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Deciphering Digital Dreams: A Critical Study of Blockchain and Green Finance

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Abstract

This dissertation explores the role of blockchain technology in the landscape of contemporary capitalism, with a particular focus on KlimaDAO, a Decentralized Autonomous Organization (DAO) that wanted to scale carbon markets. The initial enthusiasm surrounding this initiative followed a series of accusations and scandals that, however, didn't shut down the project.

The study is situated at the intersection of economic anthropology and technology, offering a critical examination of how digital innovations like blockchain intersect with financial practices and societal norms.

At its core, the research investigates the symbolic and practical implications of technologies and carbon markets, challenging orthodox notions of finance and environmentalism: by examining KlimaDAO this dissertation provides an anthropological lens on the complexities and paradoxes inherent in the convergence of technology, finance, and environmental initiatives. Furthermore, current gaps in socio-anthropological literature surrounding carbon markets and blockchain are identified and addressed.

The methodology integrates a multidisciplinary approach, combining qualitative research methods such as participant observation and interviews with key stakeholders in the blockchain and carbon market sectors, complemented by a comprehensive review of relevant literature spanning economic anthropology, technology studies, and environmental finance. The research presents a nuanced yet critical understanding of the motivations and aspirations of cryptocurrencies' enthusiasts and experts.

What emerges is how these actors embody and repeat many orthodox standpoints and ideas, even if they are seen and see themselves as the carriers of new socio-economic forms, thus helping the reproduction of current capitalism as we know it. From this point of view, carbon markets and cryptocurrencies resemble each other: they are both praised and adopted by a growing quantity of economic players despite their numerous drawbacks.

My findings suggest that behind their success don't lay mere monetary reasons, crypto are not only "get-rich-quick" schemes nor green finance is just greenwashing, but there's a more profound connection with the symbolical, mythological and epistemological orders governing everyday life of capitalism.

First Part: Theory

Introduction

On March 2023, I read on Twitter a thread exposing the founders and the leading developers behind the project I was studying; a few reports highlighting its ambiguous practices had already been published on some websites, static platforms where the dialogue with the author is all but fast-paced. On the other hand, *Twitter* is characterized by short conversations engaging authors and readers. In a now-deleted, seventy-tweet-long thread, the author denounced how the DAO (Decentralized Autonomous Organization) I was studying was a giant Ponzi scheme, defrauding not only investors but the very techno-utopian promises of fighting climate change through technology they believed in; founders and many other users vigorously negated every accusation, while others doubled-down initial accusations. No more than a few days later, however, everything was deleted. A couple of months after, during an encrypted video call on *Signal*, an anxious voice and a nervous body told me about the subsequent Twitter *shitstorm*, the threats toward their family, and a possible lawsuit coming from multimillionaires; a *Reuters* journalist I interviewed confirmed the shadowiness surrounding these new forms of blockchain-based green finance, and how many people in Brazil and Indonesia ended up hurt by this DAO because of the immense negative backlash received to the carbon offset market. A few months earlier, I observed in real time the spectacular multi-billion failure of TerraUSD, Celsius, and FTX, before which Bernie Madoff and the 2008 subprime crisis would bow. Then, I realized that I had studied something more significant than I had expected, and I had to widen my point of view.

I realized that my research could shed light on many aspects of contemporary capitalism since it is strictly related to the economic trend characterizing 2021-2022 and the general socio-economic tendencies we have witnessed for a few decades; at the same time, it was about the techno-financial mechanisms we have been using the numerous socio-environmental crisis ensued in the last decades.

It was thus necessary to widen my focus and get more elements inside the picture. KlimaDAO is also part of a bigger story, the story of the dreams and the nightmares characterizing investors in an economic bubble: the DAO went from zero to a billion-dollar market cap - more than the entire voluntary carbon market it was depending upon - in a few months, just to crash to almost zero in a few weeks; however, it is still

alive, the token is still traded and expanding its activities, launching new products and partnerships, despite journalistic investigations and lawsuits.

