between the hype surrounding NFTs and the Dutch tulip bulbs: In addition to the novelty character, he mentions, among other things, a rapid social change that favors the emergence of new professional fields and specialists, but at the same time also harbors uncertainties and risks, because "not only the market, but also the marketplaces are new" (Heiser 2022), so that wind trading, rug-pull practices, sock puppeting, and white washing flourish:

> Like tulip bulbs, NFTs can also be stolen, lost or deliberately destroyed in order to achieve a shortage of the commodity. For example, they are stolen–like other digital items–through phishing scams (i.e. deception to obtain personal data). According to a survey of a thousand NFT owners, around half of them had already lost access to one of their NFTs. The renowned Centre for Art and Media (ZKM) in Karlsruhe accidentally lost access to two of its 'crypto punks' worth around CHF 400,000 due to a simple copy-paste-error. (Heiser 2022, part 2, sub-item 9)

I would like to deepen Heise's comparative analytical work by recalling an even older hype that took place more than 100 years before the onion hysteria in Europe. It has had a no less lasting impact on history. I am going this far back to focus on the question of value, which turns out to be a poorly disguised question of disbelief: What value logic and what belief system is at work when the economic value of a thing either cannot be fixed at all (i.e. as it tends to tip over into a non-value, a scam or some other form of loss), or cannot be attained by scarcity? In other words, what value logic is at stake when an economy of sharing and an unorthodox, unregulated use prevails, which is diametrically opposed to the logic of capitalization?

The clarification of this question leads to conclusions about the current situation: What if cryptocurrencies try to increase their popularity artificially through pictorial signets, the NFTs, which are linked to image files that are usually *not stored securely* on the blockchain itself, but on private servers, from which they can disappear without a trace because they have been accidentally deleted or their URL address was changed?[1]

Everything–the exaggerated value, the lack of scarcity, the threat of scams and the sudden loss of value–can be studied in the laboratory at the beginning of the 16th century, shortly before the outbreak of the Reformation in Wittenberg: Political interests in power and commercial speculation in favor of the new medium of book printing, sought to moderate the relationship with the faithful via a new type of artwork (so-called *images of salvation*), failed resoundingly, after initial successes. Does that sound cryptic? Yes, exactly!

3. WHAT LUCAS CRANACH'S WOODCUTS ON THE REDEMPTION FROM SINS (1509) HAVE TO DO WITH MODERN NFTS

In 1509, Lucas Cranach was commissioned by his elector to catalogue 5,005 rather unsightly relic fragments from the Holy Land. Cranach was to produce handy drawings with precise descriptions of their healing effects.[2] The aim was to familiarize

1 Jörg Heiser also harbors this suspicion: "But they can also be deliberately misplaced, or rather, they are now burnt: They still exist as a data set, but nobody has access to its address. And you guessed it: all of this also happened with the onions, which were often stolen, misplaced or accidentally, sometimes deliberately, destroyed. What the copy-paste error of a museum employee is to the NFT legend was to tulip mania the story of the sailor who took a sinfully expensive *Semper Augustus* tulip bulb from a merchant's counter in the belief that it was a simple vegetable bulb. He then sliced the onion onto his herring bites and ate them–and thus, according to legend, the equivalent of one million US dollars." (Heiser 2022, part 2, sub-item 9)

2 "Lucas Cranach the Elder was [...] commissioned to capture the prince-elector's precious collection of relics, which at that time comprised 5005 relic particles and promised 503,300 days of indulgence [i.e. shortening the length of stay in hell, M.S.], in 119 woodcuts."–Flyer, conceived for the permanent exhibition at the Wittenberg Cranach Foundation, entitled: "Cranach's World. The life and work of the painter family in the

the faithful with the untouchability and unobtainability of the miraculous objects by means of a *Book of salvation (Heiltumbuch)*. Not only was the sale of indulgences to be simplified, also a brand-new technology had to improve its performance: the newly invented printing presses, that Cranach invested in, had to produce a first turnout. Thus, the 119 printed illustrations from woodcut are both an advertisement for Cranach's workshop and for the new medium of printing. For the faithful, on the other hand, the pictures served as infinitely precious coupons for salvation. Cranach's *Book of Salvation* served as an *interface* that allowed affective participation, even if it did not guarantee exclusive use.

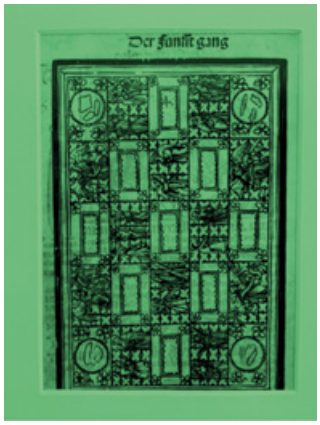
Cranach's *Heiltum* images thus fulfilled a similar function to today's NFTs. In both cases, ownership is regulated, but their use remains ubiquitous and the value of the images volatile. With the Reformation, Martin Luther put a harsh end to the business model of indulgences, just as rudely as Elon Musk today decides the success or failure of the fun currency Dogecoin with a single tweet on Twitter–before its acquisition and rebranding as X, that infamously let Donald Trump's reelection as president of the U.S. Although the reference systems (political/religious) differ, the underlying processes of radical redistribution of counter-values are astonishingly similar. During Reformation, the collectible *Heiltum* images lost their original utility value overnight, which ruined also their exchange value. From then on, Cranach printed Luther's German bibles without any sign of regret. For the new medium was by no means immune to the decline in value of its first advertising images.

The Wittenberg scene is an excellent example to better understand the increasing symbolic value, but also the vulnerability to loss of value of today's NFTs: For it is only the 119 woodcuts – like today's limited NFTs for digital wallets – that allow the physical relics to be visually reproduced. Similarly, it is limited collectible pictures that have contributed to the popularization of cryptocurrencies. (More on this later.) What happens then is twofold: The images themselves gain importance and popularity. At the same time, they allow the faithful (like today the NFT owners) to participate in the electoral collection (or in cryptocurrencies) to an unimagined extent. There is more to add: Cranach's *Heiltum images* solve at least four practical issues by switching media from the physical relic to the printed image of a woodcut: 1) the *dispersed nature* of the fragments (by putting them in an order), 2) their *lack of context* (by describing their salvatory effects), 3) their *untouchability* (by printing them on paper), 4) their *unobtainability* (by putting a price tag on every single sheet of paper).

In the woodcut miniaturization of the relics, the printing and sale of Cranach's collectible salvation pictures (like NFTs)–compiled in a devotional book (album)–combine the symbolic meaning with a vital, practical dimension: They link it to a concrete use, that overcomes the dispersed nature, the untouchability and the unobtainability. Whoever buys one of the printed albums (or NFTs) acquires an

historic Cranach-Hof", n.d., n.p. [Last visited in person on 8 May 2022].

important *asset*: The purchase of the catalogue (album) of the newly arranged, precisely described replacement relics (or NFTs), compiled in miniatures, shortens the prospective length of stay in hell (ends the painstaking non-participation in cryptocurrencies & enters the Metaverse) through devotional immersion in a particularly touching specimen of its genre (like owning NFTs helps to immerse into the Metaverse).



Figures 2, 3, 4: Examples from Cranach's 119 woodcuts for the Elector's Heiltum cycle, an album for the sale of indulgences. The green example at the top left shows how insignificant and small the relic particles (in the four outer circles) would be without the pictorial cohesion. The subsequent coloring shall make the contours clearer.

In the case of Cranach's 119 woodcuts, the passage of time put paid to the Elector's calculation of increasing their value by reproducing the unsuitability of the manageable collector's pictures in catalogue format: as is well known, the Reformation in Wittenberg put an end to the sale of indulgences just eight years later. What happened to the printed indulgence catalogues? It was no coincidence that the elector in charge was nicknamed 'the Wise': "Under the influence of Luther, Frederick the Wise only allowed the relics to be displayed without the proclamation of an indulgence in 1522" (Flyer Cranach Workshop Wittenberg 2022). Cranach's woodcuts survived the Elector's 5005 relics, unlike the physical collectibles themselves. Cranach's images survived not despite, but because of their multiplied use in the form of the "private reliving of public instruction".[3] They survived through the ages not in spite of, but because of the aesthetic and ontological difference to the depicted objects themselves: the particles from the Holy Land, which were bone splinters, inlaid ladies' thumbs, scraps of linen and nail splinters (cf. fig. no. 2). Cranach's woodcuts, limited to 119 pieces (similar to today's NFT-collections), in conjunction with the new presses (signing method on a blockchain), epitomize the new media age of book printing (of cryptocurrencies).

Cranach, who had long been a wealthy citizen of Wittenberg, owned, a phar-

3 The descriptions of Cranach's woodcuts quoted above are attached to the exhibits of *the Book of the Wittenberg Shrine* (1509ff.) in the Wittenberg Cranach Foundation in 2022.

macy and a print shop in addition to his spacious artist's workshop. From what we know, he was a brilliant businessman. The suggestion for the woodcuts for a small-format devotional book came–as we may assume–from himself. Like today's NFTs, they were initially nothing more than a *merchandising product*; a welcome opportunity for Cranach to keep the new printing presses working day and night, while at the same time promising the buyers' relief from the torment of the soul by allowing them to enjoy the full benefits of indulgence without having to possess relics or touch them physically. Cranach's switch to the small-format image of the shrine resolves the problem of non-possessability and non-touchability. The needs of the faithful to calm their fears of the end of the world are also satisfied in an exemplary manner.

4. BEEPLES AND METAKORVAN AT CHRISTIE'S

It looks like the unwieldy 5005 relic particles sold to the elector of Wittenberg by clever salesmen find their modern, digital equivalent in *Everydays: The First 5000 Days* by Beeples.[4] Not a single image of the digitally created images is worth mentioning from an aesthetic point of view. The digital artist, whose real name is Mike Winkelmann, has posted them daily on the online platform Tumblr since 2007. In his commentary pixels, fueled by resentment, obscenity, malice, mockery, perplexity and misogynistic boredom, the artist takes the piss out of everything that is not up to scratch.[5] After the spectacular sale at Christie's, critics indignantly warned that many of the individual pictures of Beeples' digital work were sexist, even racist. This criticism fails to recognize that this is Beeple's predominant stylistic principle in *Everydays*. It also overlooks that someone who exploits racial clichés in pictures does not need to be a racist. But yes, Beeples acts as *agent provocateur*. He provokes by stating all of this as the *new normal*. He profits from the fears or anxieties of those, who are triggered by his provocation, that–in its tasteless- and shamelessness–seeks attention at any price.

Let's try a more innocuous example: It is doubtful whether the auction house Christie's realized 69 million dollars for a succinct montage of a JPEG file with 21,069 x 21,069 pixels: The receipt of the purchase amount could later not be identified on the blockchain. The wallet number of the buyer (the founder of Metapurse, who goes by the pseudonym Metakovan and is possibly Vignesh Sundaresan) keeps missing. So, the very thing, that is supposed to make blockchain technology so bomb-proof, was and is missing. Presumably, this is poorly concealed surrepti-

4 https://www.monopol-magazin.de/69-millionen-dollar-fuer-beeple-nft-bei-christies

5 This is recognizably not a subtle work on the course of time, such as On Kawara's daily meditation in the form of the Date Paintings, but an angry, cliché-ridden, even self-pitying rebellion against one's own inability and weariness with the world, which is exhibited as snottily and defiantly as possible.

tious advertising, a coup, an insider- or in-house deal, as the "tech journalist Amy Castor surmises", as "Metakovan [...] bundles Beeple's digital art in a speculative fund in which the artist himself has also invested." (Scheer 2021) Anyone who purchased Ether in the first years of issue could then easily buy Beeple's work for less than 60,000 dollars, provided they pay in Ether again. This is not only permitted but expressly wanted. This is a revolution at Christie's that eclipses the problem of systematic tax avoidance. The lack of taxation of transactions fits in with its underlying business model of cryptocurrencies: firstly, secondly and thirdly–to save taxes for once and for all. The public and the people are the loser.

5. SYSTEMATIC TAX AVOIDANCE

The article could end here and refer to the excellent studies by Joseph Vogl, who never tires of blaming the shattering business model of platform capitalism for the unleashed self-destruction of our culture. One of the reasons why cryptocurrencies are prone to heated overvaluation is the unique nature of the new app-based digital companies that are pushing their way to the top of the DAX. It seems bizarre that the value of a fun currency in circulation such as Dogecoin suddenly exceeds the stock market value of Deutsche Bank; or that Airbnb, a company that is coming under political pressure in many large cities because it contributes to the explosion of rents and later to the depopulation of city centers, is listed higher than BMW.

Joseph Vogl (2022) patiently explains in his book *Capital and Ressentment. A Brief Theory of the Present)*, why the complete decoupling of analogue and digital value creation can be an advantage for investors: Because with a platform company that exists primarily as an easy-to-use app on a smartphone that brings people together effortlessly, labour can be outsourced without union ties; the transaction costs for the business to be transacted are also simply marginal. After all, no one needs to own property and look after it to make a profit with Airbnb, for example. To invest in Uber, you don't need to own any cars, i.e. no fixed capital that wears out and wears down. In case of doubt, all you need to do is invest in new, faster and therefore better computer capacities that bring customers to their drivers. These not only help to acquire customers, which will soon be coming in at an exponential rate via digital networks, but also to handle acrobatic tax avoidance strategies. These make it possible to sell platform companies as "licensable data products" through the cross-border (Vogl 2022, 51; 50) from one subsidiary to the next, from one tax haven to the next. Through systematic tax avoidance, platform capitalism has long been detached from the common good. Using the example of an Uber ride in Belgium, Joseph Vogl calculates that only 2.5% of these 50 Euros are subject to tax at all; and by no means in Belgium itself. Vogl speaks of the "notorious procedures of tax avoidance" (ibid., 50) that the new "platform capitalism" (ibid., 51, 82, 95, 103, 148–153).

6. A SIMPLE, BUT RADICAL CREDO: USE IT OR LOSE IT!

When these *peanuts* are also paid in cryptocurrencies, the plan of self-printed or even just invented play money in one's own bubble entertains unimagined flights of fancy. Cryptocurrencies are so volatile because their users have internalized the pop-cultural credo of ubiquitous use, both intuitive and counterintuitive, rational and irrational. They embody the credo of pop culture, which reaches deep into network culture and platform capitalism. This credo is as simple as it is radical: use it or lose it. The imperatives of usage at any cost including abuse and usufruct–are transgressing the traditional bonds of ownerships.

At the same time, new forms of capitalization must be found in pop culture, which is linked like no other to the unbridled desire for ever new, purchasable things, so that the ubiquitous use of the many is once again transformed back into the monetary wealth of the few. However, a radical moment of redistribution remains, as the new shareholders of the platform economies do not always correspond to the Ivy League clientele, who–e.g. in wealthy countries like the United States of America–traditionally strengthen and promote their own network over generations. At first, cryptocurrencies were used by mainly self-proclaimed underdogs, tech bros, drug or weapon dealers, who were used to act in secret. Via blockchain technology they could make dirty money–out of the sudden–confidently, boldly, freely and without fear in plain day light. Shame has been replaced by fresh insolence.

To come back to a more recent, before already briefly mentioned example, the *Bored Ape Yacht Club* (BAYC) epitomizes this attitude, this chutzpah, like no other. Its only wealth is not based on futuristic mega yachts that could be confiscated in Italian harbors during the Russian war of aggression against Ukraine, but on comic pictures of bored apes that are freely available on the internet. During the coronavirus pandemic, the monkeys sparked a hype around the so-called 'non-exchangeable tokens'. Even the term with the negation in it is a euphemism. After all, they are inter-changeable, collectible and sellable in every respect. An NFT is a digital certificate on a blockchain that refers to another digital object, usually a document with an image or video file. Since this certificate is also linked to the wallet of a natural person, it also cements ownership rights in code. This ability to link assets to a wallet makes the blockchain more than just an accounting technology for digitally securitized changes of ownership.

If the blockchain is a digital accounting technology that is given new media weight through public but encrypted storage on a digital platform, then NFTs are encrypted signatures whose purpose and meaning is to publicly display ownership of any kind digitally. This is usually done using a computer-generated image. An NFT then does not exist as a simple digital signature, but rather as an image with finite, easily recognizable characteristics in all channels (Instagram, Facebook, X) that simultaneously represents the entirety of my digital and analogue possessions.

7. NFTS AS PSEUDOGRAMS, SIGNATURE OR ALIAS IMAGES

An NFT is therefore not a pseudonym, but a pseudogram; not an alias name, but an alias image. A pictogram whose infinitely wide distribution and simultaneously interchangeable owner identity nevertheless serves the purpose of recognition. Such an NFT is a digital mask, the pictorial equivalent of an incognito. Most NFTs serve as pictorial reference traces which, under conditions of encryption, enable identification without unmasking. The pictorial surface of such an NFT is therefore basically a *trompe d'œil* for encrypted wallet numbers, metadata and the link to an image or image-generating file. NFTs thus turn the blockchain into something that can be used in many ways. They give the nonsensical code sequence a sensual form. NFTs are both *a pars pro toto* of blockchain technology and its interface, its very own spin-off and its most successful merchandising product.

Figure 5: A selection of CyptoPunks[6].

NFT as pseudograms are linked to a display of ownership on a publicly visible blockchain, as the display of ownership obviously serves not only to increase its own value, but also to increase the value of cryptocurrencies as such. Just as an author signs her books after readings, she increases book sales overall through her autograph. The increase in value not only benefits her, but also the buyer, whose autographed copy limits and counteracts the loss in value of the individual book with unlimited reprinting possibilities.

The invention of NFTs as a *spin-off* of cryptocurrencies is closely linked to the attempt to make digital wallets more attractive. As mentioned briefly before, platform operators for trading cryptocurrencies initially gave them away as free merchandising products. The first NFTs to be distributed on a large scale were 10,000 limited-edition, algorithm-generated images of crypto punks as a thank-

6 Guido Lange. 2021. "CryptoPunks NFTs: Prices and sales at record levels", on: *Block-Builders*.de, 3 August 2021, https://block-builders.de/cryptopunks-nfts-preise-und-umsaetze-auf-rekordniveau/

you for entering online capitalism. This functioned as an advance assurance that, although if one might plunge into breakneck madness (aping in), he or she would not sink into the maelstrom of anonymous insignificance (cf. Reichert, 2021, 18, 25, 26). The symbolic capital of these tiny *signature images* linked to a blockchain was thus from an early state on a promise. What promise? 'Through me you are and remain unique!'

At the same time, NFTs solve the problem of incomprehensibility and nonsensicality (here: the blockchain, whose numerical codes themselves are not particularly tangible), just like Cranach's *Heiltum or salvation images* did in 1509. NFTs thus organize the 'smart' transition from one economy to another. They represent the radical new that makes cryptocurrencies powerful agents on the international financial markets. Because the radical new always arouses fears and lacks trust, it needs an aesthetic that counteracts the uneasiness with its outspoken harmlessness.

That's why the overtly retro charm of the 8-bit cyber punks doesn't just fall into the register of a self-historical narrative, as Kolja Reichert (2021), among others, believes. Rather, it fits into the figure of camouflage typical of all media revolutions. A new medium likes to wrap itself up like a wolf in sheep's clothing. This is another reason why NFTs that function as signets are considered harmless and cute. Instead, they claim to use the new digital possibilities as playfully as possible. NFTs are therefore extremely helpful transitional objects, from the digital to the seemingly analogue and back to the digital.

8. THE UBIQUITY OF USAGE: NFTS AND THEIR INEXHAUSTIBLE UTILITY VALUE

Despite the promise of interchangeability, there is no *one* function of NFTs that towers above all others, but rather a whole set of possible actions in the digital world that are triggered, enabled, favored and suggested by them. NFTs can be exchanged and collected. As in the case of Cryptokitties, which can be used to 'breed' more NFTs and continue trading them. They can be used as field-forest-and-meadow NFTs to protect ideas, like a patent, only without the patent office, which issues percentages of the proceeds from each resale. They can be used to create digital doubles for real existing things, whose accessibility is thus maintained or increased in a playful way, for example when digital excerpts of the Old Masters are traded as NFTs by the Uffizi Gallery in Florence. It was closed during the coronavirus pandemic but thus kept the air conditioning systems running to preserve the six-hundred-year-old pictures, while entertaining a virtual public. Artists and designers are finally discovering NFTs as a new way to open completely new markets, while they can confidently dispense with the cost-intensive use of printing presses, paper, charcoal, canvases, smelly paints and toxic solvents. This multitude of possible uses is, I suspect, what makes NFTs so popular. Their obviously almost

inexhaustible utility value is the open secret of their success. My list of these uses is certainly not exhaustive. It should be seen as a starting point for discovering in the versatility of NFTs, 1) as a *give-away*, i.e. as an incentive to purchase a digital wallet (merchandising product), 2) as *digital collectible images* (including moving images) that can be exchanged, crossed (breeding) and resold (keyword: gamification); 3) as a *special unique seal* for digital artworks, which indicate the exclusive right to their further commercialization on a public online platform solely through the encrypted indication of ownership; while at the same time they can also be used, shared and memefied by anyone free of charge; 4) as a *digital clone and as a digital display of ownership* for analogue, i.e. not only mathematically, but spatio-temporally – physically – existing values and works, because their owners hope to increase their marketing opportunities through increased visibility and accessibility. (So called *free-rider* or, more kindly: *field-forest-and-meadow NFTs*, because there is no causal or necessary connection to cryptocurrencies); 5) as *signets turned into images*, which function as digital signatures and, like the pin (with emblem), lead to an exclusive club in the digital and/or analogue world; 6) as an outwardly visible and inwardly effective identification mark for the *tech-savy user community*, which is enjoying growing popularity as a digital status symbol (keyword: *bragging* value); 7) *as an investment, i.e. as an object of speculation*, which is sold as an *open edition* for a limited period in otherwise unlimited quantities; 8) as a practical entry requirement to become a *share-holder* of a DAO and to be able to vote there (like a mandatory contribution); 9) as an *interface* that not only introduces the use of cryptocurrencies in a selfless or purposeless manner, but also incentivizes their further use (keyword: adsorption into the digital world).[7]

The multitude of possible, overlapping uses already heralds the uncomfortable truth that emerges: Neither the acquisition nor the ownership of an NFT can, will or should limit and restrict the further use of the NFT by the mass of other non-owners, because they form the sounding board for further value creation. We can imagine its potential to be just as overwhelming as looking into a blast furnace where everything must be melted down beyond recognition before it can take on a new form. At the same time, the privileges of the owner of an NFT remain extremely limited. They often border on the ridiculous, seeming like a parody of the conventional approach to ownership. In general, the trade in NFTs remains paradoxical: because there is no exclusivity or privacy of use attached to the object of a digital signature, NFTs do not monopolize or restrict the rights of use of other users.

7 Jan Distelmeyer generally defines interface as a dispositive that mediates between individual use and opaque media infrastructure: "Interface stagings guide how the universal machine can prove itself in each particular use – what it is and who I am in relation to it." Distelmeyer, Jan. 2017. "An/Leiten. Implikationen und Zweck der Computerisierung", in: *Navigationen 2*: Medien, Interfaces und implizites Wissen, ed. by Christoph Ernst and Jens Schröter, Siegen: universi, p. 38.

9. THE IRONY OF UBIQUITY

It seems ironic that the official discourse about NFTs emphasizes the logic of ownership, which is at the same time so clearly undermined by the culture of use itself. What is left therefore of the promise linked to the dominant narrative about NFTs, it's immutability and its tamper proof? Not much. As the digital signing of any digital data (which does not necessarily have to be minted anew) can be found or stolen, it remains a willful, extremely brazen form of value creation. It is based solely on the act of digital cloning–at least in the case of the aforementioned 'free rider' or 'field-forest-and-meadow' NFTs, that becoming a *phygital* that bridges the physical with the digital realm (Del Vecchio, Secundo, and Garzoni 2023).