The project's original idea was to issue a cryptocurrency, KLIMA, backed by retired carbon credits, with an ingenious system of incentives based on the prisoner dilemma game. From its *all-time high*, the token lost about 99,98% of its value, going from 3'500\$ to a couple of dollars. Its story, then, is a story of a concluded economic cycle, where there are clearly (a few) winners and (many) losers; this work, however, aims to be a scientific work, not a fiction. There are no well-defined “good guys” and “bad guys” or a moral lesson, nor is it possible to cast a single conclusion; an unexpected shift in the events at the very last minute further confirmed that. I was not interested in drawing lines or casting judgments but in answering a simple yet complicated question: *why* did all that happen?

This thesis was meant to be about ideas of rationality deployed by markets and technology but ended up describing sweet dreams and abrupt awakenings by regular people and skilled investors. Dreams, however, embed chunks of reality and our innermost desires, and they have an irrefutable link with our day-to-day living; they have an inner rationality, although they cannot be labeled as “scientific” or replicated in a laboratory. In his *The Interpretation of Dreams*, Freud (2015) proposed that dreams represent unfulfilled wishes or desires that are repressed from our conscious awareness. Their content originates from our repressed unconscious thoughts, desires, and memories from daily life, and often appear in symbolized forms. During nights, Freud argues, the unconscious mind attempts to fulfill wishes and unfulfilled desires from waking life; at the same time, dreams can represent unresolved traumas and emotional conflicts, constituting a safe way to engage with those unfinished affairs. According to the Freudian analysis of dreams, the latter offer a glance to understand everyday struggles, desires and conflicts. KlimaDAO, in this sense, can be properly described as a dream. On the one hand, it was an impossible attempt to conjugate environmental protection and financial speculation thanks to technology, a dream indeed, something that could only work on a highly hypothetical scenario: it could work only in the imaginary, oneiric plane. But on the other hand, it was grounded on daily, concrete experiences and desires; climate change worries most of the population, as well as the desire for more money. Technological devices are perceived as superior to human judgements, and official

resolutions against climate change often stress their role in this struggle. KlimaDAO represented and symbolized all these aspirations and desires of contemporary capitalism, and the spectacular crash of its cryptocurrency “Klima” spot price probably best epitomizes the conflictual nature of such wishes. [Digital metallism]

This thesis shows how the methods and practices mobilized by our societies to solve our desires and anxieties can only work on in digital, nocturnal environments, like dreams. The practical, daily experience stand in opposition.

I want to advise the reader that this work is not going to be the “typical” anthropological research, where the scholar is sent exploring the Otherness in a remote area, in the sense of exploring a place geographically or culturally distant from a university department; most of the material of my study is located on the internet, almost all of the interviews were made through apps and those I did in person where in the corridors of universities or during events. This means that there are going to be very few interesting personal anecdotal comments or quirky remarks to make the narration more pleasant for the reader, nor can I report peculiar sensations from almost digital fieldwork, besides a general worsening of my back pains and eyesight due to long hours in front of a screen.

However, the physical distance imposed by a digital ethnography allows the researcher to see without being seen, almost reproducing the participant observation in its ideal form; I am not writing these lines to complain, but rather the opposite: by almost “disappearing” I hope I delivered a more “objective”¹ work, something I genuinely believe in. If I reached my objectives, dear reader, it is, of course, up to you.

My ideals of scientific objectivity collide with my case study. If I look back at how my case study developed, I cannot but think about how the 2020-2021 crypto bull run was characterized by a surreal aura that can be hardly described objectively and, at the same time, the same conditions replicated, even if this constitutes a problem for all social sciences. We saw the rise and the fall of NFTs (non-fungible tokens),

¹ Given the enormous debate on the role of the anthropologist and the objectivity of the anthropological encounter, quotation marks are necessary.

blockchain-timestamped images being auctioned for up to millions of dollars in 2021 while being traded for a few hundred dollars just a couple of years later; we saw the rise and the fall of Sam Bankman-Fried, lauded by mainstream media as a prodigious child that would use the immense fortune made by his cryptocurrencies' exchange to make the world a better place through philanthropy, that, however, actually lost billions of costumers savings by committing financial fraud.