What does that mean in concrete terms? Any pixel of any digital photograph of any color segment, let's say from Gerhard Richter's stained-glass window in the Cathedral of Cologne, can be sold as an NFT without the painter or anyone else being able to (successfully) raise a legal objection. What is exhibited is not only the concrete possession of something that would otherwise evaporate into the depths of digital space due to its technical reproducibility. It is less the concrete possession that can be experienced in the example of NFTs than the *symbolic and social capital of possession* in general. The symbolic weight of NFTs lies in the mere, the *hollow form of possession*, a form that creates its own content and values – only after the fact. In the example of NFTs, the concept of use in pop culture is radicalized: It challenges the traditional claim of ownership as a form of possession that guarantees *exclusive* rights of usage. Now that pop culture has chosen the ubiquity of use–in all its dimensions, from abuse to self-consummation to usufructs–over any other form of possession, the doctrine of sharing prevails in a twisted manner: the *symbolic power of possession* has freed itself from any concrete item that is (to be) possessed. Symbolic possession can be asserted digitally by reclaiming it. Symbolic possession no longer entails exclusive right of usage as proof of ownership. But it still entails pictures, in all its hybrid forms.

10. UNOBTAINABILITY, POTLATCH, SHAME

Not a renowned designer, but an underpaid illustrator with the artist's name *All seeing Seneca*, who counts David Lynch, Gustav Klimt and Maurice Sendak among her heroes,[8] drew the aforementioned, ostentatiously bored monkeys before an algorithm sampled the various accessories from the freely available images of mon-

8 See the artist's website at https://allseeingseneca.com/about. She only considers NFT to be a certification method, not art. The quote on Lynch, Klimt and Sendak can be found in an interview from 25 May 2022, which is linked on her website, namely here: https://hypebeast.com/2022/2/studio-visits-all-seeing-seneca-coinbase.

keys on the Internet. Not even the supposedly individual accessories make these monkeys particularly exciting. The most important thing about this monkey, however, is its attitude, not just any attitude, but a particularly exquisite one: that of boredom.

There are 10,000 of them. 10,000 bored monkey like the famous *[O]bvious 10,000 of New York*, a phrase evoking "The Upper Ten" coined by the American poet Nathaniel Parker Willis in mid 19th century expressing exclusivity and limited participation. Here 10,000 does not refer to the wealthiest people in New York City but to 10,000 forms of boredom of comic-like monkeys. One of the bores casually puffs on a cigarette under his cowboy hat, another smokes a pipe and hides his hairy face behind sunglasses, wearing a lumberjack shirt and a baseball cap with the club's identifying marks, a skull and crossbones between the initials of the club – it must be that gothic, otherwise the existential trait of this boredom cannot be explained. Oh yes, a monkey like this is sometimes pierced too.[9]

These digital relatives that are supposedly so close to us in their virtual yacht club (located in Miami), which is now the exclusive playground of their well-heeled owners (even if this game is no bigger than the walls of their toilets), have had an amazing career: Anyone who bought a bored digital monkey for 300 US dollars in April 2021 was able to resell it for around 300,000 US dollars in November of the same year. Madonna's profile picture on Twitter has featured a bored-looking monkey since 25 March 2022, which, as the transaction history of the NFT marketplace OpenSea shows, she bought for 180 ETH, i.e. around USD 565,000 at the time (Kremer 2022). Madonna writes: "I finally entered the MetaVerse..., ... My very own Ape! [orangutan icon] Thanks @ moonplay [magic wand icon] We all need protection from Evil Eye" (Madonna 2022). Including 4,029 retweets, 3,496 quoted tweets, 25,018 likes.

Figure 6: Madonna's private 'Bored Ape' first appeared on her Twitter account on March 25, 2022.

9 "The monkeys have strange glasses on their noses, others have laser beams shooting out of their eyes, they wear all kinds of hats and some are made of cyborg implants. What they all have in common is a hungover, cool look and a hint of end-time romanticism. Three-digit million sums are currently flowing into crypto exchanges every week when trading these little pictures [...] which become more and more expensive the more often they change hands. A complete 'ecosystem' is to be created around the Bored Apes, with a real clubhouse in Miami, three-dimensional apes in virtual worlds and a 'decentralised autonomous organisation' that coordinates everything." Bovermann (2021, 20)

Madonna can undoubtedly be blamed for spending half a million dollars on a monkey picture one month after the start of the Russian war of aggression against Ukraine under the leadership of Vladimir Putin. Is Madonna possibly deliberately celebrating a 'potlatch' here, i.e. an ancient rite of public lavishness and the simultaneous secret shaming of everyone else for the brilliant opportunity to destroy wealth in its obscene splendor instead of continuing to accumulate it? Is this not the ultimate demonstration of their power, which celebrates itself as arbitrariness? And is it an act of ostentatious self-demolition, comparable to the constant proclamations of the new crypto millionaires that they are just 'a piece of shit', which is why they decorate the walls of the toilets in the virtual clubhouse of their Bored Ape Yacht Club in anticipatory boredom, neatly pixel by pixel, of course.

It is worth returning to George Bataille (2021) to understand why obscene wealth is rightly paired with contempt for it. The deliberate destruction of one's own wealth is not devoid of logic if one understands its accumulation itself as an unfair acquisition. Destruction is then the only "use [...] that lies in its [the] essence [of wealth]" (Bataille 2021, 83) because only the waste testifies to the obscene accumulation of wealth itself. Wealth that is not utilized is accordingly – no wealth at all! As cross-generational initiations and threshold rituals, weddings and funerals have always been economically ruinous celebrations of exuberance. They are widespread in almost all cultures and can always be observed. Bypassing the possibility of bargaining, valuable goods or resources are squandered excessively without any ifs or buts or hesitation. The aim seems to be to increase one's own social status in the community in return.

When researching the social structure of North American indigenous tribes – such as the Tlingit, Haida, Tsimshiam or Kwakiutl – ethnographers came across practices of excessive waste as an unorthodox form of bartering. The term 'potlatch' therefore refers in the narrower sense to an unsolicited and excessive 'gift' that a chief makes to his rival "to humiliate, challenge and oblige him" (Bataille 2021, 80). The recipient must not refuse the poisoned gift. He can only "return the favor a little later with a new potlatch, which must be even more generous than the first, that is, he must return the gift with interest" (ibid., 81). Thus begins a spiral of the destruction of goods and values, with the apparently not unwelcome consequence of levelling the economic imbalance. All of this is radical and absolutely belongs here because the potlatch, like a 'paradoxical intervention', is a procedure that is as unorthodox as it is radical as it artificially creates equality among unequal people, in this case by public waste and collective excess.

Based on Marcel Mauss' *Essai sur le Don* (1925), Bataille explains why there have always been economies in almost every country in the world that "would not have corresponded to the need to acquire something, but to the opposite need to lose or waste something" (Bataille 2021, 80). Ethnological research explains this anomaly as the necessary "end point of the sacrificial cycle" (ibid.), thereby transforming and explaining the ostracized into the sacred part of the whole. Every sacrifice is always "[...] a mixture of fear and frenzy. Frenzy is more powerful than fear, but

only when its effects are turned outwards, against a foreign prisoner. It is enough that the sacrificer gives up the wealth that the sacrificed could have meant for him." (Bataille 2021, 74)

This is where the big issue of use returns. Every potlatch is a "*consumption for others*" and as such it is highly manipulative. According to Bataille, the waster simultaneously celebrates the contempt for his unwelcome gifts and presents imposed on the other person. According to Bataille, every squanderer gets something valuable in return, namely an *increase in social status*. What he "now guards like a possession is the effect of his generosity" (ibid., 83). So, it is the inordinate expenditure that, as if on a set of scales, pushes social status to dizzying heights.

In the light of these age-old bartering rites, who give up real things for fame as something of higher value, thereby levelling their own wealth economically to enhance their own social status, the lavishly high price that Madonna is prepared to pay to enter the Metaverse can be explained as a deliberate waste.[10]

Do the limits of the analogy between potlatch in a protected social setting and dizzying NFT sales lie in the growth of new, anonymous agents, as is currently happening in DAOs (decentralized autonomous organizations)? Or rather in the fact that it is by no means certain that the overheated market activity of 2021 and 2022 with NFTs is a "waste of useful wealth" (Bataille 2021, 82)? Usefulness was undoubtedly an essential prerequisite for Bataille's analysis.

Hence a final attempt at explanation: Madonna chooses the path of belonging not to any culture with any values. She enters a digital culture that is entertaining itself and shocking the rest of those who don't approve by playing with self-degradation and self-dumping in such an exaggerated manner, that shame is overcome by embarrassment. Madonna inscribes herself into a *culture of self-blaming without feeling shame*–which was alien to her throughout her whole artistic career–through the *calculated exposure of the obscenity of her own wealth*. Madonna plays with the knowledge of certain codes of do's and don'ts, that acknowledge the unrestrained capitalization of even the slightest insignificance with *demonstrative boredom* and ultimate coolness. The display of disinterestedness is particularly striking. It almost seems as if the attitude of boredom is the real obscene luxury and *jouissance* here, which is barely concealed. Cui bono? Madonna's special Bored Ape NFT undoubtedly provides precisely these codes of self-satisfaction and coolness, which, with its many eyes, simultaneously attracts the gaze like an apocalyptic beast and seeks to banish the evil eye. I am tempted to regard it as an *apotropaic* figure, that attracts and repels attention at the same time, to be always on the safe side. Madonna seems to be tired of platform capitalism to the same extent that she intends to profit from it.

10 One might argue that in the specific case of Madonna (net worth 850 million dollars) the digital ape costs less than 0.0006% of her total wealth. Thus, she is not wasting her wealth in the strict sense. But she is still sending a fatal message to the world, especially due to the coincidence with Russia's invasion of Ukraine: 'Look here, I don't care that you other celebrities are now donating money for weapons ...'

Is Madonna, for all her fame and all her trendsetting throughout her career, let off that easily? "A profile picture that you have paid for and that belongs exclusively to you, [says a club member of the Bored Ape Yacht Club], is not comparable to just any picture [...]. You're not just a monkey owner, you're also a monkey" (Bovermann 2021, 20). Self-realization and self-weariness, shame and embarrassment, destruction of value and new value creation become indistinguishable in the bright daylight of the digital era.

ACKNOWLEDGEMENTS

The text was translated by AI – deepl.com – from German into American English and revised by a native speaker afterwards. The term labour is set in British English to hint at the human adjustments.

Note: This article is a small preprint from my monograph: »Radikalität & der Mut zum Gebrauch des Eigenen« which will be published forthcoming by Felix Meiner Verlag, Hamburg, in September 2025.

REFERENCES

Bataille, Georges. 2021. *Der verfemte Teil. Versuch einer allgemeinen Ökonomie*. [*La Part maudite*, Paris: Éditions de Minuit, 1949.] Edited by Michel Surya and Tim Trzaskalik. With an afterword by Benjamin Noys. Translated from the French by Traugott König (into German), newly revised by Tim Trzaskalik, Berlin: Matthes & Seitz.

Bovermann, Philipp. 2021. "Die Milliardäre langweilen sich in der Tiki-Bar. Der 'Bored Ape Yacht Club'' ist einer der exklusivsten Clubs der Gegenwart – und angeblich ein Modell für die Krypto-Zukunft des Internets. Oder ist das alles doch nur ein Schneeballsystem?", *Süddeutsche Zeitung* (SZ), no. 274, Munich, November 26, 2021, p. 20.

Del Vecchio, Pasquale, Giustina Secundo, and Antonello Garzoni. 2023. "Phygital Technologies and Environments for Breakthrough Innovation in Customers' and Citizens' Journey. A Critical Literature Review and Future Agenda." *Technological Forecasting and Social Change* no. 189 (April): https://doi.org/10.1016/j.techfore.2023.122342.

Distelmeyer, Jan. 2017. "An/Leiten. Implikationen und Zweck der Computerisierung", in: *Navigationen* 2: Medien, Interfaces und implizites Wissen, ed. by Christoph Ernst and Jens Schröter, Siegen: universi, pp. 37–54.

Ertz, Klaus. 2012. Expertise on Jan Breugel's (1601–1678) *Allegory of* Tulipomania, from the 1640s, https://www.dorotheum.com/de/l/6718257/ (November 24, 2024).

Flyer. 2022. For the permanent exhibition at the Wittenberg Cranach Foundation, entitled: "Cranachs Welt. Leben und Werk der Malerfamilie im historischen Cranach-Hof", n.d., no p.

Heiser, Jörg. 2022. "Das Ding-Dong-Happy-Happy-Produkt. Dank NFTs soll Kunst auch im Internet besitzbar sein. Das hat den Kunstmarkt angeheizt, doch jetzt zeichnet sich ein Kollaps ab. Was ist los? Versuch einer (kunst-)historischen Einordnung." (Part 1) and "Von der Tulpenzwiebel zur Datei" (Part 2), *Republic*, June 9 and 10, 2022. https://www.republik.ch/2022/06/09/das-ding-dong-happy-happy-produkt (June 9, 2022) and https://www.republik.ch/2022/06/10/von-der-tulpenzwiebel-zur-datei (June 10, 2022) (both accessed on November 24, 2024).

Kremer, Marlen. 2022. "Neues BAYC-Mitglied. Madonna kauft Bored Ape NFT für 180 ETH. Der wohl teuerste Member Club kann sich über ein neues Mitglied freuen: Madonna hat sich für umgerechnet eine halbe Million US-Dollar eines der Affen-NFTs gesichert", *BTC Echo*, March 25th, 2022, https://www.btc-echo.de/schlagzeilen/bayc-madonna-kauft-bored-ape-nft-fuer-180-eth-137704/.

Lange, Guido. 2021. "CryptoPunks NFTs: Preise und Umsätze auf Rekordniveau", *Block-Builders.*de, August 3rd, 2021, https://block-builders.de/cryptopunks-nfts-preise-und-umsaetze-auf-rekordniveau/ (November 24, 2024).

Madonna. 2022. https://twitter.com/Madonna/status/1507183071551971330?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Etweet (November 24, 2024).

Reichert, Kolja. 2021. *Krypto-Kunst: Digitale Bildkulturen.* Berlin: Wagenbach.

Scheer, Ursula. 2021. "Crypto art at Christie's. A museum for the most expensive digital artwork", in: *Frankfurter Allgemeine Zeitung* (F.A.Z.), March 15, 2021, https://www.faz.net/aktuell/feuilleton/kunstmarkt/anonymer-kaeufer-von-beeples-nft-kunstwerk-everydays-plant-ein-eigenes-museum-17246266.html.

Vogl, Joseph. 2022. *Capital and Ressentment. A Brief Theory of the Present.* Translated by Neil Solomon. Cambridge: Polity Press.

ARTWORK, MARKET AND COMMODITY FORM

PAUL SEIDLER

1. INTRODUCTION

The emergence of non-fungible tokens (NFTs) has added a new dimension to the art market and changed the way digital art is created, bought, sold and owned. NFTs, a type of digital tokens (ERC-721 2018) enabled by smart contracts, have given rise to social and economic structures that differ significantly from those of the traditional art market – particularly in terms of market dynamics, ownership structures, and distribution forms. Inspired by Friedrich Kittler's essays like *Protected Mode* and *Unconditional Surrender* (Kittler 2005), the first part of this article seeks to derive the social and economic frameworks surrounding NFTs from its technological a priori (Spreen 1998). To achieve this, I will conduct a comparative analysis of the traditional art market and the NFT market, highlighting the differences stemming from the technological characteristics of NFTs and examining these features with reference to the medium's specifications. In the second part I will interrogate the tension between the artwork pertaining to its value and its status as a commodity. Thereby I will address the conditions under which artworks become commodities and the questions which arise from this process with regard to value and the artist's labor. The third part will give an overview of artworks engaging with their own commodification and resulting market dynamics.

By analyzing the underlying technology, it becomes clear that the NFT market differs from the traditional art market. NFTs can be generalized as digital assets authenticated by blockchain technology – a cryptographically secured database with a consensus algorithm ensuring transparency and verifiability – originating from an Ethereum Improvement Proposal in 2018.[1] While ERC-20 tokens (ERC-20 2015) can be likened to fungible, divisible currency, the ERC-721 standard was primarily conceived to represent non-fungible assets, as articulated in its definition by William Entriken, Dieter Shirley, Jacob Evans and Nastassia Sachs:

> We considered use cases of NFTs being owned and transacted by individuals as well as consignment to third party brokers/wallets/auctioneers ('operators'). NFTs can represent ownership over digital or physical assets. We considered a diverse universe of assets, and we know you will dream up many more:

1 The specification of the Non-Fungible Token Standard by Entriken, Shirley, Evans, and Sachs was designed to contrast with the ERC-20 token standard (ERC-20 2015).

> Physical property – houses, unique artwork
> Virtual collectibles – unique pictures of kittens, collectible cards
> 'Negative value' assets – loans, burdens and other responsibility
> (ERC-721 2018)

The unique tokens should, therefore, function as something analogous to a property title or as a proof of authenticity, with applications not exclusively limited to art[2]. The ERC-721 token standard inherits many of its interface functions from its predecessor, the ERC-20 – with both transfer functions (ERC-20 2015) and the ability to assign transfer rights to a smart contract to third parties being identical. The main difference is the individual identity of each token characterized by a sequential number, the so-called token ID, as well as the individual reference to its associated metadata. This metadata (the ERC-721 metadata JSON schema) can then serve as a description and link to an associated good. In this use case, it becomes apparent that an NFT cannot be seen as a singular object but must be defined in relation to an underlying good. The specification points to the separation between the underlying good and its property title – and allows NFTs to act both as property title and distribution mechanism. The specifications of the ERC-721 token results in marketplaces and sales platforms being tied to the characteristics of this standard, resulting in interaction patterns which are based on trading platforms rather than galleries. While traditional art markets are bound to physical objects (e.g. paintings, sculptures) predominantly traded via galleries, auctions, and private sales – NFT platforms enable buying and selling in real time. In the following, I will compare the two markets. This will highlight their differences better.

2. THE MARKET

Isabelle Graw defines the art market as the various venues where artists, gallery owners, and buyers come together, describing it as an "informal market" (Graw 2008, 66, translated by author)– which isn't necessarily part of official statistics. Informal markets often contain characteristics that correspond to the precarious economic conditions of art production. From one perspective, artists and certain galleries operate without formal legal entities, leading to contracts often being esta-

2 A property title is defined as a legal record that signifies ownership of property and provides evidence of the rights and interests held by the owner. Since property titles are reliant on a formal legal system, it is notable that the authors of the proposal, leave open how the legal link between token and underlying asset, e.g. physical property will be established. In this context, Marx should also be remembered here: "This juridical relation, whose form is the contract, whether as part of a developed legal system or not, is a relation between two wills which mirrors the economic relation. The content of this juridical relation (or relation of two wills) is itself determined by the economic relation" (Marx 1972, 180).

blished between private individuals. Conversely, artists don't conform to a conventional model of wage labor, fostering an alternative and sometimes unhinged dynamic between capital and labor, as evidenced by the self-employment prevalent among most artists. Artworks sold independently or through galleries are typically produced in limited quantities, eschewing industrial mass production – though this does not preclude artists from employing industrial production methods. With this, Graw expresses a clear distinction between the art market and an organized market for industrially manufactured products. As Graw points out, an informal market has similarities to a "networking market" (Graw 2008, 67), such as those found in the financial industry. "The market is always where a few market players come together and communicate with each other." (Graw 2008, 67, translated by author).[3] Therefore, the art market can be segmented into various distinct markets, as per Graw's classification: Primary markets (galleries and first sales), secondary markets (dealers and auction houses), markets of knowledge (conferences, publications), markets of institutions (museums) and markets of major exhibitions (biennials). This structural division will aid in analyzing the NFT market, focusing on the primary and secondary markets.

2.1 NFT PRIMARY MARKETS

To navigate the NFT market, it is necessary to distinguish between two different ways of selling (similar to the way Graw analyses the art market): Minting (the creation of the token and the initial sale, i.e. the primary market) and the secondary sale (secondary market). Minting itself generally consists of three technical actions: the purchase, creation, and transfer of the NFT. These three actions are typically bundled in a smart contract as a function that the user calls during the minting process. The purchase works by sending the correct amount of Ether (the currency of Ethereum) set by the seller to the smart contract. The smart contract then creates the individual token, i.e. an entry is generated in the persistent memory of the smart contract, which assigns a token ID to the buyer's Ethereum address. The assignment of the token ID is followed by an event that signals the transaction of the token to the buyer. From an informational point of view, it is worth noting that in most cases, the creation of the token is initialized by the buyer. If the token itself is taken as the work of art, it would only be created during the process of the first sale – a seeming impossibility with physical works of art. However, even if the token is generated as a digital object in the minting process, the underlying smart contract has been pro-

3 In contrast to an industrial product, which should be made accessible to as many people as possible through effective distribution, the art market is limited by the finite nature of the artwork itself. Demand exceeds supply, which is why Graw also refers to the market as a seller's market.

grammed by the artist, so the artwork is not created through the process of minting.[4]

Initial sales of NFTs went largely unnoticed by commercial entities in the first few years after the establishment of the ERC-721 standard – only gaining recognition after the profits of platforms specializing in secondary sales became too significant to ignore. As a result, artists usually created their own bespoke interfaces and websites on which buyers could mint their ERC-721 tokens. However, the newfound attention that NFTs were receiving in the media led to increasing pressure to specialize the multitude of ways that NFTs could be used (collectable, artwork, community token) – resulting in the creation of platforms that could counter the mass of offerings with curatorial programs. These 'communities' developed rituals and models that were not dissimilar to those of the classical galleries: Prescreenings, whitelists, and guest lists for certain events such as NFT NY showed how new intermediaries arose here as well, some of which demanded similar profit sharing as classical galleries. This development raises the question as to why, in a smart contract mediated market whose central promise is the elimination of the middleman, new middlemen simply arise in reality.

One example of this is *Artblocks* (Artblocks 2024), a platform for generative art. The curatorial program of *Artblocks* specializes strictly in generative art, mostly written in the Javascript programming language with the *P5* programming library. The many collections of artworks sold by *Artblocks* thus formed a certain aesthetic direction, orientated through works by artists such as Casey Reas and focused on procedural software art. However, this also created an increasing dissonance between the implemented smart contracts and the artwork. *Artblock's* smart contract system (Art Blocks Engine) (Etherscan 2022) enabled artists to create collections without any significant interaction with the smart contracts. *The Art Blocks Engine* is a smart contract that is designed to map hundreds of different collections and thus excludes individual programming from its architecture. The separation of smart contract and artwork becomes particularly clear here: in this case, the smart contract is no longer designed by the artist but provided by the platform. The artist is not only relieved of the distribution but also of the possibility of recognizing the smart contract itself as part of their art. Platforms with a curatorial program are, therefore, a double-edged sword: on the one hand, they enable consistent and curatorial stringency and determine distribution mechanisms; on the other hand, they run the risk of taking creative decisions and agency away from the artist.[5] Over time, many digital launch platforms have been established (*Artblocks*, *Verse*, *Fingerprints Studio*, *Folia*, *Quantum Art*, etc.) that are united above all by the fact that they only mediate initial sales.

4 The abstraction of the commodity only arises through a specific social relationship, which does not necessarily include every product of human labor. "Abstraction thus arises neither from things nor from the relationship of man to things [...]. Its origin is of a purely relational nature, lies in the relation of things to one another, [...] their relation as commodities in the purely social relation of exchange" (Sohn-Rethel 2018, 66, translated by author).

5 It is worth emphasizing here that there are also platforms on which the smart contracts are still written by artists.

2.2 NFT SECONDARY MARKETS

While first sales are becoming increasingly important (as the number of second sales tends to fall), second sales have long been the focus of profit-oriented platforms. So, how is the secondary market structured for NFTs? If primary markets were economically insignificant, especially in their initial phase, the bulk of capital was accumulated on secondary markets, where artists could also profit from royalty fees on secondary sales. Due to the easy tradability of NFTs, enshrined in the specifications of the standard, a flourishing secondary market quickly emerged, which was subsequently dominated by a single platform between 2017–2020 called *OpenSea*. Founded in 2017, it quickly became the main hub and destination for trading NFTs, and in 2020, the platform had 4,000 active users who processed $1.1 million in transactions per month (Forbes 2021) – by July 2021, users were processing $350 million in transactions per month. While 200k users were still trading NFTs per week in May 2022, this figure has now fallen to ~33,000 (Dune 2025). These figures also show that little has remained of the initial interest. It is important to note that many of the NFTs traded on *OpenSea* are not art-specific – other categories such as games, memberships, PFPs (profile pictures), and music had and continue to have a large share of sales.[6] The *Art Basel Market Report* reaches a similar conclusion:

> Looking at the two most relevant segments of art and collectibles, art-related NFTs made up just 12% of the value of these two segments in 2019, but by 2020, had reached the majority share at 67%. However, since 2021, collectibles have dominated and in 2023, reached 84% by value versus only 16% for art (McAndrew 2024).