KlimaDAO resembled a dream, too, a reverie of coupling a greener future for the planet and prosperity for every investor that turned into an illusion too hastily so that many are still dreaming of it. Only an oneiric metaphor can describe a project that moved billions of dollars in a few weeks trying to leverage the small-sized Voluntary Carbon Markets (VCM) just to crash in a few days; and yet, despite scandals and journalistic enquires, it managed to survive and attract capitals after more than one year; it does not look real. I want to state initially that this does not mean that KlimaDAO participants were foolish or irrational people whom some scam artists deceived, but rather the opposite. As stated before, dreams symbolize "real" experience. The DAO worked and kept operating because it reproduced specific ideas embraced by our society at large, thus having clear correspondences in the "real" world, and, using Hegel, we can state that the whole process was, in the end, rational.

I realized that my project would not work if I adopted many epistemological standpoints characterizing anthropology since the "reflexive turn" (mainly, the abandonment of a broader theoretical analysis), and I instead tried to be as objective as possible even if that meant some cases, playing "devil's advocate." To say it better, I had to put aside my beliefs: using moral categories and judgments means adopting a peculiar and situated point of view, something that would not have let me untangle the variety of facts behind such controversial topic. I am not advocating for a return of specific functionalistic ideas on anthropology or of the Weberian idealistic researcher, rather than subsuming a truly postmodernist stance into the research; if post-structuralism's impact on epistemology can be summed as doubting and questioning researchers' position and beliefs, this also means departing from many notions we give for granted. As we will see, current works on the blockchain are incredibly polarized, resulting in a partial knowledge of this phenomenon.

The eerie scenario I faced provided an interesting epistemic starting point. For this dream to continue, daily experiences to feed on are needed. KlimaDAO relies upon three hegemonic discourses: money and economic profits, climate change, and the use of technology to address societal problems. We are constantly exposed to such themes, and even if their precise influence on our actions and aspirations can hardly be measured, we can infer they have one. They are the background noise that can be heard on social media and newspapers, that KlimaDAO encoded and brought to the forefront. It embodies all these themes in its very design, showing us how it is almost impossible to draw lines between them in contemporary capitalism and forcing us to rethink many of the categories and the definitions we give for granted. A deeper analysis will reveal how it constitutes the clear manifestation of discourses and ideas characterizing the development of modern socio-economic formations: its study represents a unique occasion to analyze our society from a peculiar standpoint.

The thesis is going to be structured in this way. In the course of the first section, we are going to expose how KlimaDAO intertwines with many key assumptions of economic anthropology; furthermore, it will provide us the chance to rethink or, at least, to reframe many standpoints of our discipline, like the construction of markets, accountability, responsibilities and, above all, magic and fetishism: such themes will permeate the rest of the manuscript, they are the lens through which I approached this research, and I feel necessary to introduce them to the reader. This section can be seen as a long introduction, where the reader is introduced to the theoretical framework and the ethnography.

The second section will be devoted to KlimaDAO itself; a chapter will consist of an extensive literature review on the blockchain: despite being a multifaceted topic, I think the right angle to observe it is from the technological perspective. Furthermore, blockchain embeds many political, anthropological, and economic questions, so its exploration represents a unique chance to observe how different phenomena are strictly related. As it will emerge, a comprehensive, theoretically and ethnographically sound investigation of blockchain's application has never been done in anthropology. The other chapter will analyze KlimaDAO in-depth, reconstructing its development through interviews and documental analysis of its first 18 months. In particular, the reasons driving people to invest, the controversies regarding the quality of its credits, and the shadowy trades of its founders will be explored; the concepts highlighted in

the previous section will be deployed here to frame them in a theoretically sound structure.

Drawing from the first two parts, further theoretical considerations will be elaborated in the last section, exposing the reader to the profound theoretical richness of KlimaDAO and blockchain in general. Indeed, the philosophical and sociological premises upon which blockchain and DAOs were built became the center of one of the biggest financial frauds ever: I am talking about Sam Bankman-Fried (SBF) and the collapse of the crypto-exchange FTX, which happened during my research.

Altruism and the trust in technology and finance were crucial for building the narrative sustaining his empire, themes central in KlimaDAO too; even if tangential to our case study, there are so many similarities that SBF rise, and fall cannot but be included in the present work. It seems that we cannot talk about blockchain without talking about morality or economy at large: the other chapters will be devoted to understand the political economy and the moral economy implications of the blockchain.

In short, facing an inherently complex theme, rather than prioritizing a standpoint, I decided to embrace this wholeness, showing how all the different aspects are inherently linked. This thesis is then an homage to Marcel Mauss' intellectual heir.

What I found intellectually stimulating through all my enquire was how I was led to rethink many assumptions I gave for granted. KlimaDAO's inner complexity prompts us to notice the subterranean connections between fields that we thought were distant. In this section, we will shortly see how new forms of green investing can help us revisit and give new life to old anthropological disputes.

If "getting rich" is undoubtedly the message behind the discourse all populations who lived in a capitalist economy experienced the most, so that it played a role in KlimaDAO's success, it is not less accurate that in the last decades, the alarming messages from scientists and activists about rising levels of carbon in the atmosphere gained tremendous popularity among the general population.

Environmental credentials played a foremost role in legitimizing the project, even if it runs on the blockchain, a technology usually depicted as a libertarian pollutant device. Its launching time was, in fact, exceptionally fortuitous: it debuted in October 2021, just before the peak of the 2020-2021 bull market and the *2021 United Nations Climate Change Conference* (or COP26). In this meeting, leaders and delegates

from over 190 countries discussed how to reduce greenhouse gas emissions and limit global warming; the resulting *Glasgow Climate Pact*,² moving along the aims and the means traced by the Paris Agreement (2015), underlined the role of carbon markets and green finance to limit the global temperature increase to 1.5 °C above pre-industrial levels. At the same conference, the *Blockchain for Climate Foundation* launched the BITMO Platform to “put the Paris Agreement on the blockchain,” providing Paris Agreement signatories a blockchain infrastructure to exchange their carbon credits.

Even if results obtained by large international bodies and conferences might be questionable, their very presence undoubtedly had a performative effect (Austin 1975), bringing climate awareness to the front page of newspapers and fueling uncountable online discussions. This sensibility toward rising temperatures nowadays is shared by large swaths of the population; according to 2021 UNDP’s *The Peoples’ Climate Vote*,³ the largest poll ever conducted on climate change, most of the worldwide population believes in anthropogenic climate change, it is worried by the phenomenon and thinks more action is needed to stop this danger.

These stances are reflected in the economic sphere by various market actors, and many investors in KlimaDAO showed a certain climate awareness, too. Despite current conflicts and polarization on climate (Ulver 2022), environmental consciousness increasingly characterized consumer and brand behaviors starting from the turn of the millennium (Holt 2002; Kozinets and Handelman 2004). It has been furthermore noted how climate awareness drives anti-economic behaviors (Delgado, Harriger, and Khanna 2015; Griskevicius, Tybur, and Van den Bergh 2010; Sexton and Sexton 2014): people are willing to pay a premium or get lower-quality commodities if they are “green”, if they can signal their status of environmental-conscious people so that they can be recognized as virtuous and ethical people by their peers. Given the relevance of climate for the majority of world population, we can infer that now the group of peer coincide with (almost) all the society. In an apparent paradox, capitalism's development and expansion downgraded the role played by rational utility-maximizing behavior according to

² <https://unfccc.int/process-and-meetings/the-paris-agreement/the-glasgow-climate-pact/cop26-outcomes-market-mechanisms-and-non-market-approaches-article-6#COP26:-what-did-countries-agree-with-regard-to-mar>

³ <https://www.undp.org/publications/peoples-climate-vote>

neoclassics while “bringing back” attitudes anthropologists attributed to pre-capitalistic formations.