This does not mean that art collections are not traded, but that art NFT contingents only make up a certain share of the NFT market, which is proportionally small in relation to PFP collections. By 2022, up to 86% of all global NFT sales were being transacted via *OpenSea*. This is an unprecedented monopolization that can at best be compared to Google's market share in search engine queries, and it was not until 2021 that the newly developed *Blur* platform was able to gain a significant market share over *OpenSea*. *Blur*, unlike *Opensea*, specializes in catering to professional NFT traders, and its interface design is more reminiscent of platforms focused on the trading of securities, such as *Robinhood*. Although ~59% of all NFT traders still use *OpenSea*, ~73% of the total volume of all NFT trades are now processed via *Blur* (Dune 2025), which is primarily used to trade well-known collections with large active trading volumes. Whilst Blur has a daily volume of ~11 Million Dollar

6 A look at the most traded collections (OpenSea 2024) shows that 9 of the 10 top-selling collections are PFPs. If we now compare the best-selling PFP collection (Bored Ape Yacht Club, ~2 million ETH total volume) with the best-selling collection in the Art category (Opepen Edition, 82,000 ETH total volume), the difference becomes even more visible.

(compared to ~5 Million Dollar on *OpenSea*), the number of traders is relatively small (~13,000 traders) compared to *OpenSea* (~20,000 traders) (Dune 2025). The strategy of targeting only a specific group of traders has thus worked: a few individuals trade large quantities of NFTs from mostly established NFT collections. The NFT secondary market is split between *Blur* and *OpenSea*, which together account for ~75% of the total volume (Dune 2024).

The development of platforms such as *OpenSea* and *Blur* is possible because NFTs can be traded as purely digital tokens at any time and do not require physical delivery or a storage location. In addition, the ERC-721 specifications allow the seller/buyer to designate other smart contracts as intermediaries for the token.[7] Marketplaces like *OpenSea* and *Blur* employ these functions in each sale: the seller relinquishes the right to transfer the token to the marketplace's smart contract, and upon the buyer's payment of the agreed price, the token is then transferred to the seller. As a result, a secondary market has emerged. It is characterised by a peer-to-peer structure (not unlike Ebay), facilitated by smart contracts.

NFT platforms for secondary sales, therefore, function fundamentally differently from the secondary markets of the art market. While auctions, sales by dealers, and art fairs can also take place online, the majority of the secondary art market is still offline. In addition, of the average 23% of online sales by galleries/dealers, around 20% take place via their own websites (McAndrew 2024). Only around 3% are brokered via third-party platforms, although these do not have a peer-to-peer structure either, but mostly promote sales by dealers or galleries. Here, the specific characteristics of the medium are also reflected in the market structure. On the one hand, the sales history of each NFT is transparent, giving the buyer a pseudo "*provenance*", i.e. the chronology of ownership. Secondly, as digital tokens, NFTs are not subject to any change of state in the physical sense: while the owner of an oil painting can alter it through incorrect handling (transport marks, etc.), it is in most cases impossible for the owner of an NFT to change the underlying work of art.[8] These characteristics would seem to make the terms of exchange simpler,

---

7 This can be seen again in the specification:

/// Throws unless 'msg.sender' is the current NFT owner, or an authorized

/// operator of the current owner.

/// @param _approved The new approved NFT controller

/// @param _tokenId The NFT to approve

function approve(address _approved, uint256 _tokenId) external payable; (ERC-721 2018).

The two functions 'approve' and 'ApprovalForAll' can be used to determine operators (usually smart contracts) that have the option of transferring the token with the specific token Id.

8 Since most NFTs only point to a URL, the token is immutable, but the linked artwork can be changed at any time, as its content is hosted on a server. The artist Simon Denny demonstrates this contradiction in his work *Backdated NFT/ Ethereum stamp (2016-2018-2021)*. Denny replaces the linked image of an old NFT (2018) with his even earlier produced work (2016) in 2021, thereby precisely emphasizing the contradiction between

as NFTs do not require condition reports, analogue certificates of authenticity, and where applicable, provenance reports, which are typical requirements for physical works of art.[9] The secondary markets for NFTs therefore combines two seemingly paradoxical paradigms: it is centralized (with only two monopoly platforms) and peer-to-peer (a market structure that can only arise if purchases/sales are possible *trustless* e.g. smart contract mediated). As a result of this peer-to-peer structure, the frequency with which NFTs are traded differs significantly from that of traditional art markets. While artworks rarely or even never change hands on average, NFTs (at least historically) are often bought and sold with high frequency. This is particularly true of PFP collections, which are traded much more frequently than art collections. Nevertheless, it often happens that an art NFT changes hands 20 times a year, a figure that is relatively unheard of in the classic art market due to delivery times and bureaucratic hurdles. The frequency of buying and selling an NFT also determines the profit of the secondary platforms, which is why *OpenSea* and *Blur* optimize their interfaces for a high frequency of sales and purchases.[10] *OpenSea* was valued at $13.3bn (Seward 2022) in its last Series C funding round, a figure that has certainly since been revised downwards, but still shows that the 2.5% fee charged on each sale generated huge profits for the marketplace at its peak. The technical characteristics of the ERC-721 are fully utilized in the secondary market interface. Together they provide the necessary conditions for the rapid and volatile price development of NFT collections, which is reminiscent of financial and derivatives markets.

3. ART AND COMMODITY FORM

In the previous section, the art object appeared primarily as a commodity that is traded on the market. In her analysis of the art market Isabelle Graw refers to Karl Marx's economic theory of the commodity's value (Wertformanalyse) at its center. The following analysis will touch on the question of how and whether a coherent

---

the underlying artwork and the token.

9 It should be noted that in reality most NFT artworks lack an immense amount of metadata information necessary for curatorial and archival purposes.

10 Only through this structural characteristic continuous and dynamic pricing can take place, which enables continuous trading. This process of negotiating the price is linked to collections and is made possible on the trading platforms enabled by constant offers. Each NFT collection is also displayed on platforms such as OpenSea (OpenSea 2024) and Blur with an individual floor price, i.e. the price of the lowest sales offer currently available on the marketplace. The equivalent of a floor price does not exist in traditional secondary art markets, as editions are not traded peer-to-peer, and there is no 'transparent' public pricing. It is impossible to overestimate how radically different a continuous transparent price, similar to a share price, is from a non-transparent price in influencing artistic production.

Marxist explanation of value is possible for artworks and whether the concept of the commodity remains adequate to capture the economic framework of an artwork. This consideration is essential to understand the duality of NFT artworks – as property titles and as underlying artworks. Marx begins *Das Kapital* (Marx 1962) by analyzing the dual character of the commodity, which leads to an analysis of the value form. For Marx, the commodity is defined by an exchange value (Tauschwert) and a use value (Gebrauchswert) (the corresponding terms for the commodity here are value form and natural form) – the use value results from its practical utilization (a shovel is a tool that can be used as a means of production, a drink can be consumed, etc.), while the exchange value is constituted through social production. Marx makes this distinction to clearly understand and differentiate the types of labor involved in the production process. This involves the concrete material labor attributed to the physical production process, such as a carpenter building a chair. Additionally, a social exchange relationship is necessary to ensure that different forms of labor are comparable. This exchange value of the commodity results not only from the concrete labor expended, but also from the socially necessary labor time, which is realized in exchange (abstract labor).[11]

Socially necessary labor time (gesellschaftlich notwendige Arbeitszeit) is a concept found in the beginning of *Das Kapital* (Marx 1962) which answers to the question of how different types of concrete work can be made comparable: Socially necessary labor time does not correspond to the real labor time measured with a clock and is not determined by the individual skills of the worker. It's determined by the average time required to produce a product under specific social conditions with a specific degree of technologization. This means that the socially necessary labor time is constantly changing and cannot actually be measured in concrete terms. Michael Heinrich describes this the following:

> Individually expended labor time is reduced to socially necessary labor time. Only the labor that is necessary to produce a use-value under average conditions counts as value-forming. How great the average productivity is, however, does not depend on an individual producer, but on the totality of the producers of use-value. This average is constantly changing [...]. (Heinrich 2005, 49, translated by author)

However, exchange rarely correlates precisely with the value determined by labor time but does so on average. Marx introduces the price form as a special form of actual exchange value, measured in "money commodities".

11 For Marx, this reduction (which is referred to as the law of value) can only be achieved on the basis of socially necessary labor time. Karl Reiter expresses this as follows: "The equation of concrete and abstract labor time is never merely a given, but it is constantly asserting itself like a crisis" (Reitter 2011, 63). Just as there is a specific relationship between concrete and abstract labor time ("Durchschnittsverhältnis"), which is realized through crises, there is a similar relationship between value and price. Value is only really realized in money commodities *on average*.

> With the transformation of the magnitude of value into the price this necessary relation appears as the exchange-ratio between a single commodity and the money commodity which exists outside it. [...] The possibility, therefore, of a quantitative incongruity between price and magnitude of value, i.e. the possibility that the price may diverge from the magnitude of value, is inherent in the price-form itself. This is not a defect, but, on the contrary, it makes this form the adequate one for a mode of production whose laws can only assert themselves as blindly operating averages between constant irregularities. (Marx 1976, 196)

This leads, through a brief derivation, from the commodity to the concept of *market price*. This price is defined on average by socially necessary labor time, which is only realized when the commodity changes into money. The commodity is a form inherent to capitalism, which constantly reproduces historically determined social values. As Karl Reitter describes: "The commodity form is therefore the most stubborn and powerful bulwark of capitalism against its overcoming. But it contains qualities and quantities that do not coincide with the form and are not determined by this form" (Reitter 2011, 67, translated by author). What emerges here in Reitter's work, and is also found in the work of Etienne Balibar, are the empty spaces in the representation of value – certain labor, activities and social relations that cannot be grasped through representation as commodities (Balibar 2013).

What would it mean to develop a theory of value for works of art analogous to Marx's derivation? An attempt will be made here, mainly to point out one of the problems of certain Marxist economic categorizations of artworks. The artwork is produced by the artist – this production process is, first and foremost, private labor, which is not yet mediated through capital relationships. This means that there is a concrete material labor process that requires energy, inspiration, concentration and professional knowledge on the part of the artist. The work of art is the product of private, concrete labor that has been expended.[12] Now, the artist takes the work of art to the market in order to sell it there. So how is the price defined? Following the derivation described above, in which value is reproduced in the price as an average value, the question shifts first and foremost to the attributed value. This highlights a key question in Marxist aesthetics that has remained largely unanswered: What can be understood by abstract labor, the main component of exchange value, in a work of art? How would a necessary social labor time (gesellschaftlich notwendige Arbeitszeit) be defined for a work of art? Even if there were a necessary social labor time for works of art, how would this be realized on average in money via the price form? The crux of any Marxist derivation of the artwork as a commodity under the law of value becomes therefore a clandestine definition of artistic abstract labor. This fundamental problem has rarely been formulated and has been largely glossed over historically. Graw

12 It's not suggested here that the artist stands outside of social structures and constraints in production – but rather that the artist does not produce in a direct wage relationship.

approaches and describes the relationship between commodities and artworks as follows:

> The moment artistic works circulate on the art market, they inevitably take on the character of commodities. [...] Accordingly, their belonging to the capitalist system means that they are carried to the market and thus become commodified. (Graw 2008, 28, translated by author)

To summarize: *Without a market on which it can circulate, the artwork is not a commodity*. Only upon the art dealer/gallerist's transference of the artwork into the market does it take on a commodity form. Graw further emphasizes the special status of the artwork as a commodity by finding characteristics such as singularity (production advantage) and an 'aura of uniqueness' (Graw 2008, 28, translated by author) in the artwork. These special commodity characteristics thus set art goods apart from other mass-produced goods. However, Graw also encounters the problem of the duality of the commodity as an object of use and a carrier of value – which she addresses by deploying Pierre Bourdieu's concept of symbolic value. For Graw, an artistic work has symbolic and market value, and it is in this relationship that the social reception takes place. The symbolic value is fed by various factors such as "singularity, establishment of the artist, promise of originality, promise of permanence [...] or intellectual claim" (Graw 2008, 32, translated by author). The symbolic value is thus strongly linked to reception and "the consequence of an idealistic charging of art just as much as an expression of its well-founded special position" (Graw 2008, 33, translated by author).

What does this mean for an analysis of the value of artworks? Firstly, Graw has replaced the Marxian use value with Bourdieu's symbolic value, while the exchange value is discovered again as the market value. At first glance, the replacement of use value seems logical because being useless is considered one of the characteristics of art. However, the replacement of use value highlights two problems: on the one hand, the entire Marxian value form analysis is based on the thesis that exchange serves to satisfy the need for the consumption of a product. Consumption itself is reflected in the use value of the commodity, which can also be the accumulation of value itself in the case of labor.

On the other hand it is in the deduction of use value and exchange value in relation to the various forms of work where the contradictions become also apparent. If the use value is created by concrete labor does the same apply to the symbolic value? To iterate the problem: The general question of value is one of the specific production conditions of use value and exchange value. But since Graw replaces use value, the question of abstract labor (e.g. the production condition) remains unanswered still.

Exchange value (and thereby price) remains as mysterious as before, as long as artistic abstract labor remains obscure. Additionally, instead of use value, there is now a symbolic value that is almost purely *socially* determined, similar to exchange

value. One of the biggest problems with this categorization is not that it is, to a certain extent, self-referential (especially when Graw later explains that market value can also create symbolic value), but that artistic labor relations and practices (concrete and abstract labor, as well as productive and unproductive capitalist production) disappear in the analysis. As a result, value and the market price are largely left to *the market* because no relationship between value and social or concrete labor can be identified. The price also has an unclear relationship to an extrinsic, intellectual production of knowledge, which produces a symbolic value. This categorization of the artwork as a commodity also overlooks essential aspects of its infrastructure: for instance, the relation between the artwork and productive capital, the role of galleries as commercial capital, and the direct link between artworks and financial capital. All of these aspects are subsumed under the usage of symbolic value. Marx's derivation of the commodity and value form applies to capitalist production in general, where the socially necessary labor time is crucially related to value. However, while the commodity and value form are central to explaining capitalist production, they alone do not encompass the entirety of capitalist dynamics. The commodity and value form cannot fully explain capitalist production since Marx only finds a variable in surplus value through which *capitalist* accumulation can take place. In other words, for Marx, trade and the sphere of exchange always remain a zero-sum game (Reitter 2011, 85). Interpreting the work of art solely as a commodity in the sphere of exchange lacks the terminology necessary to describe the complex and not always economic relationships in which artists act, work and produce.

I want to be more specific here: Socially necessary labor time is a fundamental building block in the derivation of Marx's concept of value in the first volume of Capital. Incorporating the work of art as a commodity under the law of value would require a reformulation of the concept of abstract labor. I would also like to pose the following question: Why is it helpful to incorporate the artwork as a commodity under the law of value? Value in Marx is not defined normative positively, as in classical bourgeois economics, but is above all an expression of specific historic social relations. In addition, Marx himself shows that there are goods which practically do not fall under the law of value but nevertheless have a price.

Dave Beech aptly recognizes that the artist is not engaged in (capitalist) productive labor during the production of art (Beech 2016). The artist does not receive a wage for her labor, i.e. she does not sell her working time as a commodity. The surplus value is not diverted by any producer; it is not created in the first place. Beech goes so far as to state that artistic production is therefore not capitalist (i.e. unproductive) in the first place. The work of art, and here Beech agrees with Graw, only becomes a commodity at the moment it is introduced to the market by the gallerist. But even in this commodity metamorphosis, the situation is complicated: The gallerists, whom Beech defines as representatives of merchant capital (Beech 2016, 268), cannot pass on surplus value because it does not exist. In addition, most gallerists do not buy the artworks from artists, but only convert them into capital, and so therefore, the first step of the transformation M(oney)-C(ommodity)-

M(oney) is missing. Commodities in industrial production are also produced for the market (i.e. exchange) because of the promise that they can be sold for profit by the producer (the laborer does not own the goods). While it can be argued that certain art is produced directly for sale, much of the art that enters the market as a commodity is not produced directly for it (for which the criteria of value in the art market are far too vague).[13] Even if the commodity has entered the market, it does not appear sublimated under the law of value, but only retroactively defines itself as a commodity through the price form. However, this price form says nothing about the value, as there is no socially necessary labor time for works of art and no surplus value (as a surplus of labor time that accrues to the owner of the means of production) is produced. Beech's theory of the *economic exception of art as a commodity* reveals very precise contradictions in the assumption that works of art are commodities. These contradictions could also explain why works of art were bought and sold long before the development of capitalist relations of production: the commodity form, which derives from a specific historical development, is retrospectively superimposed on the work of art.

4. NFT ARTWORKS AS EXPERIMENTS WITH THE COMMODITY FORM

So, what about NFTs and NFT artworks? NFTs as a (non-art specific) medium have qualities of both property titles and commodities. NFTs have commodity-like qualities because they are bought and sold in what can be constituted as market transactions, which is due in large part to how their intrinsic technical functionalities are defined (e.g. the transfer and approve functions) (ERC-721 2018). Similar to commodities, NFTs are exchanged for money, the price of which is determined by the supply and demand in the market (although to reiterate, NFT art markets are primarily dominated by specific markets, which differs from the by and large ubiquity of traditional markets as demonstrated earlier in the text). NFTs also possess similar characteristics to property titles (ERC-721 2018), i.e. the buyer of an NFT normally acquires a digital certificate of ownership (the ERC token) that grants exclusive ownership and control over a specific digital asset.

With artworks, it becomes more complicated. Here, one would have to distinguish between two different types of NFT artworks: On the one hand, there are NFT artworks in which the token serves as a reference to an artwork (similar to the previous model/example) and on the other hand, there are NFT artworks in which *the token itself is* the artwork or an essential conceptual part of the artwork. In the first case, there is a clear distinction between the aforementioned property title/commodity form and the artwork, in which the smart contract code references

13 This is not a romanticization of artists who make a conscious decision to refuse commercial production, but rather an indication that the price in art markets is far too volatile to be a signal for artistic production.

an external medium via its metadata. The commodity form is thus visibly separated from the artwork; the smart contract is what defines the commodity; the NFT, acts as the title of ownership and only refers to an external medium, the actual artwork. In this first example, the commodity form is separated from the artwork proper. The artwork only becomes a commodity through the NFT because it enables it to become tradable through the market. Even if the NFT artwork takes on the form of a commodity, it cannot be sublimated according to any law of value, like an artwork on the traditional art market.

Now to the second case/example: If the token does not refer to an external artwork but becomes the object of the artwork, the token turns into an integral part of the artwork. What does it mean when an artist chooses to produce an artwork in a medium that is also a predefined economic form? Is a digital commodity form then prefigured during production, binding the artwork to a presumed market?[14]

In the art history of the 20th century, only a few examples can be found in which artists have developed a practice that acknowledges the commodification and integration of their artworks into financial systems. A historical analogy can be found in the series of works that Sophie Cras describes as "Experiments in Artistic Shareholding" (Cras 2018). In these works, artists like Les Levine and Robert Moore utilized market mechanisms and began incorporating financial market concepts into their art. Les Levine's *Profit Systems I* (1969) consisted of a press release and an advertisement in which the artist announced the purchase of five hundred shares of common stock in the Cassette Cartridge Corporation for a sum of $2,375.00. Levine then sold them a few months later for $7,481.25, a net profit of 220 percent (Cras 2018). Before these works of conceptual art of the 1960s, Marcel Duchamp created *Monte Carlo Bond* (1924), in which the artist issued eight bonds worth 500 francs each and offered the buyers shares in his company. These bonds, which paid interest at 20 percent over three years, were intended to finance Duchamp's gambling experiments (Cras 2018). Although they are financially worthless due to the guaranteed losses at the roulette table, a mixture of commodity form and of property title with interest, not unlike an NFT, takes place here.

In the following, I will discuss NFT artworks that explore different aspects of their inherent commodification to elaborate on the economic and social structures of the NFT market. In 2021, as part of the art collective *terra0* I published an NFT called *2 Degree*, which depicts a LiDAR scan of a German forest. The NFT is linked to a smart contract that stores the average annual temperature rise determined by NASA. If this value exceeds the threshold of 2 degrees Celsius, the token can be deleted by anyone who wants to call up the smart contract function and do so

14 Firstly, it should be noted that historically, artists did not necessarily need gallerists to bring their art to the market; they could do that themselves. However, an NFT differs from almost all other artistic media in that it defines and is bound to precise rules about selling and buying. This definition itself anticipates the commodity metamorphosis in that the artwork can be produced in a truly commodity-like manner – rules about buying and selling are imposed on it during production before it even touches the market.

(terra0 2021). In the same year, the artist Sarah Friend published and produced the work *Lifeforms*, which she describes as "a lifeform that needs regular care in order to thrive" (Lifeforms 2024). Each lifeform is an NFT and must be transferred within 90 days in order not to die (in other words, it is deleted). The narrative conditions of both works are made possible by the transfer and burn functions of the ERC-721 standards – emblematic programmatic gestures that link the narrative, code, and the commodity characteristics. On the one hand, these works can be interpreted as an attitude of refusal that uses the programmability of NFTs to predetermine the behavior of the buyer. On the other hand, programmability opens up ways for artists to design the distribution and behavior of an NFT according to their own ideas. Friend puts it like this: "Lifeforms have been popular, I think – among other reasons – because they engage in an act of market-refusal or market-nonconformity in a context (NFTs) that has been notorious for its embrace of markets" (DEO Co-Lab Ventures 2024).

In James Bloom's work *Gold* from 2021 (Bloom 2024), the amount of Ether paid after a transaction influences the appearance of an NFT. The NFTs change dynamically after they have been transferred based on various criteria thereby functioning as a dynamic visualization of its own meta-market.

One of the first works to actively focus on its own pricing is Simon de la Rouviere's *Neolastics* (2020). The mint price of *Neolastics* is determined by a linear bonding curve, i.e. a hard-coded price algorithm. The more *Neolastics* are minted, the higher the price to mint new ones. In addition, buyers can sell their NFTs back to the *Neolastics* smart contract at any time. The repurchase price is determined by the status of the linear bonding curve and paid from the reserves (accumulated through previous sales) of the smart contract. *Neolastics* not only plays with its own commodification but also introduces methods to create and discover the price of the artistic work (Rouviere 2020). A similar principle is employed in my previous work, *Smol Dollar* (2024): When a buyer mints a *Smol Dollar* NFT, a portion of the mint price goes into the reserve – however, the contract's reserve is not held in Ether but in STETH, an ETH derivative that accumulates Ethereum's staking rewards through constant rebasing (Smol 2024). In addition, the fees from secondary sales are periodically added to the reserve via the smart contract, meaning that the smart contract specifies and creates a sovereign price corridor to determine the floor price, not completely unlike a central bank. All these examples show that the commodity and property title-like attributes or characteristics of NFTs (which are inherent to the medium) enable artists to experiment with the distribution and price of their works through their programmability.

In the first part of this text, the NFT market was analyzed using public data. It was shown how the definition of the ERC-721 standard predetermined a market structure and how NFTs were used as a digital commodity form to "carry" digital artworks to the market. The underlying smart contracts pointed to the separation of artwork and commodity form: the NFT originally functions as a definition of functions for buying and selling, which is superimposed on the artwork. However, if artworks are understood as commodities (in the Marxist sense) with value, various

questions arise: What is abstract labor in art production? Is artistic labor productive at all (in the sense of surplus value production)? These questions were discussed in the second part in order to highlight the precarious and often questionable position of the artwork as a commodity in capitalism. The third part looked at artworks that consider smart contracts and the ERC-721 standard as a *medium* themselves. The idea is not new – in modern art history, artists have dealt with the commodity form and value. However, when smart contracts with transaction rules are produced as works of art, a convergence of commodity form and artwork arises that is probably historically singular. What on the one hand can be seen as a process of appropriation (e.g. art is produced and conceived by the artist as a commodity) also opens up the possibility of questioning, modifying and aesthetically processing the characteristics of the commodity and its (non)-value.

REFERENCES

artblocks. 2024. "FAQ." FAQ. Accessed May 5, 2024.

https://www.artblocks.io/marketplace/faq.

Balibar, Étienne. 2013. *Marx Philosophie*. Berlin: b_books.

Beech, Dave. 2016. *Art and Value, Art's Economic Exceptionalism in Classical, Neoclassical and Marxist Economics*. Chicago: Haymarket Books.

Bloom, James. 2022. "The NFT Art Market and the Changing Image." https://crashblossom.co/The-Art-Market-and-the-Changing-Image.

Cras, Sophie. 2018. *The Artist as Economist, Art and Capitalism in the 1960s*. London: Yale University Press.

DEO CoLab Ventures. 2024. "'I found myself the accidental creator of a digital pet graveyard'." *medium*, 16 May, 2024. https://medium.com/ideo-colab/i-found-myself-the-accidental-creator-of-a-digital-pet-graveyard-ffd8cd09f879.

Denny, Simon. 2021. "Backdated NFT/ Ethereum stamp (2016-2018-2021)" https://simondenny.net/backdated-nft-ethereum-stamp.

de la Rouviere, Simon. 2020. "Neolastics: Liquid, On-Chain, Generative Art"

https://blog.simondlr.com/posts/neolastics.

Dune. 2025. "@hildobby / Blur VS OpenSea" Accessed Jan 10, 2025.

https://dune.com/hildobby/blur-vs-opensea

Dune. 2024. "@sealaunch / Blur.io vs OpenSea." Accessed Jan 10, 2025.

https://dune.com/sealaunch/NFT

William Entriken (@fulldecent), Dieter Shirley <dete@axiomzen.co>, Jacob Evans <jacob@dekz.net>, Nastassia Sachs <nastassia.sachs@protonmail.com>.

2018. "ERC-721: Non-Fungible Token Standard." *Ethereum Improvement Proposals*, no. 721 [Online serial]. Available: https://eips.ethereum.org/EIPS/eip-721.

etherscan. 2022. "GenArt721CoreV3." Art Blocks Smart Contract. Accessed May 6, 2024.

https://etherscan.io/address/0x99a9b7c1116f9ceeb1652de04d5969cce509b069#code.

Heinrich, Michael. 2005. *Kritik der politischen Ökonomie. Eine Einführung.* Stuttgart: Schmetterling Verlag.

Isabell Graw. 2008. *Der große Preis: Kunst zwischen Markt und Celebrity Culture*. Freiburg: DuMont Buchverlag.

Kauflin. Jeff. 2021. "What Every Crypto Buyer Should Know About OpenSea, The King Of The NFT Market." Accessed May 6, 2024. https://www.forbes.com/sites/jeffkauflin/2021/11/23/what-every-crypto-buyer-should-know-about-OpenSea-the-king-of-the-nft-market/

Kittler, Friedrich A.. 2013. *Die Wahrheit der technischen Welt. Essays zur Genealogie der Gegenwart.* Berlin, Suhrkamp.

Lifeforms. 2024. "Lifeforms" Accessed May 6, 2024. https://lifeforms.supply/.

Marx, Karl. 1962. Das Kapital. Kritik der politischen Ökonomie. Erster Band. In: *K. Marx/F. Engels, Werke*, Band 23. Berlin: Dietz Verlag.

Marx, Karl. 1976. *Capital, A Critique of Political Economy.* Harmondsworth: Penguin Books.

McAndrew, Clare. 2024. *The Art Basel and UBS Art Market Report. Basel: Art Basel and UBS*. PDF. https://theartmarket.artbasel.com/.

OpenSea. 2024. "OpenSea" Accessed May 6, 2024.

https://OpenSea.io/category/art.

Reitter, Karl. 2011. *Prozesse der Befreiung: Marx, Spinoza und die Bedingungen eines freien Gemeinwesens*. Münster: Westfälisches Dampfboot.

Seward, Zack. 2022. "NFT Marketplace OpenSea Valued at $13.3B in $300M Funding Round." *yahoo*, 5. January 2022.

https://de.finance.yahoo.com/news/nft-marketplace-OpenSea-valued-13-015208069.html.

Smol Dollar. 2024. "Smol Dollar FAQ." Accessed May 6, 2024. https://smol.dollar.supply/.

Sohn-Rethel, Alfred. 2018. *Eine Kritik (der Kantschen Erkenntnistheorie)*. In: Geistige und Körperliche Arbeit Theoretische Schriften 1947-1990, Teilband 1. Freiburg: Ça ira.

Spreen, Dirk. 1988. *Tausch, Technik, Krieg. Die Geburt der Gesellschaft im technisch-medialen Apriori.* Hamburg: Argument.

terra0. 2021. "Two Degrees NFT." medium, 27. May, 2021. https://terra0.medium.com/two-degrees-nft-5af1263bfcc.

Fabian Vogelsteller <fabian@ethereum.org>, Vitalik Buterin <vitalik.buterin@ethereum.org>. 2015. "ERC-20: Token Standard," *Ethereum Improvement Proposals*, no. 20 [Online serial]. Available: https://eips.ethereum.org/EIPS/eip-20.

NFT FASHION AND VIRTUAL SELF RE-CREATION

KATRIN BECKER

1. INTRODUCTION

Cultural-theoretical approaches that focus on the relationship between the subject and institutions reveal that self-formation is far from a solitary psychological event. Scholars such as Giddens (2009), Legendre (1988), or Foucault (2008 [1982–83]) have demonstrated that the emergence of the self is inevitably embedded within the symbolic order into which one is born. It is thus inextricably intertwined with the words, images, and material structures provided by the institutional framework, within which one learns to self-identify and to speak (Legendre 1988, 37). Forming a sense of self, then, means becoming part of this order – emerging as a subject that is both perceptible to itself and recognizable by the Other. This necessitates, on the one hand, the relinquishment of one's own subjective-empirical reality "in order to partake in an extra-individual value" (Göbel/van Laak/Villinger 1995, 43); personal perceptions, representations, and worldviews merge with those staged by the institutional system. On the other hand, the body, too, undergoes a transformation: it ceases to exist as a purely biological entity and assumes a symbolic status (Legendre 1994, 41), thereby becoming legally defined, recognized and protected.[1]

In Western societies, law serves as the central instance governing these processes, ensuring the integration of both the mental and physical self into the institutional framework. As Alain Supiot explains:

> Making each of us a *Homo juridicus* is the Western way of linking the biological and symbolic dimensions that constitute human existence. Law connects the infinity of our mental universe with the finitude of our bodily experience, and in this way, it fulfills an anthropological function in our culture by instituting reason. (Supiot 2005, 10)

Blockchain technology now promises to alter this established logic. It aspires to create quasi-institutional and -legal structures in virtual space, wherein the individual – reconceptualized as a self-sovereign, autonomous subject – is granted the freedom to determine the foundations and binding structures of its existence. Rather

1 All translations of quoted sources were provided by K. Becker, unless otherwise indicated.

than being subject to the word, image and corpus of traditional institutions and law, the individual is instead meant to be bound by the self-determined code of the blockchain, the so-called *Lex Cryptographia* (Wright, De Filippi, 2015).

In my previous work, I examined the implications of blockchain's promises of autonomy and decentralization with regard to the dimensions of body (Becker 2022) and language.[2] The following analysis will shift focus to the dimension of image, that is to the aesthetic mechanisms through which the subject is invited to construct its identity within virtual space. However, it is important to note from the outset that even this seemingly autonomous and playful form of self-stylization ultimately carries legal implications – a point to which I will return later. In this context, particular attention must be paid to so-called NFTs (non-fungible tokens), which are increasingly employed in the field of virtual fashion with the aim of shaping avatars.

This paper seeks to evaluate whether and to what extent blockchains and NFT-based practices actually redefine the logic of self – granting it autonomy and self-sovereignty – and will, for this purpose, proceed as follows. First, it will provide an overview of blockchain technology, NFTs, and the underlying objective of autonomous self-creation. Next, it will examine the role of aesthetics for the formation of self, tracing its evolution since the emergence of cybernetics. The analysis will then turn to contemporary trends in digital spaces – particularly within the so-called metaverse – exploring the interplay of fashion, corporeality, and law. Finally, the paper will critically assess whether NFTs truly facilitate autonomous self-representation and reflect on the broader implications of this phenomenon for both subjectivity and legal frameworks.

2. BLOCKCHAINS, NFTS, AND AUTONOMOUS SELF-CREATION

Blockchain technology operates through tamper-proof distributed digital ledgers, where data is recorded in blocks that are cryptographically linked to one another. Each new block contains information alongside a reference to the previous block, forming an immutable chain in which transactions are recorded without the possibility of modification. Within this system, logical concatenation supplants traditional legal constraint. This technology thus claims to transcend the need for traditional intermediaries by offering an infallible, automatable, and decentralized registry through which individuals can engage in commercial, financial, legal, or political interactions. At the same time, it grants the subject a new form of autonomy in structuring their life, made possible through the consensual and decentralized programming of an incorruptible and self-executing code.

2 Katrin Becker, "Dekorporalisierung = Demokratisierung? Öffentliche Meinung im Sog der Virtualisierung", talk at the conference *Opinion. Public Opinion* at the Inter-University Center in Dubrovnik 2023. Forthcoming in 2025.

How does this work in practice? This approach is based on so-called *smart contracts*, which function according to a conditional "if-then" logic. These contracts encode specific transactions in such a way that they are executed automatically once predefined conditions are met, without the possibility of external intervention. For example, once the cryptocurrency owed by B is credited to A's account, B automatically gains access to virtual rights or connected objects within the Internet of Things (IoT) ecosystem. This mechanism enables the programming of legal and commercial processes in virtual spaces between two or more parties, eliminating the need for prior acquaintance or mutual trust. Within this framework, traditional third-party institutions responsible for ensuring the accuracy of information in public registries – such as banks, notaries, and similar intermediaries – or those to whom contracting parties could appeal in cases of non-performance, such as courts or legislatures, become superfluous. In other words, all trust-based intermediaries, whose legitimacy historically rested on a shared societal belief system, are rendered unnecessary.

Another key element of this technology are NFTs. The acronym NFT stands for *non-fungible token*, referring to a unique and indivisible digital asset. At its core, an NFT is an alphanumeric string recorded on a blockchain, typically managed via smart contracts that regulate its "transferability and ownership" (Schmitz 2022, 158). As a result, NFTs serve as an immutable and transparent proof of ownership over a digital object (Notaro 2022). Unlike most digital content, which can typically be copied and disseminated without restriction, an NFT-bound asset is therefore intended to be rendered non-reproducible in a legally and technologically enforceable manner.

NFTs first gained prominence in the art world, where they enabled the unequivocal attribution of digital artworks to their creators and facilitated their commercialization. By introducing the notion of scarcity and uniqueness into the digital realm, NFTs promised, on the one hand, to ensure "the long-term storage and availability of the actual content" (Balduf/Florian/Scheuermann 2022, 1) through the distributed infrastructure of the blockchain. On the other hand, they were heralded as a tool for empowering individual artists by enabling them to bypass traditional intermediaries – such as galleries and art patrons – who have often been criticized as corruptible gatekeepers of the art market. NFTs ostensibly granted artists to operate autonomously, positioning themselves outside established societal and political structures and engaging in market transactions without the imposition of fees by third parties with potentially exploitative interests. (A similar trend of disintermediation has been observed in the music industry.)

However, these promises quickly proved to be precarious: Most notably, the principle of non-reproducibility applies only to the alphanumeric code certifying ownership, not to the referenced object itself. As Notaro (2022, 363) notes, "what the buyer owns is just a digital certificate of ownership". Even more significantly, "[t]he tokens might be non-fungible: but the art (or similar) that any given NFT is associated with remains just as reproducible as it was before" (Whyman 2021). This

calls into question both the purported protection NFTs provide for artists and the claim that they ensure long storage. In practice, the digital objects and associated metadata referenced by NFTs are typically not stored on the blockchain and therefore do not benefit from its immutability (cf. Balduf/Florian/Scheuermann 2022, 2). In other words, if the entities managing these digital assets or their metadata cease to exist, „the NFTs won't refer to anything" (Notaro 2022, 363). Moreover, the growing centralization of metadata storage seemed to render the dream of decentralization increasingly questionable (Salem, Mazzara 2024).

Without delving further into the broader hopes (Notaro 2022, 360; Schneier 2021) and risks (Birch/Muniesa 2020, Juarez 2021 et al.) associated with these developments in the art and music domain, I shall focus here on the rapidly growing domain of NFT fashion, which plays a pivotal role in the blockchain-driven pursuit of autonomy and self-determination. A prevailing idea in this context is that individuals craft their avatars – the digital representations through which they navigate the metaverse, conduct transactions, and participate in social activities such as attending virtual concerts or cinemas – in a manner that is both unique and expressive. This phenomenon is not only significant for the conceptualization of the self but, as I will argue below, also raises fundamental legal questions. Regardless of whether one subscribes to the notion that our lives will increasingly unfold within virtual environments, this evolution, in my view, necessitates a critical examination of key issues concerning subjectivity, legal personhood, and the rule of law.

3. THE TECHNO-SCIENTIFIC TRANSFORMATION OF IMAGE-BOUND SELF-FORMATION

In order to assess the interplay between the self, legal personhood, and the institutional order – and its transformations –, a broader consideration of the relationship between aesthetic self-fashioning and law is first necessary. As previously noted, the process of subjectivation, mediated through imagery and language, inscribes the subject – both physically and mentally – into the institutional realm (Legendre 1988). This moment marks the convergence of individual and institutional representations: the subject's imaginary – their "mental universe" – intersects with the imaginary underlying the institutional order, the "social imaginary" (Castoriadis 2006), in which "symbolism is [...] deeply rooted" (Fressard 2006, 143). Ultimately, as Legendre demonstrates by extending Lacan's mirror logic to the cultural level, both self-perception and world-perception are always shaped by a collective dimension and governed by a triangular dynamic: the subject perceives itself, perceives the Other, and perceives the world within a framework anchored in a shared meaning and in shared aesthetics. At the same time, this also implies that the representations upon which institutions, law, and other structures rely must align with the self- and world-perceptions of individuals in order to sustain their appearance of legitimacy.

Since the advent of cybernetics in the post-war period of the 1940s and 1950s, the foundation of this shared meaning has been increasingly shaped by the imperatives of technical, scientific, and economic progress (cf. Legendre 1988, Musso 2017, Supiot 2020). As Steffen Mau observes, "the mode of calculation seems to encompass the entire social order in a process of territorial conquest," while "social semantics increasingly refer to the measurable aspects of the world and life" (Mau 2017). In the pursuit of greater security and economic efficiency in governing social affairs, the assumption has taken hold that social life can be numerically captured and programmed much like a computer.

This shift has brought about two fundamental transformations in how subjects relate to themselves and the world. On the one hand, it has fostered a growing pursuit of autonomy among subjects – a drive for independent, self-determined calculation and shaping of one's own life (cf. Becker 2020). On the other hand, it has brought about a profound transformation in the aesthetic mediation of selfhood and the individual's relationship to the world. As Heidegger argues, "under the reign of techno-science", an existential-epistemological shift has occurred: "*theoria* in the sense of observing *(be-trachten)* [has transformed in]to a striving *(trachten)* that is interested in knowledge only with regard to the options it might grant for manipulating reality or intervening into it" (Beinsteiner 2019, 117).[3] At the same time, as already noted by Adorno and Horkheimer (2022 [1944]), aesthetics have become increasingly intertwined with advertising and consumption, a dynamic that – *"religious in its principle"* (Legendre 2004) – therefore profoundly influences the image-based dimension of subject formation.

In this light, the pursuit of autonomy and the drive to reshape and intervene in given structures, fostered by new technologies, emerge not as purely individual endeavors but as integral elements of the collective framework of meaning. They are embedded within the institutionalized order of images and language, fundamentally shaping both self- and world-perception.[4] This transformation implicates both mind and body alike. The growing prevalence of self-improvement discourses encourages self-discovery, mental hygiene, and intellectual cultivation. Meanwhile, the physical self has become the focus of efforts to redesign or even transcend biological and physical limitations. The body is increasingly subjected to a

> cult of hygiene, diet, and therapy, the obsession with youth, the fixation on elegance and masculinity/femininity, the care and dietary supplements, the sacrificial practices associated with it, and the myth of sensual pleasure that surrounds it. […] One administers one's body, manages it like an asset, and manipulates it like one of the many signifiers of social status. (Baudrillard 2015, 189ff.)

3 The author refers to Martin Heidegger. 1977. *The Question concerning Technology and Other Essays. New York: Harper and Row.* New York: Garland Pub, pp. 163–96.

4 This is vividly illustrated by Katharina Pistor's argument, which explains how economic liberalism has transformed private law into an individualized and mutable asset designed for capitalist profit (Pistor 2020).

The ultimate aim is to transcend biological limitations – whether through surgical interventions that defy aging, reshape the body, and optimize health, or through the fusion of biology and technology via wearables and enhancement devices. As Beinsteiner aptly observes, "the human has become the new object of its interventions" (2019, 116). Nonetheless, bodily autonomy has so far remained constrained by the heteronomy of law. Through the institution of legal personality, the body's inviolability and the prohibition of its commodification are, to some extent, safeguarded (Supiot, 2005, 48). The aesthetic manipulation of the mirror image and the capitalist exploitation of the body are permissible only within legal boundaries; they do not override the fundamental subjection of the unity of body and mind to the rule of law.

At the same time, however, efforts to abandon the physical body in the so-called "meat space" and to shift as many aspects of individual and social life as possible into virtuality are steadily increasing. The expansion of virtual "presence," enhanced by increasingly sophisticated filters that refine and perfect the aesthetics of self-presentation, diminishes the need for focusing on the less flexible, less malleable physical body. Thus far, these developments have not directly challenged the core principles of institutionalization and law, preserving an element of playfulness in their application.

4. NFT FASHION AND THE PURSUIT OF SELF-AUTONOMY

At this point, we need to direct our attention toward those open blockchain initiatives that aspire to establish virtual collective and individual modes of existence, wherein decisions regarding norms, their implementation, and aesthetics are determined in an autonomous and decentralized manner. In certain contexts, the legal or governance aspect takes precedence (e.g., Network States (Srinivasan 2022), Decentralized Autonomous Organizations (Rikken, Janssen, Kwee 2021)), while in others, the emphasis is on the conception of a cultural and social space (such as the metaverse (Belk, Humayun, Brouard 2022)) –, a trajectory that propels Baudrillard's notion of the "age of simulation" to its extreme (Baudrillard, 1981). Especially within the metaverse context, the concept of NFT fashion resurfaces, ostensibly advancing what was initiated within social media and virtual self-design: With a view to their activities within the metaverse's social space, individuals are encouraged to design their virtual selfs – manifested as avatars – liberated from biological and physical constraints. Furthermore, augmented reality devices are eventually anticipated to enable the transposition of the aesthetic liberties acquired therein into the realm of the physical world (Joy, Zhu, Peña, Brouard 2022).

Upon closer examination of the dynamics of blockchain-based metaverse, however, it becomes evident that this shaping of the avatarial self carries far-reaching implications beyond those of previous virtual aesthetics: Blockchain is not merely a

technology that gamifies the virtual realm; rather, it serves as a mechanism of legalization – establishing a non-state, decentralized, and de-corporealized legal order. Consequently, crafting one's virtual identity as an avatar through the utilization of NFTs inevitably implies a legal dimension. At first glance, we therefore seem to be in reach of fulfilling the long-imagined dream of finally "enter[ing] the mirror" (Goodrich/Richards 2023, 72): In the normative order of the blockchain-based virtual world, the primary concern is no longer the integration of the subject's image and body into the institutional symbolic and imaginary order governed by law. Instead, the subject – though still physically bound to the material space – is ostensibly granted the freedom to independently choose which *Lex Cryptographia* system to join, if at all, and even to determine *who* it appears as within this digital realm. Against this background, NFT fashion emerges not merely as a medium for virtual recreation but as a conduit for the *re-creation* of the self – as free, autonomous and sovereign avatar.

However, a brief pause seems here in order: for the particular prominence of fashion in the context of avatarial self-design must come as a surprise, evoking Brecht's radio theory. Brecht notes that the radio was initially used merely to reproduce existing content, as no alternative application had yet been conceived (Brecht 1932). Why fashion, if the physical body does no longer play a role? Why not navigate cyberspace as symbols, houses, or animals?

The most obvious reason lies in the financial interest of major consumer brands eager to stake their claim in the metaverse economy, incentivizing the development of hybrid fashion that is wearable by both avatars and users.

At this point, a brief excursus is necessary to illustrate why the presumed autonomy in the virtual realm, why the separation of the material and the virtual world must be regarded with significant reservations: Upon closer examination, the metaverse appears less as a radical break from the material space and more as its economic-liberal expansion – an assetization of virtual space (Birch/Muniesa 2020). As recent market developments indicate: „the metaverse could generate up to US$5 trillion in value by 2030" (Kromidha, Taheri, Kraus, Malodia 2025).

Luxury brands such as Prada, Farfetch, Dolce & Gabbana etc. have already successfully extended their reach into this domain, amplifying consumption through "the dizzying appeal of double purchasing: one can buy a T-shirt to wear in 'real life' and the same one for their avatar" (Marissal 2022). In other words, the focus remains firmly on commerce, supplemented by recreational activities: "one can visit a cinema, a jazz club, fashion boutiques, a Samsung district, banks, or luxurious lounge bars" (ibid.).

What distinguishes this development from previous economic transformations, however, is the ambition to establish a legal order independent of state law, enabling brands to set and enforce their own rules within the digital ecosystem. Consequently, this blockchain-driven creation of scarcity and exclusivity impacts not only individual artists, musicians, and investors, but also corporate governance, triggering a transformative shift in value creation:

> Crypto-capitalism provides the artist, art collector, cryptocurrency investor with the utopian dream of the 'Big Sale' or the 'quick buck' thanks to a technology, the blockchain, located 'outside' society and politics. It is as if the price to pay for individual financial emancipation were the loss of any form of social contract (to be replaced by the blockchain equivalent of 'smart contracts'). (Notaro 2022, 366)

However, another key factor explaining the prominence of fashion even in brand-independent decentralized design environments, such as The Fabricant or MetaFactory, appears to be the strong identificatory bond between users and their avatars – an effect repeatedly documented in video game studies. This phenomenon, referred to as *symbodiment* (Veerapen 2010, 112), describes a process of symbiotic embodiment in which a dialectical relationship unfolds: while the user's behavior shapes the avatar, the avatar, in turn influences, the user. In that sense, NFT-fashion becomes a means of experimenting with self-images, initially reflecting the traditional role of fashion. Fashion traditionally allows individuals to navigate the boundary between the biological and institutionalized body, between prescription and self-design. Like art, it operates within the tension between autonomy and heteronomy – at first serving the "reproduction of the similar" (Legendre 1988, 344) by adhering to shared ideals of beauty. Yet at the same time, it enables wearers to engage in an "ironic and knowing, reflexive" and conscious play with "unanchored signs" (Haltern 2020, 516). In this way, fashion not only interacts with institutionalized ideals but also holds the potential to shape and transform them. Similarly, and in line with the decentralist ethos of blockchain, NFT fashion platforms, such as The Fabricant, aim to dismantle the authority of "historic gatekeepers of style and their velvet ropes" (The Fabricant 2022). Yet they go even further, seeking not only to challenge the beauty standards imposed by these very gatekeepers, but to overturn the biological and institutional constraints that have traditionally shaped self-representation, ultimately striving to enable autonomous self-creation.

> Our conceptualization of digital fashion is meaningful because it is not limited to improving technical features of the garment design and development process (e.g., fitting) or boosting the shopping experience (e.g., virtual try-ons) but also facilitates embracing the expression of oneself beyond age, gender, and ethnicity in a virtual world. It lets customers try on new bodies, experiences, ideas, and lives, allowing them to experiment with a multiplicity of identities and styles. (Baek et al 2022)

5. REALIZATION OF AUTONOMOUS SELF-REPRESENTATION?

In view of these use-cases of NFT fashion and against the background of the assumption of a *symbodical* relationship between user and avatar, the question arises as to whether we are dealing with a new form of self-representation. In other words: can the NFT-fashioned avatar be understood as a legal-aesthetic representative of the self, thereby engendering a novel form of autonomy?

Video game studies seem to suggest this, positing a general „avatarial relation to ourselves" (Rehak 2003, 123), wherein digital environments can be perceived as testing grounds for navigating the lifelong split – rooted in the mirror paradigm (Lacan 1975, 162) – between the self as observer and the self as observed. The self-exploration facilitated by video games, where agency, control and mortality are put to the test, has thus been interpreted as a form of liminal play, an attempt to isolate and grasp "the oscillatory motion of consciousness" (ibid.) – a reasoning which, logically, should also apply to avatars within the metaverse.