Distinction, status-seeking, and leisures - unproductive and irrational activities opposing standard description of capitalism since Mandeville and Adam Smith - seem to be central in a world where market relationships permeate almost every aspect of life: rather than Weber’s rationality, Veblen’s conspicuous consumption better describe the present. We will return to this point later during the research. For now, we can use this assumption to make another theoretical remark. In fact, the conflation of different spheres of value characterizing these new politics of consumption (Micheletti and Stolle 2012) and the rise of green finance (Berrou, Dessertine, and Migliorelli 2019) can be seen as a starting point to reframe and twist the old substantivist-formalist debate (C. Hann and Hart 2011); in short, they were both right and wrong.

Formalism, Substantivism and Neosubstivism Today

This theoretical debate among these opposing views emerged in the 1950s and 1960s and regarded the nature of economic systems in non-Western societies. Substantivists like Karl Polanyi and his epigones argued that non-Western societies had fundamentally different economic systems than those in the West, based on social relationships and cultural values rather than on rational economic principles; these economies were embedded the societies: the economic activity was predominantly guided according to non-economic principles of redistribution - where goods and services are produced and exchanged according to a central authority - and reciprocity - where they were exchanged and produced according to mutual obligations like gift-giving; markets - where commodities are produced and exchanged according to supply and demand and trades settled through money - had a marginal role. Only in contemporary capitalism production is *dis-embedded* from society and regulated only through impersonal market mechanisms.

Formalists like Raymond Firth, on the other hand, argued that economic systems in non-Western societies were fundamentally similar to those in the West: individuals are seen as rational actors who seek to maximize their utility/satisfaction given scarce resources; they could be analyzed using neoclassical economics and its mathematical models of supply, demand, and equilibrium prices.

This debate lost its foremost role back then; however, after the 2008 crisis, economic

anthropology looked back especially to Polanyi (C.M. Hann and Hart 2009) to explain the failure of the contemporary financial system and propose alternatives. The Hungarian scholar, in his seminal work *The Great Transformation* (Polanyi 1957), denounced how economic liberalism “forgot” the existence of a wider society, how the economy became *dis-embedded* from it, and how this constituted an exception in the history; whenever an economic actor tried to pursue a never-ending profit-quest and hoarding vital resources, societies always reacted to balance these forces and limit their dangerous influence to preserve the existence and the reproduction of the social group as a whole. He dubbed this phenomenon as “double movement”. This book was written during the Second World War, and its author reflects on how XIX century unfettered liberalism brought the war, the crisis, and the fascist regimes in the XX century, proposing a profound reformation of market mechanisms (and not their abolition). The French ethnographer Marcel Mauss proposed similar socialistic ideas, as we will see.

More than a decade after the subprime crisis and after the broad adoption of devices like ESG metrics, impact investing, and the carbon market, we cannot see any more capitalism as moved only by impersonal markets: they embodied and pursued non-economic values. This new wave of financialization⁴ seems to mark a turning point in the history of neoliberalism: market mechanisms and actors are called to administrate not only political and administrative tasks but also, in a decisive step forward to consolidate their power, to allocate resources toward moral issues. Economic sociology has long noticed these patterns. For example, Granovetter (1985) famously stressed the role of non-economic, social factors behind economic actors’ choices, forcing adjacent disciplines to question many of their assumptions, inaugurating a strain of research called *neosubstivism*. However, the economic trends I observed seem to present a *qualitative* difference that forces us to problematize and question their relationship with the broader moral and historical issues surrounding them. The modern economy, because of the role played by the financial sector, *embeds* and reproduces broader societal, moral, and historical values - even if coupled with and subjected to the never-ending research of profits proper of capitalism - so that it is nowadays hard to draw a line between economic

⁴ I employ this term using the definition given by Lapavitsas (2013) to indicate the ever increasing use of financial instruments by non-financial institutions

sector and non-economic sector.

The fall of boundaries has a corollary, too. If substantivists were right in affirming the role of non-economic factors, formalists were right in affirming that we can study non-capitalistic subjects using concepts deployed to study modern economies. This does not necessarily expand *homo oeconomicus*' rationality to everybody, instead it means fully embracing the universalistic premises used by formalists, since we just affirmed that boundaries are not existing.

Clearly, I am not the first one hinting at this direction and proposing a vast and encompassing redefinition of what we mean by "economy". Moving from a Marxist perspective, the French anthropologist Maurice Godelier (1986) framed economy as a way human groups relate with the environment to sustain and reproduce themselves, a definition similarly adopted by a strain of social scientists like Alf Hornborg (2011) and Andreas Malm (2018). A definition of the economy that puts the natural world at the very center is of the utmost importance not only for a work analyzing the intersection of the two but also because, in an era of environmental crisis, it can help us overcome the cultural effects of the commodity fetishism, the distance imposed by the capitalistic system between laborers and the surrounding world⁵.

Curiously, notions of economy focusing not on the material outcome of the economic process or the self-fulfilling research of profits can be found in different subjects and schools of teaching. Many scholars seem to agree on these more profound aspects of the economy. For example, the classical Mengerian marginalist definition of economy sees the latter as a system in which individuals decide to satisfy their wants and needs⁶. This reasoning that we might call "economic" differentiates us from other living beings.

In *The Capital*, Karl Marx (2004: 284) famously noted that "what distinguishes the worst architect from the best of bees is that the architect builds the cell in his mind before constructing it in wax. At the end of every labour process, a result emerges

⁵ "Orthodox" interpretation of Marxian works often overlook the role assigned to the natural world by the German philosopher, and marxism is sometimes reduced to its productivist aspects, thus opposing the environmental question. However, as J.B. Foster, Clark, and York (2011) has shown, the notion of *alienation* encompasses also the relationship between men and nature, and not only with the means of production: environmentalism and marxism are not in opposition, rather they complete each other.

⁶ The Austrian school is also called the "Psychological school"

which had already been conceived by the worker at the beginning, hence already existed ideally". Each human action is the final result of an idea, something that, if we abandon platonism, is the consequence of our daily experiences; we differ from animals because we can first imagine what we want to achieve: this is the *differentia specifica* of our species according to our specie according to philosophers and biologists (Malm 2018, 63)⁷; indeed, the word creativity entails an intangible and tangible aspect, showing how "the mental and the material" (Godelier 1986) are necessarily correlated. This allows us to glimpse similarities behind rational and irrational modes of actions, finding the similarities between economy and religion since both address our innermost desires (Schwarzkopf 2020, 65).

This lengthy excursus was needed because of the peculiar nature of KlimaDAO and to show the reader the lens I used to observe it. Culture, politics, environment, economy, and morality are deeply enmeshed, and they cannot be isolated but put in a dialectal relationship with each other. Therefore, this work will explore many themes beyond KlimaDAO because the nature of the subject forces the researcher to provide a complete account of it, reinventing the *neosubstantivist* approach. Or rediscovering the anthropological method, according to the lesson of Marcel Mauss: "Above all, it is essential to draw up the largest possible catalogue of categories; it is essential to start with all those which it is possible to know man has used. It will be clear that there have been and still are dead or pale or obscure moons in the firmament of reason" (Mauss and Brewster 1979, 32).