However, in the legally structured blockchain-based virtual space, this element of play is fundamentally transformed – if not entirely lost. It is precisely in this context that a rupture in the representational relationship between user and avatar must be acknowledged. I would like to conclude by pointing out two distinct ways in which this rupture manifests itself.

Firstly, once an individual begins (trans)acting in the metaverse, they are split into two distinct entities: the user and the avatar, each operating within a separate legal framework. However, as the concept of *symbodiment* demonstrates, these entities form a symbiotic connection – such that events affecting the avatar directly impact the user's physical body:[5] "what happens to the avatar is experienced as also happening to the user, which is translated in the user's emotional and affective responses" (Veerapen 2010, 112). In relation to the blockchain-based legal space, however, the user's body lacks the symbolic status conferred by the rule of law. Instead, it is reduced to a purely biological *corps propre* – one that remains symbiotically linked to the avatar's fictional body but receives no protection within that legal structure. At the same time, the avatar's body, unlike the physical body in material space, is also unprotected under existing legal frameworks. Cases of virtual sexual assault illustrate this legal gap: incidents of digital violations – ranging from forced interactions to the coercive manipulation of avatar bodies – have already sparked discussions about the need to reform criminal law to address offenses occurring in virtual environments (Lobe 2022; Bellini 2024; Karapatakis 2025).

---

5 And for the sake of completeness, it is, at this point, mandatory to refer back to the previously mentioned problematic separation between NFT and referenced virtual (fashion-)object. What this split—that is, between the aesthetic and legal dimension of virtual existence —means in the context of designing avatars endowed with Lex Cryptographia legal authority is an increasingly urgent question, the complexity of which would, however, exceed the scope of this article.

Secondly, beyond these concerns, an even deeper rupture in representational dynamics emerges – one that becomes particularly evident when attempting to bridge the virtual and physical worlds through augmented and virtual reality devices. These technologies seek to extend the autonomy of the virtual realm into physical space. For example, virtual objects recognized by *Lex Cryptographia* are meant to be integrated into the material world, a concept especially prominent in NFT fashion. However, it is precisely within this so-called *spatial internet* that the fundamental limitations of blockchain-based legal structures become particularly evident: these structures operate on an intrinsically binary logic. The gaze permitted by AR glasses inherently excludes those who do not wear similar devices. Furthermore, even among those who do, AR devices are incapable of enabling a collective gaze.

As Musso (2020) argues, technology inevitably adheres to binary logic and is fundamentally incapable of symbolization. And the analysis of the metaverse reveals: Attempts to create social spaces *behind the screen* or within the *spatial internet* do not overcome this limitation. Digital environments and AR technologies impose a fragmented, individualistic gaze, thereby obstructing the very foundation of representation – and, consequently, of politics and the symbolic: namely the collective gaze that fosters a common understanding and shared meanings. Virtual collectives remain necessarily mediated through individualized, self-contained interfaces, thus inevitably leading to the "evacuation of the political" (Garapon, Lassègue 2018, 137). This aligns with the broader blockchain "proposal to resolve 'the political' through technical means" (Brekke 2019, x). As a result, the aesthetics of the metaverse remain intrinsically asymbolic and "anti-political" (Musso 2020, 118).

For these reasons, the autonomy and self-sovereignty promised by blockchain technology necessarily remain confined to the actions of the avatar – an entity that can therefore never fully function as a comprehensive representative of the user and is part of a virtual legal order whose handling is yet to be determined. Moreover, the AR-based transfer of elements from the realm of *Lex Cryptographia* into the physical space, rather than enabling true self-determination, introduces risks of new forms of dependence and constraint. While the avatar may articulate the user's interests within the metaverse, it does so only within the parameters dictated by the quasi-legal order of *Lex Cryptographia*. Everything that eludes programmability and automation – ultimately, everything tied to corporeality and the legal structures that mediate representation – remains systematically excluded from this virtual legal order. Thus, in its pursuit of disembodied autonomy, the metaverse paradoxically reveals its own fundamental limitation: its incapacity to accommodate the full complexity of subjectivity and institutions, of selfhood and alterity, of politics and law, which remain inextricably tied to the sphere of corporeality and representation.

ACKNOWLEDGEMENTS

The text was translated by AI – deepl.com – from German into American English and revised by the author afterwards.

REFERENCES

Adorno, Theodor W., Max Horkheimer. 2022 (1944). *Dialektik der Aufklärung: philosophische Fragmente*, 26th edition, Frankfurt a. M.: Fischer.

Baek, Eunsoo, Shelley Haines, Omar F. Hares, Zhihong Huang, Yuwei Hong, Seung Hwan Mark Lee. 2022. "Defining Digital Fashion: Reshaping the Field via a Systematic Review." *Computers in Human Behavior* 137 (December): 107-407.

Balduf, Leonhard, Martin Florian, Björn Scheuermann. 2022. "Dude, Where's My NFT? Distributed Infrastructures for Digital Art," *Proceedings of the 3rd International Workshop on Distributed Infrastructure for the Common Good*, Association for Computing Machinery, Québec: 1–6.

Baudrillard, Jean. 1981. *Simulacres et Simulation.* Paris: Galilée.

Baudrillard, Jean. 2015. *Die Konsumgesellschaft: ihre Mythen, ihre Strukturen*, edited by Kai-Uwe Hellmann and Dominik Schrage, translated by Annette Foegen. Wiesbaden: Springer.

Becker, Katrin. 2020. "Das postfaktische Drängen in Zeiten rechtlich-sprachlicher Entgrenzung," in *Buchstäblichkeit: Theorie, Geschichte, Übersetzung*, edited by Achim Geisenhanslüke, 89–102. Bielefeld: transcript.

Becker, Katrin. [forthcoming]. "Dekorporalisierung = Demokratisierung? Öffentliche Meinung im Sog der Virtualisierung", talk at conference *Opinion. Public Opinion* at Inter-University Center in Dubrovnik 2023.

Becker, Katrin, and Pierre Musso. 2023. *Introductions à l'œuvre de Pierre Legendre*, Paris: Éditions Manucius.

Beinsteiner, Andreas. 2019. "Cyborg Agency: The Technological Self-Production of the (Post-)Human and the Anti-Hermeneutic Trajectory." *Thesis Eleven* 153 (1): 113–33.

Belk, Russell, Mariam Humayun, Myriam Brouard. 2022. "Money, possessions, and ownership in the Metaverse: NFTs, cryptocurrencies, Web3 and Wild Markets." *Journal of Business Research* 153: 198–205.

Bellini, Olivia. 2024. "Virtual Justice: Criminalizing Avatar Sexual Assault in Metaverse Spaces." *Mitchell Hamline Law Review* 50 (1). https://open.mitchellhamline.edu/mhlr/vol50/iss1/3.

Birch, Kean, and Fabian Muniesa. 2020. *Assetization: Turning Things into Assets in Technoscientific Capitalism*. Cambridge: The MIT Press.

Brecht, Bertolt. 1932 (1975). *Der Rundfunk als Kommunikationsapparat*. In: Gesammelte Werke, Vol. 18. Frankfurt a. M.: Suhrkamp.

Brekke, Clara Jaya Eleonora. 2019. *Disassembling the Trust Machine, three cuts on the political matter of blockchain*, Durham theses, Durham University. http://etheses.dur.ac.uk/13174/

Castoriadis, Cornelius. 2006. *L'institution imaginaire de la société.* Paris: Éditions du Seuil.

Fressard, Olivier. 2006. "Castoriadis, le symbolique et l'imaginaire." *L'imaginaire selon Castoriadis*, edited by Sophie Klimis and Laurent Van Eynde. 119–50. Brussel: Presses de l'Université Saint-Louis.

Girvan, Carina. 2018. "What Is a Virtual World? Definition and Classification." *Educational Technology Research and Development* 66 (5): 1087–1100.

Göbel, Andreas, Dir van Laak, and Ingeborg Villinger. 2018. *Metamorphosen des Politischen. Grundfragen politischer Einheitsbildung seit den 20er Jahren,* Berlin: Akademie-Verlag.

Goodrich, Peter, Serene Richards. 2023. "L'Empreinte juridique." *Introductions à l'œuvre de Pierre Legendre,* edited by Katrin Becker and Pierre Musso. Paris: Éditions Manucius.

Haltern, Ulrich. 2020. *Europarecht und das Politische*. Tübingen: Mohr Siebeck.

Karapatakis, Andreas. 2025. "Metaverse crimes in virtual (Un)reality: Fraud and sexual offences under English law." *Journal of Economic Criminology* 7: 100–18.

Foucault, Michel Foucault (2008), *Le Gouvernement de Soi et Des Autres*, Hautes Études, Paris: Seuil/Gallimard.

Frye, Brian L. 2022. "The Art of the Token." *Stanford Journal of Blockchain Law & Policy*, https://stanford-jblp.pubpub.org/pub/art-of-the-token.

Garapon, Antoine, Jean Lassègue. *Justice Digitale. Révolution graphique et rupture anthropologique,* Paris : PUF.

Giddens, Anthony. 2009. *Modernity and Self-Identity: Self and Society in the Late Modern Age*, Cambridge: Polity Press.

Joy, Annamma, Ying Zhu, Camilo Peña, Myriam Brouard. 2022. "Digital future of luxury brands: Metaverse, digital fashion, and non-fungible tokens." *Strategic Change* 31 (3): 337–43.

Kormidha, Endrit, Babak Thaeri, Sascha Kraus, Suresh Malodia. 2025. "The metaverse as an opportunity for entrepreneurship and innovation". *The International Journal of Entrepreneurship and Innovation.* SAGE Publications, https://doi.org/10.1177/14657503251314627.

Lacan, Jacques. 1975. *Le Séminaire Livre: 1: Les Écrits techniques de Freud* (1953-1954), Paris: Éditions du Seuil.

Legendre, Pierre. 1988. *Lecons VII. Le désir politique de Dieu. Étude sur les montagnes de l'État et du Droit*. Paris: Fayard.

——. 2004. *Leçons. 4: L'inestimable objet de la transmission*, revu et corrigé. Paris: Fayard.

——. 1994. Lecons 3: Dieu au miroir. Étude sur l'institution des images, Paris : Fayard

Lobe, Adrian. 2022. "Hilfe, mein Avatar wird sexuell belästigt! Die virtuelle Realität verlangt nach neuen strafrechtlichen Überlegungen." *Neue Zürcher Zeitung*, February 21, 2022. https://www.nzz.ch/feuilleton/hilfe-mein-avatar-wird-sexuell-belaestigt-die-virtuelle-realitaet-verlangt-nach-neuen-strafrechtlichen-ueberlegungen-ld.1664730.

Marissal, Pierric. 2008. "Métavers. Notre voyage dans le nouvel avatar du capitalisme." *L'Humanité*, April 30, 2008. https://www.humanite.fr/social-eco/metavers/metavers-notre-voyage-dans-le-nouvel-avatar-du-capitalisme-748087.

Mau, Steffen. 2017. *Das Metrische Wir: Über die Quantifizierung des Sozialen*. Berlin: Suhrkamp.

McDowell, Maghan. 2021. "Shaping Online Avatars: Why Our Digital Identities Differ," *Voguebusiness.com*, October 19, 2021. https://www.voguebusiness.com/technology/shaping-online-avatars-why-our-digital-identities-differ.

Musso, Pierre. 2017. *La religion industrielle: monastère, manufacture, usine: une généalogie de l'entreprise*. Paris: Fayard.

——. 2020. "Le désir technologique de Dieu", *Quaderni,* 99-100 : 113–124.

Notaro, Anna. 2022. "All That Is Solid Melts in the Ethereum: The Brave New (Art) World of NFTs." *Journal of Visual Art Practice* 21 (4): 359–82.

Pistor, Katharina. 2020. *The Code of Capital: How the Law Creates Wealth and Inequality.* Princeton, Oxford: Princeton University Press.2020

Procter, Lesley. 2021. "I Am/We Are: Exploring the Online Self-Avatar Relationship," *Journal of Communication Inquiry* 45 (1): 45–64.

Rehak, Bob. 2003. "Playing at Being: Psychoanalysis and the Avatar." in *The Video Game Theory Reader*, ed. by Mark J. P. Wolf and Bernard Perron. New York/London: Routledge.

Rikken, Olivier, Marjin Janssen, Marijn, Zenlin Kwee. 2021. "The Ins and Outs of Decentralized Autonomous Organizations (Daos)." *SSRN Electronic Journal*: https://ssrn.com/abstract=3989559.

Salem, Hamza, Manuel Mazzara. "Hidden Risks: The Centralization of NFT Metadata and What It Means for the Market", arXiv:2408.13281.

Schmitz, Amy J. 2022. "Resolving NFT and Smart Contract Disputes." *SSRN Electronic Journal*, https://doi.org/10.2139/ssrn.4162969.

Schneier, Matthew. 2021. "Dispatches from the NFT Art Boom." *Vulture*, April 15, 2021. https://www.vulture.com/2021/04/nft-art-boom.html.

Srinivasan, Balaji S.. 2022. *The Network State*. https://thenetworkstate.com.

Supiot, Alain. 2005. *Homo juridicus. Essai sur la fonction anthropologique du Droit*, Paris: Le Seuil.

——. 2020. *La gouvernance par les nombres: cours au Collège de France (2012-2014)*. Paris: Fayard.

The Fabricant. 2022. "Curating Our Identity In The Metaverse: Who Will We Be When We Can Be Anything?," *Medium.com*, September 30, 2022. https://thefabricant.medium.com/curating-our-identity-in-the-metaverse-who-will-we-be-when-we-can-be-anything-79a9f300228.

Veerapen Maeva. 2010. "Leading a symbembodied life: A phenomenological investigation of second life." *The International Journal of the Humanities: Annual Review* 8 (5): 105–114.

Wright, Aaron, Primavera De Filippi. 2015. "Decentralized Blockchain Technology and the Rise of Lex Cryptographia," *SSRN Electronic Journal,* SSRN: https://ssrn.com/abstract=2580664.

Whyman, Tom. 2021. "The Work of Art in the Age of the Non-Fungible Token," *Logically*, *https://www.logically.ai/articles/the-non-fungible-token.*

INVISIBLE LABOR, VISIBLE VALUE

Blockchain's Impact on the Economics and Recognition of Digital Art

VIKTORIA HILSBERG

1. INTRODUCTION

All branches of contemporary art infrastructure have strongly evolved since mid-20th century, and within this development, museums, art prizes, residences, art schools, and art magazines (Gauberti 2012, 50–51). Although it has been created since the 1950s by pioneers such as Vera Molnar and Herbert W. Franke, digital art has not been in the limelight of the art market, likely due to its overall poor market performance. In the ongoing conversation around artistic and monetary value, the digital age presents a unique conflict. Digital art can be infinitely reproduced and easily manipulated, raising questions of authenticity and ownership of art that has traditionally relied on physical scarcity. While it democratizes creation and accessibility, it also complicates established notions of provenance and distinction. This complex situation, with its potential for both disruption and innovation, has led to significant discussions within the art world about how to determine the value of works of art. It culminated with the peak of the NFT hype cycle in 2021, when an unprecedented high in digital art sales of US$2.9 billion was reached, driven by the establishment of blockchain technology.

Despite a 51% decline in 2023 compared to the previous year, as noted in the Art Basel Market Report, art-related NFT sales in the art sector have still generated US$1.2 billion within that year (McAndrew 2024, 34). This highlights a significant niche within the market that was effectively non-existent four years ago.

The intersection of digital art, blockchain technology, and the construction of value remains a topic of ongoing exploration. The development of market presence demonstrates that the establishment of blockchain technology has had a lasting impact on the perceived and realized value of digital artworks. In this article, I will engage in this evolving discourse by examining blockchain and related technologies based on distributed ledgers and cryptographic security. In order to show how these technologies allow for the development, distribution, and visualization of value in artworks, I will examine the factor of labor visibility and its manifestation in art-related practices.

The topic of digital art on the blockchain, particularly in relation to its valuation, remains only partially explored due to the relatively recent emergence of

the technology. An established analytical framework has yet to be developed. In addition, the impact of blockchain technology on labor has not yet been thoroughly addressed in academic discourse.

This article seeks to increase transparency regarding key aspects of value and artistic labor by employing an interdisciplinary approach that integrates media studies, art theory, and economics. By examining both non-digital and digital artworks, this analysis will investigate how the visibility of value is constructed within the context of contemporary art production and circulation. Drawing on theoretical literature from primarily neo-Marxist perspectives, this interdisciplinary framework will provide a deeper understanding of the complex factors that shape the perception and valuation of art in the current cultural landscape.

2. BLOCKCHAIN'S ROLE IN ART VALUE

Blockchain is a decentralized digital ledger that records transactions across multiple computers in a way that ensures the data cannot be altered retroactively. This decentralized nature makes the blockchain immutable, meaning that all data recorded on it is permanent and cannot be deleted. Key features relevant to digital art, such as non-fungible tokens (NFTs) and decentralized autonomous organizations (DAOs), rely on smart contracts. NFTs are unique digital assets that represent ownership of a specific object or piece of content, making them an ideal token for trading digital art. The term "smart" signifies their automated nature, as these contracts are self-executing programs that automatically enforce the terms of the agreement when specific conditions are met (Voshmgir 2019, 254–258). A DAO is a digital entity that operates on a blockchain network. DAOs take on the form of an organizational architecture, governed by protocols with their underlying smart contracts. They also represent a community or network of potentially anonymous individuals and/or institutions. With or without a connection to art, DAOs are used for various purposes. These include commercial and non-commercial purposes, such as the stabilization of digital currencies or the governing of decentralized communities. They can also function as artworks themselves, as exemplified by the *terra0* collective and their research regarding the *terra0 DAO* (Salemy, 2024; Seidler, Kolling and Hampshire 2018, 63–72).

In the art discourse, the term value is predominantly understood in economic terms. According to Marxist theory, value is manifested in both use-value and exchange-value, shaped by labor, societal needs, and economic factors such as supply and demand (Weber 2012, 282–283). Adam Smith's diamond-water paradox illustrates this by showing how scarcity and demand affect market prices: diamonds, rare and desirable but of low utility, command high prices, while water, essential but abundant, is priced low. This paradox highlights that economic value extends beyond utility and is shaped by scarcity and social preferences (Beech 2019, 166).

Similarly, when comparing digital and physical art, the diamond-water paradox reveals differences in market valuation. Physical art, with its tangibility and cultural heritage, derives its value not only from scarcity, but from contextualization and provenance, which are both based on collective or expert approval and historical debate. Digital art, by contrast, is easily reproduced and accessible, challenging traditional scarcity-driven valuation processes but also established narratives and curatorial discourse by art historians. While physical art conveys status and prestige through ownership, digital art democratizes access and encourages new forms of expressions. Thus, digital art is reshaping how the value of artworks is perceived in the contemporary. In the digital era, both forms of artworks become commodities.

2.1 CREATING VALUE: IMMUTABILITY, OWNERSHIP, AUTHENTICITY, AND FURTHER CONSIDERATIONS

Regarding the immense impact on increasing the value of digital art in connection with blockchain technology, the following three aspects are cited as the main reasons: immutability, ownership, and authenticity of NFTs (Fairfield 2022, 1275–1282).

Immutability refers to the property of data that cannot be altered, deleted or tampered with once it has been added to the blockchain with its decentralized storage structure. The minting of an NFT associated with an artwork begins an immutable and transparent sales and transaction history of that individual work (Salemy, February 24, 2024). If it is argued that the minting process is equivalent to the creation of an art piece, then the act of minting itself can be considered the date of creation, marking the first step in establishing the NFT's individual provenance. Blockchain's immutability can also securely store and verify ownership of intellectual property, reducing the risk of piracy and ensuring that creators are adequately credited for their work.

The second aspect is ownership. Blockchain technology allows for digital scarcity, enabling the existence of unique versions of data that would otherwise be infinitely replicable. A wallet address can act as a representation of an individual, such as an artist. It belongs to them until they decide to send it to another owner. Similarly, when a collector acquires an artwork, they have proof of ownership, the work, or the corresponding digital token. While this represents the standard for physical works, the secure allocation and distribution of digital works is only made possible by blockchain technology. Having an encrypted proof of ownership for digital art acts as a driving factor for perceived market value among art collectors (Gold et al. 2022). Furthermore, the technology enables the inclusion of artist royalties, where an automated percentage of secondary market sales is automatically transferred to the artist's wallet, utilizing smart contracts. This percentage is set by the original minter of the NFT (Voshmgir 2019, 254–258). In terms of the secondary market, this underlying traceability resolves a long-standing conflict between resel-

lers and the original artist of an artwork, as the latter is rarely compensated after the secondary sale. Therefore the artists benefit from digitally created property. The enabling of digital scarcity thus increases the perceived market value from the creator's perspective.

Authenticity brings all these aspects together. From a cryptographic perspective, authenticity is related to notions such as confidentiality, integrity, and binding, as it requires that a unit is clearly distinguishable from other units (Schmeh 2016, 15). When using an NFT, the token of an artwork is by definition non-fungible, meaning that it is uniquely identifiable and cannot be exchanged for another token. As far as ownership is concerned, the original minting address can provide proof that the artist is the creator and original owner of the work. The aforementioned immutable history enables the creation of a traceable individual history, which in contemporary art constitutes the provenance of the artwork (Salemy, 2024). Provenance provides the historical context of an artwork and its creator, contributing to both its cultural and monetary value. By generating transparent, immutable transaction records, blockchain offers an objective basis for verifying the ownership and transaction history of digital artworks. This verification process is a fundamental step in establishing trust within the digital art market. To build trust, it is essential to enhance market stability and minimize opportunities for fraudulent activities. The technical features of blockchain technology ensure that the origin, ownership and transfer of artwork are traceable and secure, allowing for a reinforced confidence in the system.

Through NFTs and smart contracts, artists, buyers, and sellers can track this history, ensuring greater accountability and enhancing market confidence. This verification process allows for greater accountability and contributes to stabilizing the market for digital art, particularly during periods of volatility. The traceability and immutability associated with the authenticity of the token is relevant to the extent that other digital applications are still only seen as an additional technique for identifying the authenticity, for example when it comes to clarifying provenance (Elgammal, Kang and Den Leeuw 2018, 43).

Regardless of the medium used by the artists, many forged artworks are sold every year, as confirmed by the major international auction houses, whether by forgers or by the hand of the artists (Luck 2016; McClenaghan 2024). This is mainly due to the lack of binding regulations in the unique art market overall (Day 2014, 58). For this reason, additional authentication techniques, such as those enabled by blockchain technology, are particularly valuable.

2.2 LABOR, VALUE, AND NETWORK DYNAMICS

Historically, the commodification of art has been constructed by principles of immutability, ownership, and authenticity. This traditional framework, however, is increasingly challenged by contemporary realities, including globalization and multifaceted

crises, which have fundamentally altered the landscape of art production, consumption, and valuation. The rise of new and dynamic media platforms, including online journals, blogs as well as social media networks, have profoundly influenced how artists, audiences, and intermediaries engage, challenging long-standing notions of valuation (Iles and Vishmidt 2020, 18; Roberts 2019, 171).

The concept of valuing an object, particularly based on its originality and singularity, as theorized by Walter Benjamin (Benjamin 1996), has been significantly challenged by the emergence of modern storage and reproduction technologies. The ease with which both digital and physical artworks can be reproduced has rendered the notion of the unique, original artwork increasingly complex. This complexity has been further provoked by the rise of social and research-based art practices, which challenge traditional conceptions of what constitutes a work of art and the factors that determine its value. The artwork, as I argue, is not an isolated object but rather a process entangled in relations and references, and its scaled originality relies on the attributions and constructions associated with it. While painting continues to thrive in the market, the emphasis on producing singular, original artworks has diminished overall, particularly in light of the proliferation of collective practices, performance art, and other forms of artistic expression that defy traditional notions of originality (Von Gehlen 2012, 171).

Regarding the artistic practice, the spectrum ranges from artists who detach themselves from traditional art practices to achieve new modes of artistic production, to those who position their work as an immanent critique, where notions of value, object and labor become central to ongoing discourse. This shift has fundamentally moved the focus from the artwork as an isolated entity to the processes of artistic labor and the networks within which artworks are situated, increasingly extending into the realm of social action (Lütticken 2022, 15–17). A linear judgment of art through direct observation is becoming obsolete, replaced by a non-linear exploration of meaning through clusters of information that each spectator must navigate independently. Even artworks lacking this quality are often framed within a multilayered catalog of meanings, complicating the artwork-spectator relationship and making the determination of value inherently more complex.

These evolving relationships require significant time, effort, and education from both individuals and institutions, which often contradict the immediacy sought in capitalistic value exchanges. This development, however, does not negate the object's potential to enter commodified exchanges. It instead positions the artifact within an intricate system of institutional and collaborative practices, where value is determined through a complex interplay of artistic practice, market forces, and critical discourse.

Also in this scenario, early-stage value determination remains critical for market exchange. Art production, as John Roberts notes, exists within a framework where each action and object, including the artwork itself, is subject to commodification and monetary exchange. However, unlike industrial production, the aim of art is not to reduce the value of labor over time. Instead, the difficulty in determining artistic labor lies in its unique placement within the overlapping systems of

commodification and institutional critique. While this crisis of value challenges the speed and simplicity of market-driven exchanges, it opens pathways for a deeper and more nuanced engagement with art's multifaceted valuation processes. Art has traditionally fostered social connections between the viewer and the artwork, often overlooking collective and critical thinking about the potential use value of art. Today's expanded networks, however, create new ways of engaging with art, where looking, thinking, and evaluating extend beyond personal taste. Under these conditions, engaging with art no longer merely affirms its value, but encourages viewers to critically reflect on its social integration and broader implications. The aesthetic experience increasingly involves discussing and participating in the evolving life and impact of the artwork over time, rather than simply ranking it within a hierarchy of likes or preferences (Roberts 2019, 171–173; 181–183). This continues to push the boundaries of what is considered to be relevant to the value of a work of art. It also challenges what is considered artistic labor within the art sector. Because traditional notions of labor are becoming increasingly unstable and uncertain, artists, and art institutions are starting to pay more attention to the social and political implications of these changes. They are using art to examine, critique, and perhaps even propose solutions to the challenges posed by the evolving world of work (Lazzarato 2010, 132). This is particularly true to where art is increasingly expanding into the realm of social action (Iles and Vishmidt 2020, 18–19).

This evolving discourse finds historical resonance in the *Art Workers Coalition (AWC)*, established in New York City in 1969. It served as a platform for the representation of all art workers, demanding their equal treatment and participation. This marked a convergence of participatory art and activism. As an important platform, it never became an institution with the broad support system that a labor union would provide. However, the limited documentation was one reason for the lack of recognition of its importance. It is the role model for contemporary projects such as *W.A.G.E. (Working Artists and the Greater Economy)* or *Las Agencias* (Sholette 2010, 56; Vishmidt 2018, 136). The Berlin-based group *Black Swan DAO* is taking a similar approach. It developed different methods of establishing participation in contemporary art. One of these practices was a public, democratic decision-making process, in which any member of the DAO could vote on art projects to receive funding, which was previously distributed to the DAO. Through this practice, *Black Swan DAO* aimed to undermine the structural disadvantage of minorities and the power positions of individual authorities in the cultural sector, replacing them with horizontal decision-making power.

In DAOs, the decision-making processes and outcomes are automatically stored on the blockchain, which produces a register of collective action. Through its connection to established contemporary art institutions, such as the KW Institute, *Black Swan DAO* acted as a platform that provided selected projects with an institutional framework that allowed for the recognition and the reception of cultural value. At the same time, the group *Black Swan* was also being recognized for its contributions (KW Institute for Contemporary Art 2022). In adopting this

practice, *Black Swan DAO* reflected the principles of contemporary art utilizing the advantages of blockchain. It also repositioned the network, which is not an object but an organizational structure, within the concept of art, following a lasting tradition of participatory artworks. Here, the artistic production was reimagined as a form of collaborative labor itself, while the concept of labor displayed here went beyond being the subject or image of artistic production (Vishmidt 2018, 135). It is important to note that blockchain technology does not automatically record all engagements with an artwork. Nor does it count the time required for individual tasks. With the exception of ownership, transfers, and prices, most actions such as discussions, participation in exhibitions and mentions in academic discourse are not recorded because there is currently no technological implementation to streamline these exchanges. However, the voting process, as stored on the blockchain, allowed the institution and the audience to understand and visibly perceive the engagement with the artwork through the code in the encrypted chain and to continue to do so, thus allowing it to gain cultural value beyond its irregular physical presence. It thus allowed a certain spectacle and fetishism to be realized, with or without physical presence.

Another example of DAO-based works that visualize individual participation is the *Jonas Lund DAO (JLD)*, where the Jonas Lund's career and the related decision-making processes are controlled by the members of a DAO founded by the artist himself. Tokens that allow participation have been distributed to several individuals. This ties the artist's decision-making to the actions of the active voting members. This fractionalization of decision-making through tokenization makes the process labor-intensive, as each participant's involvement becomes part of the artwork itself. It also raises questions of accountability, both for the token holders who make decisions and for the artist who embraces this practice. By involving individuals in the process for both the short and long term, *JLD* allows for a form of self-reflection as members question the value of their actions within and beyond the DAO. *JLD's* success rests on the shared ideals of transparency and participation that bind the community together. Without these shared values, the artwork risks becoming unintelligible or even fragmented. Participants receive no financial compensation, but instead contribute unpaid labor, which they contribute to Jonas Lund's artistic practice. In this way, *JLD* embodies not only a decentralized art practice, but also a set of ideals that provide cohesion and meaning for participants, reinforcing its social and artistic significance (Hutter and Shustermann 2006, 198). Through blockchain, Jonas Lund introduces new relationships and expands traditional structures of engagement, making the artwork a practice of collective labor rather than the product of a single artist. The decentralized and transparent practice, along with detailed documentation, increases the digital presence of the network, giving it a symbolic value that can go beyond the narrative of an individual artist (Yin 2023, 22–23). Unlike earlier socially engaged artworks with limited documentation, the DAO structure provides a sustained, transparent record of the network's activities, which is critical for provenance (Hilsberg 2024). However, while the DAO structure fosters

engagement, it also exposes the practice to market-driven dynamics. This can have a contaminating effect on the social and cultural dimensions of art. As art historian and curator Sotirios Bahtsetzis argued, even before the emergence of DAOs, new models of engagement can lead to a public commodification of social life within art (Bahtsetzis 2012). When the market infiltrates artistic processes, it risks alienating artists from their work and communities, reducing the value of art to mere commodities through pricing mechanisms (Velthuis 2005, 3).

This tension is visible in *JLD*: the artist, Jonas Lund, benefits from the signalling effect of a functioning network, where a growing number of participants increases his social capital (Hutter and Shustermann 2006, 195). As his status increases, Lund often presents commodified physical works that represent the *Jonas Lund Tokens* and promote his established status. In emerging markets, social status is particularly valuable (Lee et al. 2024), so the *JLD* allows Lund to leverage his network for speculative success while promoting community engagement. The success of DAOs such as *JLD* therefore depends on a delicate balance between community-driven values and market pressures, ensuring that the social and artistic integrity of the artwork remains crucial.

As in any medium, the work put into an artwork is not solely the artist's creative effort. Maurizio Lazzarato, in his seminal work Immaterial Labor (1996), explores what "[…] is defined as the labor that produces the informational and cultural content of the commodity" (Lazzarato 2010, 132), making it particularly relevant to the art world. It includes both the physical creation of artworks and digital production, independent of the creator, as well as the management of symbolic content. This includes essential activities such as digital implementation, curation, promotion, contextualization, and cultural interpretation, all of which are necessary to give meaning and value to these works. Lazzarato argues that immaterial labor is a crucial but often overlooked aspect of contemporary production (Lazzarato 2010, 132–133). The sociologist Howard Becker describes the art world as a network of non-artistic actors in the art market, such as gallerists, critics, educators and calls them "support personnel" who perform the labor relevant to the artwork. This includes the workers in the artist's studio, if there is one. From Becker's point of view, the artist is only part of the process from the beginning. The artist does not need the so-called "support personnel" to produce the artwork. But the collective approach to its realization potentially allows for a diverse set of skills to realize and distribute an artwork to a higher quality than an individual could achieve (Becker 1997, 25–27). Gregory Sholette argues that this 'dark matter', as he terms it, is crucial to the art market's functioning, yet remains largely invisible to most actors beyond the support personnel (Sholette 2010, 184–202). However, their work is essential in bridging the gap between the artwork and the audience, as it enables the latter to make meaningful connections with the art. Not euphemising their motives is important: Cultural economists who analyze the art market often emphasize that participants, whether buyers, sellers or distributors, act as rational individuals who continually seek to maximize their profits, much like agents in other markets

(see, e.g., Osterloh and Frey 2000, 543). Economic value increases when multiple forms of artistic value are integrated into a single work (Hutter and Shustermann 2006, 200). Following this argument, participants in networks such as *JLD* could in fact be positioned as a network of agents, rather than merely providing an artistic and social practice, once again pointing to the speculative nature of networks. Lazzarato suggests that the informational content will increasingly be defined by the diversification of communication streams and technological practices that we are currently experiencing within and outside of digital art (Lazzarato 2010, 132).

According to Lazzarato, recognizing and valuing immaterial labor is essential, as it enriches the cultural and economic capital of art and fosters deeper social connections within the art community (Lazzarato 2010). New technologies, in a kind of technological mediation, can lead to a restructuring of the visibility of production relations and thus of society, as a DAO can visualize collective efforts (Röhrl 2018, 5). This can be the case in the context of artworks such as Sarah Friend's *Lifeforms*, *BeeDAO* or the aforementioned *Jonas Lund DAO*, which each have a conceptual approach. As Lütticken points out, the notion of immaterial labor can be used as "the leftist counterpart to neo-liberal buzzwords such as 'the creative industries'" (Lütticken 2022, 242), while ultimately glorifying precarious work in the art industry. And this may well be the case. The argument of immaterial labor removes art from being perceived as a primarily commodified object, which is essential to the recognition of artistic practice to this day (Lütticken 2022, 242). As the art economy is increasingly driven by freelance work, it becomes difficult to distinguish between self-directed artistic labor and socially necessary labor, as Anthony Iles and Marina Vishmidt point out. It must be said that Lazzarato has also criticized the term immaterial labor for being used in an exploitative way (Vishmidt 2018, 119–136).

Metcalfe's Law suggests that the economic value or impact of a network increases in proportion to the square of the number of users connected to it, demonstrating the potential increase in the value of an artwork through increased interaction. However, the first version of the theory was not about actual users, but about the devices connected to a telecommunications network (Hendler and Golbeck 2008, 14). In both cases, it is applicable to the use of blockchain technology, where the immutability of the distributed network is extended by an increasing number of connected devices. There is a remarkable shift in the way we think about attention in today's connected world. These changes are not only due to our networked culture and its constant push for participation. Engagement can now lead to market speculation or be a calculated market strategy (Frost 2021). It shows why many individuals, especially in the blockchain community, may perceive their engagement with the artwork as labor, as quantifiably documented on social media or through actions on the blockchain and thus themselves as part of the artwork, whether paid or unpaid. Despite these efforts, the undervaluation of immaterial labor persists. As with Metcalfe's Law, the framework only suggests a potential increase in the value of the work. It is not a certain success factor, nor is it proof that the perception of value is sustainable. The network then functions as a speculative method to promote commodifiable works of art.

3. LEGAL REGULATIONS

After years of almost no regulation and uncertainty in the market, with increasing political and legal regulation of cryptocurrencies and trading, an overall sustainable practice seems possible. In 2023, MiCAR was introduced, a regulatory framework that establishes rules for the issuance, trading, and management of cryptocurrencies and digital assets in Europe (Auffenberg 2023).

This is not yet the case for DAO structures. Digital artists such as Rhea Myers point out that there is a practical potential for DAOs to become the architecture of institutions, such as trade unions. But the adaptability of DAOs is still limited by the lack of legal regulation (Myers [2017] 2023, 180–181).

In a few US states, legal registration of DAOs as legal entities is possible since 2021, allowing them to operate under the corporate structure of an LLC. One example is the state of Utah, where it was incorporated in 2023 (Boucher 2021). Outside of these states, in many cases a DAO cannot serve as a framework for business practices at this early stage of regulation. It is not possible under European law either (Mienert 2021). This still needs to be coordinated, especially in Europe, through different forms of business ownership models (World Economic Forum 2023, 17–18). However, with increasing political and legal regulation, a comprehensible legal framework that can lead to a truly sustainable practice seems possible (Auffenberg 2023).

4. CONCLUSION

The transformative potential of blockchain technology in the art world goes beyond providing digital artists with enhanced tools to establish authenticity, ownership, and provenance through NFTs and smart contracts. Blockchain technology has emerged as a transformative force in the digital art world, reshaping how value, labor, and community participation are understood and integrated into artistic practices. By providing transparent and immutable records of ownership, provenance, and transactions, blockchain addresses long-standing challenges faced by digital artists, such as reproducibility and undervaluation. Mechanisms like NFTs and smart contracts ensure that artists gain rightful recognition and financial benefits from their work, fostering a more equitable art market. Providing proof of ownership allows for a sustainable model for distributing and collecting art works.

Decentralized models like DAOs are also redefining artistic production and valuation by empowering community-driven, egalitarian frameworks that challenge traditional hierarchies. Projects such as *Black Swan DAO* and *Jonas Lund DAO* illustrate how collective participation in artistic creation, funding, and distribution shifts the focus of control from institutions to communities. However, this democratization

introduces challenges, such as the commodification of social interactions and the reduction of cultural and social values to economic metrics.

The growing importance of networks and social interactions in art valuation signals a shift from static object-based valuations to a more dynamic understanding of artistic value. Blockchain technology, by providing transparent and verifiable records of artistic processes, can contribute to this shift. By making visible the labor-intensive nature of art production and the role of community engagement, blockchain can help to elevate the status of artists and their work. The ability of a blockchain to make visible the labor and collective processes behind artworks offers a means to acknowledge the social and cultural contributions of both individual artists and communities.

Yet, the increasing reliance on quantifiable metrics raises concerns about over-commodification, particularly when engagement metrics are used to determine artistic worth. The tension between viewing artistic labor as an autonomous creative process and as a commodified market asset is increasingly evident, particularly in projects like *JLD*, where participation enhances both the social value of the artwork and the market position of the artist. This delicate balance between promoting transparency and encouraging engagement highlights the need for ongoing critical reflection on how blockchain technology affects artistic labor and valuation. Balancing these tensions, transparency versus commodification, equity versus autonomy and innovation versus cultural preservation, will be critical as blockchain integration progresses further.

Meanwhile, its applications in digital art must be critically assessed to ensure it aligns with the goals and values of the artworks. By fostering a more inclusive and resilient digital art ecosystem, blockchain has the potential to redefine how we create, share and value art in the digital age. Future research should explore how blockchain can further integrate and balance the diverse forms of value represented in digital art. While blockchain technology enables new ways to define and trace artistic, social, cultural and economic value, it is crucial to acknowledge both its potential benefits and its potential drawbacks, rather than solely focusing on market-driven metrics.

REFERENCES

Auffenberg, Lutz. 2023. "BaFin Und NFTs: Welche Aktivitäten Reguliert MiCA?" Accessed May 31, 2024. https://www.btc-echo.de/news/bafin-und-nfts-welche-aktivitaeten-reguliert-mica-172899/.

Bahtsetzis, Sotirios. 2012. "Eikonomia: Notes on Economy and the Labor of Art." Accessed May 31, 2024. https://www.e-flux.com/journal/35/68397/eikonomia-notes-on-economy-and-the-labor-of-art/.

Becker, Howard S. 1997. "Kunst Als Kollektives Handeln." In *Soziologie Der Kunst*, edited by Jürgen Gerhards, 23–40. Wiesbaden: VS Verlag für Sozialwissenschaften.

Beech, Dave. 2019. "Value." In *Keywords for Marxist Art History Today*, edited by Larne A. Gogarty and Andrew Hemingway, 165–72. Göttingen: V & R Unipress.

Benjamin, Walter. 1996. *Das Kunstwerk Im Zeitalter Seiner Technischen Reproduzierbarkeit: Drei Studien Zur Kunstsoziologie*. 22nd ed. Edition Suhrkamp 28. Frankfurt am Main: Suhrkamp.

Boucher, Brian. 2021. "The NFT Revolution Isn't Just a Fad: These Galleries and Artists Were Ahead of the Curve." Accessed June 2, 2024. https://www.artbasel.com/stories/nft-revolution-koenig-mennour-pace-ora-ora?lang=de.

Day, Gregory. 2014. "Explaining the Art Market's Thefts, Frauds, and Forgeries (And Why the Art Market Does Not Seem to Care)." *Vanderbilt Journal of Entertainment & Technology Law* 16. (3).

Elgammal, Ahmed, Yan Kang, and Milko Den Leeuw. 2018. "Picasso, Matisse, or a Fake? Automated Analysis of Drawings at the Stroke Level for Attribution and Authentication." *AAAI* 32 (1): 42–50. https://doi.org/10.1609/aaai.v32i1.11313.

Fairfield, Joshua A.T. 2022. "Tokenized: The Law of Non-Fungible Tokens and Unique Digital Property," *Indiana Law Journal* 97 (4): 1261–1313.

Frost, Halle. 2021. "Trust, Tokens, Tyranny: A Conversation with Sarah Friend." Accessed May 31, 2024. https://weirdeconomies.com/contributions/conversation-with-sarah-friend.

Gauberti, Annabelle. "How the Art Market Became a Luxury-Goods Business: Revisited." *Info* 2012 (4): 50–51. https://crefovi.com/How%20the%20art%20market.pdf.

Gehlen, Dirk von. 2012. *Mashup: Lob der Kopie*. 2nd ed. *Edition Suhrkamp 2621*. Berlin: Suhrkamp.

Gold, Kerstin, Kristina Leipold, Johanna Neuschäffer, and Anne Schwanz. 2022. "ART+TECH Report." Report, last modified November 7, 2022. https://mcusercontent.com/5c26fe086a57792372901c09f/files/ebaeae83-842e-05fd-5079-c3bf71dced6e/ART_TECH_Report_ArtNFTCollecting_2022_May22.pdf.

Hendler, James, and Jennifer Golbeck. 2008. "Metcalfe's Law, Web 2.0, and the Semantic Web." *Journal of Web Semantics* 6 (1): 14–20. https://doi.org/10.1016/j.websem.2007.11.008.

Hilsberg, Victoria. 2024. "DAOs: A Blockchain-Based Application Not Intervening, but Strengthening the Agility of Contemporary Arts." In *ISEA2023 PROCEEDINGS*. Paris: Ecole des arts decoratifs – PSL.

Hutter, Michael, and Richard Shusterman. 2006. "Value and the Valuation of Art in Economic and Aesthetic Theory." *Handbook of the Economics of Art and Culture* 1: 169–208. Elsevier. https://doi.org/10.1016/S1574-0676(06)01006-4.

Iles, Anthony, and Marina Vishmidt. 2020. "Arte Futile: The Gift That Is No-One's to Give and Which No-One Wants to Receive." In *The Trouble with Value: Art and Its Modes of Valuation,* edited by Kris Dittel, 18–31. *Onomatopee 151*. Eindhoven: Onomatopee.

KW Institute for Contemporary Art. 2021. "Hackathon, Black Swan." News release, February 25, 2021. Accessed November 18, 2024. https://www.kw-berlin.de/hackathon-black-swan-the-communes/.

Lazzarato, Maurizio. 2010. "Immaterial Labor." In *Radical Thought in Italy: A Potential Politics,* edited by Paolo Virno and Michael Hardt, 133–48. *Theory out of Bounds 7*. Minneapolis: University of Minnesota Press.

Lee, Kangsan, Jaehyuk Park, Sam Goree, David Crandall, and Yong-Yeol Ahn. 2024 "Social signals predict contemporary art prices better than visual features, particularly in emerging markets." *Scientific Reports* 14 (1): 11615. https://doi.org/10.1038/s41598-024-60957-z.

Luck, Adam. 2016. "Market in Crisis as Experts Warn £200m of Paintings Could Be Fakes." Accessed June 21, 2024. https://www.dailymail.co.uk/news/article-3817580/Moriarty-Old-Master-pulls-art-crime-century-Market-crisis-experts-warn-200m-paintings-fakes.html.

Lütticken, Sven. 2022. *Art and Autonomy: A Critical Reader.* Köln: Verlag der Buchhandlung Walther König.

McAndrew, Clare. 2024. *The Art Basel and UBS Global Art Market Report 2024*. The Art Basel and UBS. Accessed June 21, 2024. https://www.ubs.com/global/en/our-firm/art/art-market-insights/download-survey-report-2024.html

McClenaghan, Maeve. 2024. "Damien Hirst Formaldehyde Animal Works Dated to 1990s Were Made in 2017." Accessed June 21, 2024. https://www.theguardian.com/artanddesign/2024/mar/19/damien-hirst-formaldehyde-animal-works-dated-to-1990s-were-made-in-2017.

Mienert, 2021. "How Can a Decentralized Autonomous Organization (DAO) Be Legally Structured?" Accessed September 21, 2024. https://lrz.legal/en/the-lrz/how-can-a-decentralized-autonomous-organization-dao-be-legally-structured.

Myers, Rhea. (2017) 2023. "Artists Re:Thinking the Blockchain: Initial Book Offering Slides." In *Proof of Work: Blockchain Provocations 2011–2021,* edited by Rhea Myers, 180–81. Falmouth: Urbanomic.

Osterloh, Margit, and Bruno S. Frey. 2000. "Motivation, Knowledge Transfer, and Organizational Forms." *Organization Science* 11 (5): 538–50. https://doi.org/10.1287/orsc.11.5.538.15204.

Roberts, John. 2019. "Art, Value, and Value-Form Theory." In *The Value of Critique: Exploring the Interrelations of Value, Critique, and Artistic Labour*, edited by Isabelle Graw and Christoph Menke, 171–84. Frankfurt am Main: Campus.

Röhrl, Boris. 2018. *Marxistische Philosophie Und Kunstgeschichte: Einführung, Entwicklung, Terminologie*. Einführungen: […], Philosophie Band 23. Berlin, Münster: LIT.

Salemy, Mohammad. 2024. "Beating a Dead Horse: What's Wrong with DAOs?" *Arts of the Working Class*, February 24, 2024. Accessed May 9, 2024. https://artsoftheworkingclass.org/text/beating-a-dead-horse-1.

Schmeh, Klaus. 2016. *Kryptografie: Verfahren, Protokolle, Infrastrukturen*. 6th ed., iX-Edition. Heidelberg: dpunkt Verlag.

Seidler, Paul, Paul Kolling, and Max Hampshire. 2018. "Terra0: Can an Augmented Forest Own and Utilize Itself?" In *Artists Re:Thinking the Blockchain*, edited by Ruth Catlow, Marc Garrett, Nathan Jones, and Sam Skinner, 63–72. London, Liverpool: Torque Editions; Furtherfield; Distributed by Liverpool University Press.

Sholette, Gregory. 2010. *Dark Matter: Art and Politics in the Age of Enterprise Culture*. London: Pluto Press.

Velthuis, Olav. 2013. *Talking Prices*. Princeton, Oxford: Princeton University Press. https://doi.org/10.2307/j.ctt4cgd14.

Vishmidt, Marina. 2018. *Speculation as a Mode of Production*. Historical Materialism Book Ser. Boston: BRILL.

Voshmgir, Shermin. 2019. *Token Economy: How Blockchains and Smart Contracts Revolutionize the Economy*. Berlin: BlockchainHub.

Weber, Thomas A. 2012. "Price Theory in Economics." In *The Oxford Handbook of Pricing Management*, edited by Özalp Özer and Robert Phillips, 281–339. Oxford: Oxford University Press.

World Economic Forum. 2023. *Decentralized Autonomous Organization Toolkit: Insight Report*. Geneva. Accessed June 24, 2024. https://www.weforum.org/publications/decentralized-autonomous-organization-toolkit/.

Yin, Aiwen. 2023. "Can Web3 Technology Help Socially Engaged Art Become Organizationally Sustainable, or What the Heck Is a Community?" Accessed May 9, 2024. https://creativeimpact.eu/wp-content/uploads/yin_aiwen_public_version.pdf.

ESCAPE FROM THE GLASS PRISON

History and Future of Medical Computer Networks and Threatened Values in Web3's Health Self-Infrastructuring?

LAURA NIEBLING IN CONVERSATION WITH SEBASTIAN R. RICHTER

Sebastian R. Richter: Let's talk about your completed and soon to be published habilitation project: How is medicine connected to Web3?

First off: Hardly yet, in the medical day-to-day in many countries and medical disciplines. A connection to Web3 would require medicine undergoing fundamental digitalization, which simply does not exist in many places and cannot yet be implemented without major institutional changes. The connection between medicine and Web3 under the keyword "Decentralized Healthcare" is but one of the latest iterations of an old problem: the demanding connection between computers and their (techno)logical networks and human-centered medical communication. The central subject of medicine is the human being: their body, their mind and their health or illness. This human being can be measured, recorded and analyzed, but since the increase of computerization in the 1970s, there has been considerable skepticism in medicine about what happens when you do that. There is a quote often used in German medicine: "Wer viel misst, misst viel Mist" (When you measure a lot, you also measure a lot of crap).

So, before you talk about Web3, the first question to ask is what "healthcare" should mean with regards to digital media gadgets, infrastructures and medical communication practices. If you break down the term, a tension arises between "health", which can be measured and datafied in medical normative terms, and the idea of "care", which refers to a cultural-theoretical relationship between medical staff and patients. A commitment to care implies a responsibility to safety, duty and benevolence that calls for more ethical value dimensions and that cannot be easily quantified. Interestingly for Media Studies, both sides tie in with media in a variety of ways. The role of datafication and measuring in medicine is much discussed – not only in the prominent debate about the quantified self (Deborah Lupton 2016) but also for instance in diagnostics (Andrew S. Lea 2023). Care on the other hand had one of its last prominent appearances in German Media Studies as a media-theoretical phenomenon (ZfM Medien der Sorge, 2021, 13/24). This debate showed that caring for others through and with media is often embedded in techno-political discourses of governmental control. This is particularly true for the question of decentralized healthcare, so, the "decentralization" part of our Web3 concept.

What does it imply?

Decentralization is what Jan-Felix Schrape has rightfully called the "underlying generic vision" of digitalization (Schrape 2019). Generic, because it has historically accompanied every step of the development of networking technology. It follows two trajectories to make it popular: one is the general compatibility with "elementary utopian ideals" (ibid.), the other refers to the "basic patterns of factual, social, and temporal complexity reduction" (ibid.). So, historically, decentralization is both a promise for a better (read: more democratic, more private) web, and a concept to make network structures usable. It is a grand idea which must be met by both technological possibilities and, in our case, medical communication structures with their own practices and rules.

Medicine has its own cultural-historical context of networks, but also of health systems in many countries. The question of a center and a periphery of technical networks, for example in the construction of hospital information systems, is reflected in the question of central systems and de-central periphery in medical treatment. Some industrial players associated with Web3 are selling this periphery as a new achievement. Naturally, the usual vigilance of media historians against the claim of disruptive technologies applies here. One look at Alexander Galloway's book on protocols (Galloway 2004) is enough to know that the central/decentral/distributed triad is already written into the core of networking architectures.

What Galloway notes about the idea of freedom as a core value of the Internet, is that it needs to be critically questioned, as it obscures structures of control. This idea can also be found in the historical sources on the history of networking in medicine. I researched the discourses and discussions in more detail for Western Germany's digital medicine history from 1970 to around 2000, but much of it can also be applied to other countries such as Sweden or the USA, as many countries in the Western hemisphere had transnational connections in the early days of medical informatics.

How have values changed? You start your research in the 1970s. In what way did medicine then have different values from today?

So, we've already seen that debates about medical infrastructure involve at least two value-related discourses – one concerning medicine and one concerning media infrastructure. There are promises, ideas and ideologies embedded in techno-cultural changes which coincide with discourses about medicine's own ethics. A central question concerns the privacy of patients' information and the benefits and challenges of (de)central communication infrastructures. Let me explain this in more detail, as it ties in with the health vs. care debate and the privacy ideology underlying any future Web3 concepts in (German) medicine.

When public data processing first became a topic in the 1970s and 1980s in the Federal Republic of Germany, it was funded through national grant projects like

the three major data processing schemes ("Datenverarbeitungsmaßnahmen"). Appeals for networking and computerization were formulated at the state level, which were intended to usher in the age of telematics (telecommunications + information technology). These were, among other things, accompanied by new fields of study, new training, new industrial sectors and actors, major funding measures and many reports and discussions in politics and the media. Many of these debates concerned a joint development of new communication channels and media, a democratic idea of network building which in other sectors (such as the military) quickly became known as interoperability – cooperation with and through communication channels, the standards of which should be determined by everyone involved.

This early computerization of public services in Western Germany was, however, fundamentally influenced by public debates about private and public data, which are now partly forgotten; the 1987 census, for example, was accompanied by large demonstrations and calls for boycotts. Particularly medical personnel were furthermore divided by the history that National Socialism brought to both medicine and early medical informatics. The history of recording and data processing, as discussed by Götz Aly and Karl Heinz Roth (2019 [1984]), was directly linked to calculating machines and their (health) political instrumentalization – something that was still present in some debates in the 1970s.

Debates about the value of decentralized, yet networked patient data and medical work in Germany concerned matters of independence and ethics – promises of decentralization through technology, which were centrally postulated at the time, often triggered skepticism about systems that amassed information, especially private patient information, in a centralized manner. This skepticism was articulated in articles or specialist newspapers such as the German Medical Journal (*Deutsches Ärzteblatt*) and it had profound long-term implications. In Germany in particular, we still have a very fragmented healthcare system whose individual actors want to maintain their agency – this posed fundamental challenges for the technical infrastructure discussed from the 1970s onwards. So, to sum up, privacy of patient data could be considered one of the main values of medicine – it is even enshrined in law. It represents one part of the "care" aspect of "healthcare", and it is threatened the moment it becomes quantifiable and open to the public.

> How would it be threatened? Is the discussion about private data and privacy not a more recent phenomenon?

The question of private data in medicine is historically tied to specific value debates regarding the confidential doctor-patient-communication. One of them, which I have also examined in more detail in my research, concerns the quasi-sacrosanct relationship of their treatment communication. Since ancient times (and I don't mean this figuratively, but literally, as in: since medical ethic discourses like the Hippocratic Oath emerged), the doctor-patient conversation has been defined by several loosely formulated rules and values – one of which, which is also legally enshrined today, is the duty of confidentiality.

Doctors are not allowed to give third parties any information resulting from a doctor-patient conversation. This relationship has been interpreted very differently in the history of medicine, but above all it represents an imagined scene in terms of communication theory, because it seems to ignore the media as the diaphanous third party. Whether it's a recording of conversation notes that an employee transcribes, a file archived in a clinic or practice, a telephone conversation with a colleague, a doctor's letter or prescription – many technical media in medicine involve the potential "disclosure" of personal data, as medical law would phrase it. These media, however, are needed for the communication situation and they also need to be networked so that treatment procedures can take place. If you look at the discourses, however, they are basically invisible.

What we can observe in the debate on the history of technology is what Wendy Hui Kyong Chun has called "habitual media" (2016). According to Chun, our habitual, and seemingly invisible media have embedded themselves so deeply into our everyday life, that it is almost impossible to live without them and outside of their control, while our habits with them create networks of small groups in which we take on the tasks of machines. The doctor-patient conversation and its connections in medicine and healthcare infrastructure – from administration to insurance companies to pharmacies, from measuring, to analyzing and documenting – could be cited as one example of this. It is no coincidence, as Chun finds and the history of the German health infrastructure also shows, that this habitualization goes hand in hand with neoliberalist tendencies – whether in early computer medicine or in the medical Web3 today.

> What is the media-historical significance of this change in values? From this perspective, how would you define the concept of value?

Let me reiterate my thoughts up to now: The computer as a medium that collects all others, as Bernhard Dotzler puts it (cf. 1994, 57), comes with certain networking postulates. One concerned – and still concerns – the democratic, free communication through interoperable technology and new networks. This message, however, ran counter to closed off communication traditions and ideas in medicine as a field of work with a media culture of communicative values – a similar debate could certainly be traced for the military, the police, the administration, the judiciary and industry, which all have regulations regarding language and the management of secret information. So, in my research, I asked myself: what happens in such a case, when new media are postulated?

My work with historical sources on medical infrastructure projects in Western Germany highlighted one important aspect: At the moment that media postulates are posited, habitual media become visible (again) and old and new media can become a problem. They invite reflections on the invisible control that they make possible. In data discourses in Germany, this was manifested in a significant medium of its own: Measuring patient information seemed like a direct threat to the "care"

idea and German doctors have long rejected this idea of the "glass patient", but also that of the "glass doctor", and this was prominently discussed in the 1980s. The idea of medical environments – as well as the government in general – could become some kind of glass prison, where every information, every communication channel and every person are visible (to federal eyes or even a prying public), caused great concern. It was argued that trust goes both ways – if doctors are constantly transparently measured, their own human factor is threatened, and they become a machine. They are well aware of the other side of this argument, the problems of malpractice and abuse of trust, too, of course. As such, there are also debates to be had about the value of personal knowledge, integrity, work ethic and simply of human behavior made visible through diaphanous, but transparency-enforcing media.

Marshall McLuhan once said that the media have the power to force their postulates on the unsuspecting (cf. 2003, 28). I would argue that at such a moment, value debates become particularly obvious as old habits become insufficient to meet new challenges and the question arises as to how values and knowledge must be combined. This is still evident today and can reoccur with any update to "remain the same", to reference Chun once again; just consider communication studies researching the values of digital platforms and the platform industry which, like media studies, also increasingly involve Web3. Instead of determinable concepts of value, we are often faced here with specific media cultures of communicative value, which are diffracted in their actual ethical dimensions, and which depend on certain media postulates, such as the invisibility of media or the sacrosanct trust of a two-person-communication. Questioning value can help us identify and reconsider relationships to certain media and the information age in these cultures.

> Martha Nussbaum's argument is that emotions are important in defining values. Can you relate this to your own research?

I don't know if trust is itself an emotion, but it contributes to an emotional linking to media, which is important here. In medicine, values are defined primarily through medical ethics. Only certain rules of communication are ethically – and sometimes even legally – agreed upon, and they are based on the fact that only the imagined, ideal concept of the doctor-patient conversation can maintain trust. The question of trust is, in turn, one that we encounter in many research contexts related to media and values – for example in the platform research already mentioned, or in the cryptographic discourses that have existed since the beginning of the cypherpunk movement around the new network worlds, and later blockchain and Web3. It is not for nothing that Web3 is designed to be decentralized, primarily because it is intended to reestablish user control over data. As such, people become private again, while the system is transparent. The aim is to restore lost trust, now that habitual media have become visible and a disturbance of sorts.

The fact that trust is a prerequisite for working with personal data, and represents a kind of core value, can be explained by its vulnerability. Whether financial or

health data: the ideal is that only the affected actors have access. Here, medicine, with its imagined doctor-patient conversation, seems predestined to be transferred to Web3 concepts, if one believes the promises of democratic interoperability regulated by everyone. However, if you look at the whole thing from a technology-historical perspective, it quickly becomes clear that what we are dealing with here is primarily a tradition of problematic habits becoming visible with every new media update. Medicine may look decentralized, but in many places, it is not – and it is not easy to separate it from the "health system" in which it is anchored. This also has to do with the fact that media enable forms of control that refer beyond themselves.

Most updates, e.g., disruptions, to habitual medical media therefore seem to endanger the trusted doctor-patient confidentiality time and again. Interestingly, the debate in 1970s computer medicine almost immediately concerned questions later addressed in the Blockchain and Web3, that is, how to remain private in an increasingly open system, and how to take control instead of losing it. To understand why, it is extremely vital to consider the German discourses tied in with the evolution of data privacy laws, which originated in Germany in the 1970s. Hessen was the first federal state worldwide to draft and establish data protection laws ("Hessisches Datenschutzgesetz") in 1970. Western Germany followed this draft a few years later with a nationwide data protection law ("Bundesdatenschutzgesetz"). This law was not just some ink on paper, but came with new agents of control, new discourses about data and the public sector, and new rules for infrastructure, significantly shaping debates in German medicine – and the aforementioned public discourses.

> And this has culminated in the current version of 2017. But what does the ambivalence of digital data mean for everyday medical practice?

While some in the field of medicine were enthusiastic about the prospects of computer medicine, others were cautious regarding their own agency and the impact with regard to data protection. The fact that some German health insurance companies were among the first to digitize patient data, and in a highly questionable way at first, and subsequently started to measure doctors' diagnoses, was one aspect of this rather complicated situation. If read like this, the doctors' side is supposed to represent the transparent system, while the patients' side represents the private data.

This strongly deviated from the imagined scenario of closed-off channels of communication. Ever since the first telematic measures in the 1970s, the ideas of decentralized, digitized and automated health systems, where interoperable networks freely exchange all the relevant data in the most efficient form, have put doctors in a difficult, indeed near impossible situation: If their side of the communication channel is transparent, what happens to their trust-building promise to keep patient records safe? If these channels are opened up, the question of trust is placed upon every actor entering the channels, as doctor and patient data become

measurable assets. And what continues to this day is the complication that many of these actors do not act transparently themselves. Yet there is an implicit demand upon doctors *and* patients to be transparent about their data – when writing a letter or prescription for example, when claiming insurance, and when participating in necessary research to further medical knowledge.

Values such as trust and confidentiality are often defined by agency over media and one's own data. Here, Web3's idea of democratized, interoperable but secured channels is painted as a solution. There are concepts to store patient data as NFTs, for instance, which are first and foremost giving agency to patients. Germany has now, after 50 years of failed attempts, finally introduced an electronic patient record, which is framed in a similar form. It's interesting to look at the promises of Web3 health systems from the standpoint of the complicated history of computer medicine.

> Does Web3 take the position of an infrastructure or rather of an administrative apparatus?

Web3 health care implies a new digital world, where data is decentralized and ownership over data is given to patients, who can access international health communities and pay for these services using cryptocurrencies. It is framed as personalized, safe care. In this ideal scenario, doctors can remotely control how data is accumulated via the Internet of Things, they can assist patients around the world (and be compensated for it), they can use digital twins of patients for research and for the training of personnel and students. It is a beautiful, clean and simple utopia, centered around the sacrosanctity of the doctor-patient-relationship. But what about the system behind it? The compensation and administration, the technical organization, the control over medical practices and education?

In these scenarios, the centralized health system is still there, but alongside the media that maintain it, it is invisible. You could abolish it, of course, but you would have to replace it with *something* else to maintain the medical infrastructure – a nation's health system, consisting of real places, people, roles, institutions, technology and administration, cannot just be Web3-based, at least not at this stage of governmental organization. As Kelsie Nabben wrote, "Web3 is actually about creating the enabling infrastructure for the coordination of resources, beyond the concept of ownership" (Nabben 2023). With reference to Park et al., self-infrastructuring is the "exciting and terrifying future" (ibid.) which Web3 seems to promise. Let's exaggerate this idea a bit for our scenario: who would want to self-infrastructure a whole health system? Who would benefit from that and who would be disadvantaged? If you have no assets or resources to allocate, do you still have any worth? What will remain of care, when measurable data is a neo-liberal asset? These are questions to critically consider when re-imagining a Web3 medicine.

> Is there a utopian or dystopian potential to decentralized medicine? How does it relate to the statement "the less human involvement the better"?

This is a very good question, which has been frequently asked since the 1970s! Even though interoperability seemed to promise agency with regard to what these decentralized systems could look like – an offer some doctors took up as they participated in projects during the data processing schemes ("Datenverarbeitungsmaßnahmen"), wrote handbooks, founded initiatives and work groups – the lingering question always concerned the wider echo: How would the rest of medicine react? After all, visible media demanded attention and time, while habitual media promised time for patients and medical routines. The central question here was that of the prospective work by doctors. Will a future doctor necessarily work alongside his computer colleague, even being reduced to fulfill its required tasks in the background, while the computer does the actual medical work?

Historically, medical personnel had a lot of choice words for these scenarios, not only because computers – or more precisely their documentation demands – took up an increasing amount of time – so the background concern significantly grew. There is a frequently articulated promise, still recurring to this day, however, that one would ultimately have less interactions with machines if one were only to implement *enough* technology. It is based on the idea that computers are sufficiently knowledgeable at this point to complete routine tasks within treatment procedures, due to the decades of information already fed into the system. This is also occasionally tested in research, for example, through AI image searches to detect symptoms, but it is rarely implemented in treatment. There is of course a cost factor to this, but also a more fundamental concern, which ties back to our initial thought of measuring, caring and faulty data.

If machines do take over routines and tasks, questions of liability and knowledge arise. Here, data bias becomes a central concern. What informs measures and calculations, and who safeguards decisions? Is the future doctor rather an engineer, commanding decision-making machines in decentralized Web3 infrastructures? And if so, what happens to those populations who have historically been discriminated against in the medical data which this infrastructure is based upon? Many doctors argue that machines also cannot yet measure all relevant data. So, I would say we are eventually left with the recurring core value debate of the information age: How do we determine the worth of humans amongst machines? This debate will return with every update, at every moment in which we are made aware of the invisible control of media – and perhaps this is the only certainty we have.

REFERENCES

Aly, Götz, and Karl Heinz Roth. 2019 [1984]. *Die restlose Erfassung: Volkszählen, Identifizieren, Aussondern im Nationalsozialismus*. 3rd ed. Die Zeit des Nationalsozialismus. Frankfurt am Main: Fischer Taschenbuch Verlag.

Chun, Wendy Hui Kyong. 2016. *Updating to Remain the Same: Habitual New Media*. Cambridge, MA: The MIT Press.

Degeling, Jasmin, Maren Haffke, eds. 2021. "Zeitschrift für Medienwissenschaft. Heft 24: Medien der Sorge." transcript. https://doi.org/10.25969/MEDIAREP/15762.

Dotzler, Bernhard. 1993. "Nachrichten Aus Der Früheren Welt – Und Zukunft : Zur Programmierung Der Literatur Mit Und Nach Babbage." In *Computer Als Medium*, edited by N. Bolz, F. A. Kittler, and G. C. Tholen, 39–69. München: Fink.

Galloway, Alexander R. 2006. *Protocol: How Control Exists after Decentralization*. 1st ed. Leonardo. Cambridge, Mass.: MIT Press.

Lea, Andrew S. 2023. *Digitizing Diagnosis. Medicine, Minds, and Machines in Twentieth-Century America*. Johns Hopkins University Press. https://doi.org/10.56021/9781421446813.

Lupton, Deborah. 2016. *The Quantified Self: A Sociology of Self-Tracking*. Cambridge, UK: Polity.

McLuhan, Marshall. 2003. *Understanding Media: The Extensions of Man*. Edited by W. Terrence Gordon. 2nd ed. Corte Madera, CA: Gingko Press.

Nabben, Kelsie. 2023. "Web3 as 'Self-Infrastructuring': The Challenge Is How." *Big Data & Society* 10 (1). https://doi.org/10.1177/20539517231159002.

Schrape, Jan-Felix. 2019. "Technology and the Promise of Decentralization. Origins, Development, Patterns of Arguments." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.3350395.

ABSTRACTS WITH AUTHORS

Media Cultures of Value: Economy, Politics, and Art in Web3

JOHANNES BENNKE AND MIRJAM SCHAUB

MEDIA CULTURES OF VALUE: ECONOMY, POLITICS, AND ART IN WEB3

The recent surge in Bitcoin's value and the emerging of Web3 as a new layer of the internet are reshaping digital infrastructures. While artifical intelligence (AI) dominates current discourse on digital technologies, blockchain technology has quietly influenced finance, governance, and digital ownership, thereby raising questions concerning datafication, decentralization and economic control. The introduction proposes media cultures of value as a framework to think about Web3. With this issue we explore the potential of Web3 to challenge platform capitalism or reinforce user control, examining the various values and ideological tensions that exist among blockchain ecosystems. The blockchain technology, as a networked medium intricately associated with finance, gives rise to different media cultures of value and, in turn, to different forms of digital governance models. Adopting a media studies perspective, this collection critically investigates the cultural, economic, political, and aesthetic implications of blockchain technology, seeking to do so beyond the scope of speculation and hype.

JOHANNES BENNKE AND NATHAN SCHNEIDER

PROTOCOLOGICAL GOVERNANCE: BETWEEN SOVEREIGNTY AND ENTANGLEMENT

This paper proposes the concept of *protocological governance*, an account of the interplay in the enactment of protocols between sovereignty and entanglement. Protocols, understood as patterns that organize interactions among agents, are increasingly central to social and technical systems, ranging from digital networks and climate accords to Indigenous cultural practices. While protocols offer a means of sovereignty through decentralization and resistance to capture by external entities

such as states or corporations, their entanglement with other systems introduces both vulnerabilities and conditions for their usefulness. The paper takes current developments in Web3 as a starting point, clarifies the distinctions between mere protocols and the protocological, and explores how protocols can assert sovereignty while being embedded in social life through a series of encounters in practice between protocols and other systems – in religious and anthropological history, Internet standards, and diplomatic agreements. Drawing on media philosophy, media anthropology, and performativity, the analysis shows how protocols can become tools for generative, relational governance through the tension between sovereignty and entanglement. The paper concludes by introducing the concept of *protocological chiasm*, which describes the dynamic tension between abstract patterns of protocol and their material instantiations, re-introducing the human body as a key element for resistance against capture. Protocological governance thus represents an emergent organizational form with the potential to reshape power structures.

JOHANNES BENNKE

Johannes Bennke, Dr. phil. is a post-doc fellow at the Hermeneutics & Cultural graduate program at Bar-Ilan University in Israel. His current projects are concerned with the future of archives in decentralized networks, media of trust, epistemology of protocols, and the aesthetics of generativity. He received his doctorate at the Bauhaus-University Weimar with a thesis on media philosophy and aesthetics according to Emmanuel Levinas. His research focuses on the philosophy of image and media, aesthetics, ethics and (post-)phenomenologies of digital practices. Since 2022 together with Markus Rautzenberg and Mirjam Schaub, he is co-speaker of the working group media philosophy of the Gesellschaft für Medienwissenschaft. Recent publications: Co-editor of *Levinas und die Künste* (with D. Mersch; transcript 2024); guest editor of *communication +1*, "Media of Verification" (Vol 10, 2023); *Obliteration. Für eine partikulare Medienphilosophie nach Emmanuel Levinas* (transcript, 2023) and *International Yearbook of Media Philosophy. Mediality/Theology/Religion* (with V. Brower; de Gruyter, 2021).

NATHAN SCHNEIDER

Nathan Schneider is an assistant professor of media studies at the University of Colorado Boulder, where he leads the Media Economies Design Lab and the MA program in Media and Public Engagement. He is the author of four books, most recently *Governable Spaces: Democratic Design for Online Life*, published by University of California Press in 2024, and *Everything for Everyone: The Radical Tradition that Is Shaping the Next Economy*, published by Bold Type Books in 2018. He edited Vitalik Buterin's book *Proof of Stake: The Making of Ethereum and the Philosophy of Blockchains* and co-edited *Beautiful Solutions: A Toolbox for Liberation* and *Ours to Hack and to Own: The Rise of Platform Cooperativism, a New Vision for the Future of Work and a Fairer Internet*.

JENS SCHRÖTER

THE PRISON OF THINGS

In a materialist theory a form cannot exist independently from a material support – therefore a social relation, a social form like value must be embodied and materialized. A 'social form' needs a material support or, to be more precise, presupposes a complicated assemblage of materials and processes. Some elements of the media and materiality of value are described. Media are understood as techniques of storage, transmission, processing and representation of information. Which techniques of storage, transmission, processing and representation of information go along with 'value'? The media and materialities that are necessary to stabilize the value of material commodities are put into focus. A whole ecosystem of apparatuses and practices is necessary to perform the value of, let's say, an ordinary apple in a supermarket.

JENS SCHRÖTER

Jens Schröter, Prof. Dr., is chair for media studies at the University of Bonn since 2015. Director (together with Prof. Dr. Anna Echterhölter; PD Dr. Sudmann and Prof. Dr. Alexander Waibel) of the VW-Main Grant "How is Artificial Intelligence Changing Science?" (Start: 1.8.2022, 4 Years); Winter 2021/22: Fellowship, Center of Advanced Internet Studies. Recent publications: *Medien und* Ökonomie, Wiesbaden: Springer 2019; (together with Christoph Ernst): *Media Futures. Theory and Aesthetics*, Basingstoke: Palgrave 2021; (together with Andreas Sudmann et al., ed.) *Beyond Quantity. Research with Subsymbolic AI*, Bielefeld: Transcript. Visit www.medienkulturwissenschaft-bonn.de / www.theorie-der-medien.de / www.fanhsiu-kadesch.de

---

MIRJAM SCHAUB

NFTS AS THE INTERFACE OF CRYPTOCURRENCIES: UTILITY VALUES AND THE ACT OF WASTEFUL SPENDING

Cryptocurrencies are still rarely used as a means of payment. They work all the better as objects of speculation and tax-saving loss models. How new and how credible are the promises of incorruptibility and independence with which NFTs lure us as visual figureheads and supposedly infallible signing procedures for cryptocurrencies?

The banking crisis is assumed to be the political trigger for the emergence of cryptocurrencies in 2008. The success of so-called 'non-fungible tokens' (NFTs) is interpreted as a media-philosophical event. This is because it helps highly speculative cryptocurrencies to become not only visible but also recognizable as a kind of visual interface. The special images generated in the process reflect the self-image of the crypto brothers in an ironically fractured way: hanging out with bored new millionaires self-deprecatingly calling themselves 'monkeys'? The paradox of their new medium has by no means escaped the sworn community: How is it possible that millions are spent on digital images that continue to be used by everyone for free? The essay questions the origin of a counter-intuitive value system that attempts to capitalize every theoretically digitizable grain of sand by the sea with a digital certificate, i.e. to charge it with monetary value. I am interested in dealing with this obvious absurdity. Is absurdity being proactively turned into the pictorial program of NFTs? This seems sorely needed: the technical solution of capitalizing a good that remains non-scarce takes its unobtainability to the philosophical extreme. The ubiquitous and happily unregulated use of digital entities belies the idea of exclusive digital ownership. How to continue selling NFTs as visual figureheads of cryptocurrencies? The way out of the dilemma seems to be the argumentative flight forwards: Of all things, highly volatile cryptocurrencies are said to make us users independent and impervious to the vagaries of finance. How credible is such a promise? Or is this, in the words of George Bataille, precisely what turns every potlatch from crap into a publicly staged self-indulgence, and transform it into new social capital? Does it leave any trace other than that shame is overrated?

MIRJAM SCHAUB

Mirjam Schaub, Dr. phil. habil., is a professor of aesthetics and cultural philosophy at the Department of Design at HAW Hamburg. After studying in Münster, Munich, Berlin and Paris, she completed her doctorate on the philosophy of time as an event philosophy in Gilles Deleuze (2 volumes, at Fink, 2003, plus a separate one on cinema). At the same time, she attended the German Journalism School (DJS) in Munich. She worked as a freelance cultural journalist for taz, SZ-Magazin, Zeit, FAZ and made films for Aspekte (ZDF). In 2005, she co-published the design-award-winning "Walk Book" in collaboration with the Canadian artist Janet Cardiff. In 2009, she habilitated on the sense and nonsense of examples in philosophy and aesthetics (diaphanes, 2010). After stays abroad with the DAAD and the Alexander von Humboldt Foundation in Paris and Edinburgh, she took on substitute professorships at the FU Berlin and the TU Dresden. She also taught for five years as a professor of philosophy at the Burg Giebichenstein University of Art and Design. In September 2025, her monograph "Radikalität. Eine unerhörte Kulturphilosophie" will be published by Felix Meiner Verlag in Hamburg in two volumes.

PAUL SEIDLER

ARTWORK, MARKET AND COMMODITY FORM

The article examines the relationship between NFTs, digital art, and their existence as commodities through three interconnected analyses. In the first step, the article investigates how the ERC-721 standard shapes monopolistic market structures and transforms digital artworks into commodities. Secondly, it explores theoretical questions about artistic labor from a Marxist perspective, particularly examining problems in a value-form based analysis of artworks and questioning whether artistic work can be considered productive labor in the classical Marxist sense. Finally, the article analyzes artistic practices that engage with smart contracts as a medium, proposing a unique convergence of commodity form and artistic expression. The aim of the article is to highlight how this convergence both reinforces the artwork's status as a commodity but how it also creates opportunities for artists to critically examine and reconstruct notions of commodity and value in the artistic production process.

PAUL SEIDLER

Paul Seidler is a Berlin-based artist and researcher whose work traverses networks – from analyzing economic systems to deploying decentralized and peer-to-peer experiments. Seidler is a founding member of terra0, exploring technologically-augmented hybrid ecosystems. Seidler's fascination with multi-agent simulations carries over into his solo artistic practice. His 2022 artwork Straylight Protocol is an on-chain multiplayer game designed to be played with peers, resisting the notion that a crypto-art work's primary vale lies in its potential for speculative financial upside. Seidler has written extensively on the technical affordances of smart contracts as an artistic medium, situating his practice in a longer history of cypherpunk experimentation. His work has been featured in prominent exhibitions and discussions, including the 7th Athens Biennale, Schinkel Pavillion, Transmediale, the 58th Carnegie International, and KW Institute for Contemporary Art.

KATRIN BECKER

NFT FASHION AND VIRTUAL SELF RE-CREATION

This article explores how blockchain technology and NFT fashion challenge traditional frameworks of identity formation. While law has historically served as the primary mechanism integrating both the mental and physical self into institutional orders, blockchain aspires to establish alternative quasi-legal structures, granting

individuals self-sovereignty through Lex Cryptographia. This shift is particularly evident in the realm of NFT-based virtual fashion, where digital aesthetics not only facilitate avatar customization but also reconfigure notions of corporeality and legal personhood. By examining the interplay between aesthetics, law, and self-representation in virtual spaces, this study critically assesses whether NFTs genuinely enable autonomous self-creation or, rather, reinscribe new institutional constraints under the guise of decentralization

KATRIN BECKER

Katrin Becker is a Research Scientist for Law and Culture at the University of Luxembourg and an associate member of the Centre Georg Simmel at EHESS in Paris. Her work combines philosophy with legal, media, and cultural theory, exploring the dialectical interplay between symbolic and imaginary foundations and technological progress, with a particular focus on blockchain technology and the legal and cultural transformations it sets in motion. Drawing on French and German intellectual history, she has worked extensively on Pierre Legendre. Recently, she co-edited an introductory volume on Legendre together with Pierre Musso (*Introductions to the Work of Pierre Legendre*, Manucius 2023 / Velbrück 2024). Previously, she was a research fellow at the Institut d'Études Avancées in Nantes (2018–2019) and at the Weizenbaum Institute in Berlin (2022). She is currently working on her habilitation under the supervision of Prof. Rainer Kiesow at the École des Hautes Études en Sciences Sociales (EHESS).

VIKTORIA HILSBERG

INVISIBLE LABOR, VISIBLE VALUE

Digital art has historically encountered market challenges related to authenticity and reproducibility. This article explores the impact of blockchain technology on digital art's valuation, visibility, and structural organization, emphasizing artistic labor and decentralized networks. Blockchain, through mechanisms like NFTs and smart contracts, offers provenance, secure ownership, and visibility of labor, leading to improved economic recognition. Additionally, DAOs are stabilizing new models for collective involvement in artistic creation and decision-making, redistributing agency among artists and communities. However, this infrastructure also facilitates the commodification of social interaction and cultural value, subjecting artistic labor to speculative market forces and raising concerns about tensions between community-driven art practice and financial speculation. Evolving legal regulations like MiCAR will determine the long-term viability of these frameworks. Thus, blockchain

presents both opportunities and significant risks for a more transparent, equitable, and dynamic art ecosystem, increasing artistic labor's visibility and incorporating collective valuation models.

VIKTORIA HILSBERG

Viktoria Hilsberg is an independent researcher based in Berlin, Germany. As an interdisciplinary lecturer and project manager, she connects contemporary art discourse with technology. In academia and cultural management, she collaborates with institutions such as Martin-Luther-Universität Halle and POSITIONS Berlin Art Fair. Her research, publications, and consultancy focus on blockchain and XR technologies and their applications in the art market, digital culture, and market strategies.

LAURA NIEBLING IN CONVERSATION WITH SEBASTIAN R. RICHTER

ESCAPE FROM THE GLASS PRISON

Medicine as a discipline and work environment has a long and complicated history with its media. In order to function well, communication channels and networks are required, but any medium, that saves, distributes and processes information, infringes on the idea of patient-doctor confidentiality. These problems were amplified, when computers became a relevant new medium in the 1970s.With their new communication scapes came a changing perception of privacy and trust as well as societal discourses that centered around a specific media culture of (medical) values. Some of the ideas first articulated in the 1970s are directly tied to the recent discourses surrounding the Web3, where structural and cultural problems become once again visible alongside the media that require updates and concern. This interview discusses the challenges presented in the history of media networks of communication in medicine and the implications for tomorrow's medical networks, specifically drawing on concepts of self-infrastructuring and the old utopian promise of decentralized media.

LAURA NIEBLING

Laura Niebling is a German media scholar. She is Managing Director of the *Department for Interdisciplinary and Multiscalar Area Studies* at Regensburg University. Her areas of expertise are medical media, net and popular cultures and the methodology of digital media historiography. Her habilitation book, "Als die Medizin ins Netz ging" (When Medicine got Caught up in the Net), on the history of digital medicine

in Western Germany from 1970-2020 is currently under review and is planned for publishing in 2025. Her latest publications include: *Audiowelten* (w. B. Burkhart, A. v. Keeken, C. Jost & M. Pfleiderer, 2021), *Computer und Medizin* (ed. w. T. Kussel & D. Freis, 2022), *Handbuch Digitale Medien und Methoden* (ed. w. F. Raczkowski & S. Stollfuß, 2025).

SEBASTIAN R. RICHTER

Sebastian R. Richter is currently research assistant of Astrid Ensslin at the Department for Interdisciplinary and Multiscalar Area Studies in Regensburg. His PhD-thesis is on coping strategies for failure in video games and existentialism.

LIEFERBARE HEFTE

Kulturen des Kopierschutzes I
Herausgegeben von Jens Schröter, Ludwig Andert, Carina Gerstengarbe, Karoline Gollmer, Daniel Köhne, Katharina Lang, Doris Ortinau, Anna Schneider u. Xun Wang; weitere Beiträger: Stefan Meretz u. Martin Senftleben.
2010 Jg. 10 H.1 - 135 Seiten

Kulturen des Kopierschutzes II
Herausgegeben von Jens Schröter, Ludwig Andert, Carina Gerstengarbe, Karoline Gollmer, Daniel Köhne, Katharina Lang, Doris Ortinau, Anna Schneider u. Xun Wang; weitere Beiträger: Brian Winston, Till A. Heilmann u. Alexander Fyrin.
2010 Jg. 10 H.2 - 138 Seiten

High Definition Cinema
Mit Beiträgen von Jens Schröter, Marcus Stiglegger, Helmut Schanze, Ivo Ritzer, Jörg von Brincken, Benjamin Beil und einem Nachruf für Gundolf Winter.
Herausgeber: Jens Schröter, Marcus Stiglegger
2011 Jg. 11 H.1 - 111 Seiten

Game Laboratory Studies
Mit Beiträgen von Benjamin Beil, Thomas Hensel, Jens Schröter, Philipp Bojahr, Tobias Gläser, Lars Schröer, Gisa Hoffmann, Marlene Schleicher u.a.
Herausgeber: Benjamin Beil, Thomas Hensel
2011 Jg. 11 H.2 - 149 Seiten

Film Körper. Beiträge zu einer somatischen Medientheorie
Mit Beiträgen von Ivo Ritzer, Marcus Stiglegger, Kai Naumann, Julia Reifenberger, Irina Gradinari, Susanne Kappesser, Romi Agel u.a.
Herausgeber: Ivo Ritzer, Marcus Stiglegger
2012 Jg. 12 H.1 - 145 Seiten

I am Error - Störungen des Computerspiels
Herausgeber: Benjamin Beil, Philipp Bojahr, Thomas Hensel, Markus Rautzenberg, Stephan Schwingeler, Andreas Wolfsteiner
2012 - Jg. 12 H.2 - 118 Seiten

Der Medienwandel der Serie
Mit Beiträgen von Dominik Maeder, Daniela Wentz, Gabriele Schabacher, Michael Cuntz, Nicola Glaubitz, Lorenz Engell, Herbert Schwab u. Isabell Otto.
Herausgeber: Dominik Maeder, Daniela Wentz
2013 - Jg. 13 H.1 - 145 Seiten

Vom Feld zum Labor und zurück
Mit Beiträgen von Raphaela Knipp, Johannes Paßmann, Nadine Taha, Anna Brus, Juri Dachtera, Anja Dreschke, Katja Glaser, Matthias Meiler u.a.
Herausgeber: Raphaela Knipp, Johannes Paßmann, Nadine Taha
2013 - Jg. 13 H.2 - 187 Seiten

Pasolini - Haneke: Filmische Ordnungen von Gewalt

Mit Beiträgen von Marijana Erstic, Christina Natlacen, Konrad Paul, Hans J. Wulff, Oliver Jahraus, Uta Felten, Marcus Stiglegger u.a.
Herausgeber: Marijana Erstic, Christina Natlacen
2014 - Jg. 14 H.1 - 130 Seiten

50 Jahre Understanding Media

Mit Beiträgen von Jana Mangold, Florian Sprenger, Barbara Filser, Till A. Heilmann, Rembert Hüser, John D. Peters, Nina Wiedemeyer u. Marshall McLuhan.
Herausgeber: Jana Mangold, Florian Sprenger
2014 - Jg.14 H.2 - 124 Seiten

Medien der Kooperation

Mit Beiträgen von Erhard Schüttpelz, Sebastian Gießmann, Susan Leigh Star, Heinrich Bosse, Kjeld Schmidt, Mark-Dang Anh, Ilham Huynh u. Matthias Meiler.
Herausgeber: AG Medien der Koperation
2015 - Jg.15 H.1 - 148 Seiten

Von akustischen Medien zur auditiven Kultur
Zum Verhältnis von Medienwissenschaft und Sound Studies

Mit Beiträgen von Bettina Schlüter, Axel Volmar, Rolf Großmann, Maren Haffke, Felix Gerloff, Sebastian Schwesinger, Lisa Åkervall u.a.
Herausgeber: Bettina Schlüter, Axel Volmar
2015 - Jg.15 H.2 - 164 Seiten

Playin' the City
Artistic and Scientific Approaches to Playful Urban Arts

Mit Beiträgen von Judith Ackermann, Andreas Rauscher, Daniel Stein, Miguel Sicart, Martin Reiche, Michael Straeubig, Sebastian Quack u.a.
Herausgeber: Judith Ackermann, Andreas Rauscher, Daniel Stein
2016 - Jg.16 H.1 - 182 Seiten

Medienwissenschaft und Kapitalismuskritik

Mit Beiträgen von Christian Siefkes, Christoph Hesse, Christine Blättler, Martin Doll, Jens Schröter, Till A. Heilmann, Andrea Seier u. Thomas Waitz.
Herausgeber: Jens Schröter, Till A. Heilmann
2016 - Jg.16 H.2 - 165 Seiten

Medienpraktiken
Situieren, erforschen, reflektieren

Mit Beiträgen von Mark Dang-Anh, Simone Pfeifer, Clemens Reisner, Lisa Villioth, Anna Lisa Ramella, Christian Meyer, Christian Meier zu Verl, Raphaela Knipp, Christoph Borbach, Erhard Schüttpelz u. Andreas Henze.
Herausgeber: Mark Dang-Anh, Simone Pfeifer, Clemens Reisner, Lisa Villioth
2017 - Jg. 17 H.1 - 169 Seiten

Medien, Interfaces und implizites Wissen

Mit Beiträgen von Christoph Ernst, Jan Distelmeyer, Timo Kaerlein, Thomas Christian Bächle, Peter Regier, Maren Bennewitz, Regina Ring, Sabine Wirth u. Jens Schröter.
Herausgeber: Christoph Ernst, Jens Schröter
2017 - Jg. 17 H.2 - 155 Seiten

Queer(ing) Popular Culture

Mit Beiträgen von Daniel Stein, Uta Fenske, Florian Krauß, Joanna Nowotny, Rebecca Weber, Tim Veith, Joanna Stàskiewicz, Andreas Rauscher, A. Benedict Wolf u. Sebastian Zilles.
Herausgeber: Sebastian Zilles
2018 - Jg. 18 H.1 - 181 Seiten

Medienindustrien
Aktuelle Perspektiven aus der deutschsprachigen Medienwissenschaft

Mit Beiträgen von Florian Krauß, Skadi Loist, Nathalie Knöhr, Marion Jenke, Pablo Abend, Andy Räder, Kiron Patka, Elizabeth Prommer, Thomas Wiedemann u. Tanja C. Krainhöfer.
Herausgeber: Florian Krauß, Skadi Loist
2018 - Jg. 18 H.2 - 199 Seiten

Immersion
Grenzen und Metaphorik des digitalen Subjekts

Mit Beiträgen von Thiemo Breyer, Dawid Kasprowicz, Rainer Mühlhoff, Theresa Schütz, Franziska Winter, Christiane Heibach, Jan Torpus, Andreas Simon u.a.
Herausgeber: Thiemo Breyer, Dawid Kasprowicz
2019 - Jg. 19 H.1 - 146 Seiten

Neue Rechte und Universität

Mit Beiträgen von Jens Schröter, Clemens Knobloch, Friedemann Vogel, Erhard Schütz, Nadine Taha, Carolin Wiedemann u.a.
Herausgeber: AG Siegen Denken
2019 - Jg. 19 H.2 - 166 Seiten

Spiel|Material

Mit Beiträgen von Claudius Clüver, Max Kanderske, Timo Schemer-Reinhard, Finja Walsdorff, Felix Raczkowski, Judith Ackermann, Pablo Abend u.a.
Herausgeber: GamesCoop
2020 - Jg. 20 H.1 - 199 Seiten

Filter(n) - Geschichte Ästhetik Praktiken

Mit Beiträgen von Theresia Bäcker, Jasmin Kathöfer, Christian Schulz Hartmut Winkler, Monique Miggelbrink, Ilka Becker, Till A. Heilmann, Golo Föllmer u.a.
Herausgeber: Theresia Bäcker, Jasmin Kathöfer, Christian Schulz
2020 - Jg. 20 H.2 - 198 Seiten

Multispecies Communities

Mit Beiträgen von Ina Bolinski, Stefan Rieger, Clara Mancini, Hanna Wirman, Fredrik Aspling, Jinyi Wang, Oskar Juhlin, Jens Hauser, Jussi Parikka, Martina Szopek u.a.
Herausgeber: Ina Bolinski, Stefan Rieger
2021 - Jg. 21 H.1 - 262 Seiten

Zukünftige Medienästhetik

Mit Beiträgen von Tilman Baumgärtel, Karel Dudesek, Christoph Ernst, Jens Schröter, Sabine Flach, Carolin Höfler, Marius Goldhorn u.a.
Herausgeber: Jens Schröter, Tilman Baumgärtel, Christoph Ernst, Anja Stöffler
2021 - Jg. 21 H.2 - 200 Seiten

Navigieren
Zugänge zu Medien und Praktiken der Raumdurchquerung

Mit Beiträgen von Christoph Borbach, Max Kanderske, Susanne Müller, James R. Akerman, Manfred Pfaffenthaler, Asher Boersma, Karina Kirsten, Stefan Höltgen u.a.
Herausgeber: Christoph Borbach, Max Kanderske
2022 - Jg. 22 H.1 - 272 Seiten

Unfälle. Kulturen und Medien der Akzidenz

Mit Beiträgen von Dominik Maeder, Christoph Ernst, Florian Sprenger, Julia Bee, Felix Hüttemann u.a.
Herausgeber: Dominik Maeder
2022 - Jg. 22 H.2 - 186 Seiten

Tech|Demo

Mit Beiträgen von Julia Eckel, Christoph Ernst, Claude Rosental, Jordan Gowanlock, Canan Hastik, Katharina Rein, Sven Grampp, Jens Schröter u. Mareike Meis.
Herausgeber: Julia Eckel, Christoph Ernst, Jens Schröter
2023 - Jg. 23 H.1 - 134 Seiten

Tech|Imaginations

Mit Beiträgen von Christian Schulz, Jens Schröter, Christoph Ernst, Martin Doll, Felix Hüttemann, Agnieszka Jelewska, Michał Krawczak, Özgün Eylül İşcen u.a.
Herausgeber: Christian Schulz, Jens Schröter, Christoph Ernst
2023 - Jg. 23 H.2 - 194 Seiten

Musical|Medien

Mit Beiträgen von Laijana Braun, Jasmin Kathöfer, Heike Klippel, Lukas Foerster, Eva Theresa Beck, Sebastian Matthias, Sebastian Stoppe u.a.
Herausgeber: Laijana Braun, Jasmin Kathöfer
2024 - Jg. 24 H.1 - 208 Seiten

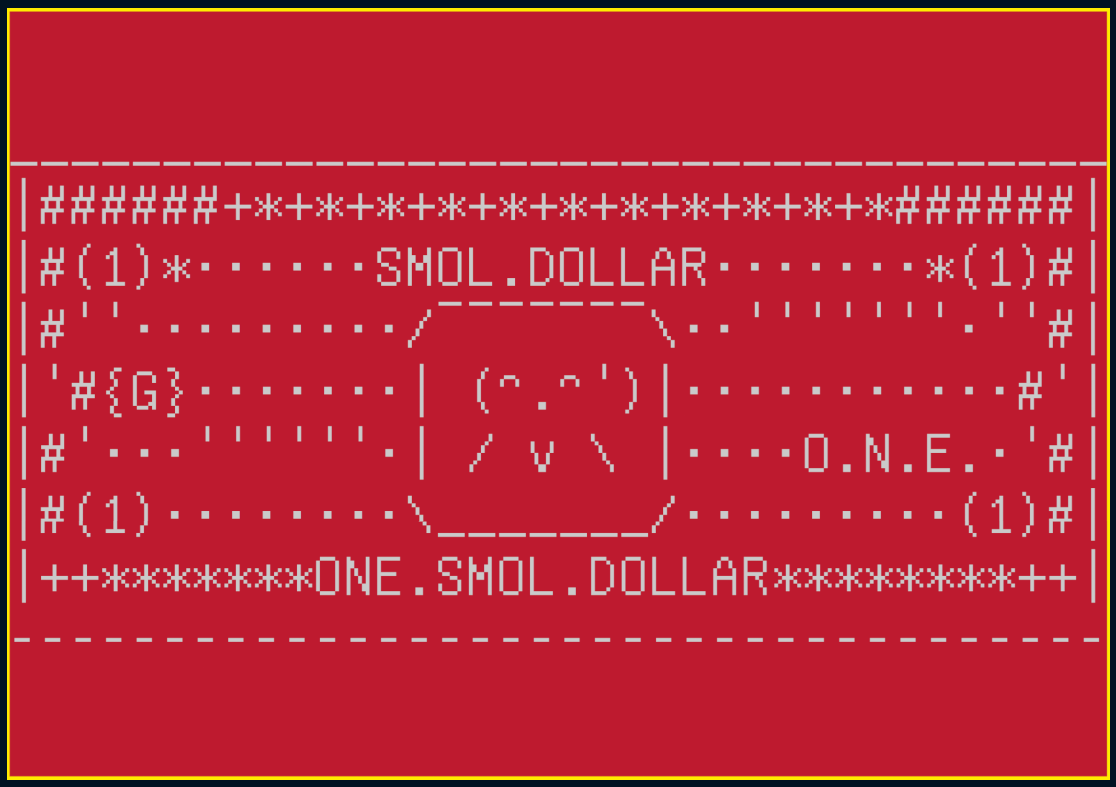
Liefern. Logistiken, Daten und Politiken

Mit Beiträgen von Miglė Bareikytė, Julia Bee, Gerko Egert, Armin Beverungen, Hannah Wiemer, Michelle Pfeifer, Patricia Ward u.a.

Herausgeber: Miglė Bareikytė, Julia Bee

2024 - Jg. 24 H.2 - 210 Seiten

Values don't just fall from the sky. They are shaped by media, infrastructure, and social practices. With new protocols and media objects – such as smart contracts, cryptocurrencies, and NFTs – Web3 not only extends platform capitalism but also redefines value, labor, and community. While these technologies reinforce proprietary markets and corporate governance structures, they simultaneously open up alternative new ways of organizing life, challenging traditional economic and social models. This issue builds on the hybrid workshop "Digital Biedermeier – or Radical Democratic Utopia? NFTs as Interfaces of Cryptocurrencies", organized by Johannes Bennke at the Humboldt University Berlin and Mirjam Schaub at University of Applied Sciences (HAW) Hamburg in October 2023. The issue brings together eight contributions by media scholars, artists, and curators who examine different media cultures of value – exploring protocols, infrastructures, labor, NFTs, art, and political stakes of Web3 governance.



universi
UNIVERSITÄTSVERLAG SIEGEN