The conflation of economic and non-economic spheres found in green finance and impact investing strongly characterized my case studio and, more broadly, the whole crypto-economy; even if those activities did not lead to any material output and their claimed use-value is questionable, they cannot but be defined as economic. Or, to say it better, KlimaDAO created at least a tangible output, carbon emissions. Its precise quantification remains hard to define. Blockchains, especially those using a Proof-of-Work protocol, have been heavily criticized for their energetic consumption; this matter will be explored further on. Going back to KlimaDAO's carbon

⁷ This proposition is not unanimously shared. For example, post humanists and philosopher adhering to ANT (actor-network theories) principles attribute agency to non-human actors too.

consumption, it should be noted that it runs on the Polygon blockchain, a Layer 2 blockchain⁸ running on Ethereum; even if Polygon always claimed to have a negligible energetic and environmental impact⁹, Ethereum did not, at least until “the Merge”, the name given to the update that transformed Ethereum in a Proof-of-stake blockchain. As we will see, this validation mechanism requires a fraction of the computational energy required by PoW, the protocol used, among others, by the Bitcoin blockchain. In this way, each transaction requires a sensible lower amount of computational power, even if the overall consumption might have increased because the entire Ethereum ecosystem became more complex¹⁰.

Between its launch date and the Ethereum upgrade to PoS, on 15th September 2022, the Klima token registered more than two million transactions¹¹; according to the scholar Alex de Vries¹², each Polygon transaction on the Proof-of-work Ethereum network emitted around 400 grams of CO₂: KlimaDAO generated around 800 tons of carbon dioxide. After “the Merge”, around 500'000 transactions were registered. Yet, those raw estimations of carbon emissions should be taken with a grain of salt: these 800 tons represent an estimation in a *baseline scenario* where a sum equivalent to the total volume generated by these transactions had been settling idle all the time, in paper money or cheques. Blockchains have been extensively criticized for their energetic consumption, as we will explore further on; however, this point appears to me as secondary. Cryptocurrencies are mostly used for financial speculations and transactions, activities that “TradFi” (*traditional finance*) carries out as well. The socio-technical apparatus constituted by accountants, managers, consultants, VPs, CEOs and so on does have a carbon impact; it is highly possible that without cryptocurrencies, carbon emissions generated by the financial apparatus would exist as well. As we will see, the calculations surrounding carbon emissions and compensations entail a certain degree of arbitrariness.

It remains an open question if this project generated any other impact. In the end,

⁸ A layer 2 blockchain is a secondary network built on top of an existing blockchain to handle transactions faster and cheaper.

⁹ <https://www.bloomberg.com/news/articles/2022-02-02/polkadot-has-smallest-carbon-footprint-crypto-researcher-says>

¹⁰ <https://www.forbes.com/sites/digital-assets/2023/10/11/one-year-after-the-merge-sustainability-of-ethereums-proof-of-stake-is-uncertain/>

¹¹ <https://polygonscan.com/advanced-filter?tkn=0x4e78011ce80ee02d2c3e649fb657e45898257815&txntype=2&age=2021-10-12%7e2022-09-15>

¹² <https://digiconomist.net/the-carbon-footprint-of-polygon/>

dreams remain dreams, experiences situated behind the conscious daily life. They are real and surreal at the same time. For sure, KlimaDAO changed the life of those working on it, as shown at the beginning of the chapter, and how it will emerge from an interview with a co-founder; the project is still operational and alive, with new partnerships and use cases. What will this generate? Dreaming, in our daily language, implies two conflicting meanings: “Having a Dream” and “It’s just a dream” are sentences opposing each other. Dreams can be visions and projects for the future, can be powerful instruments to shape present decisions; on the other hand, they can be unrealizable, foolish beliefs, or nightly thoughts that are forgotten after few minutes after waking up in the morning. Whether KlimaDAO will constitute a model for future commoditization of real-life assets or not cannot but be an open, unsolved question.

At the same time, while assessing KlimaDAO’s broader impact on the crypto scene, it is difficult to design a *baseline* scenario. The project was conceived during the *crypto summer* of 2021, during which plenty of other DAOs flourished, and replicated the successful formula of OlympusDAO; if the project never materialized, it is highly possible that the monetary and oneiric resources KlimaDAO mobilized would have been funneled towards other speculative projects. All the people I interviewed were already in crypto, showing that KlimaDAO did not attract new crypto users.

However, it showed the economic potentiality of the *Regenerative Finance* (ReFi), as well as its numerous application: as it has been noticed (Sipthorpe et al. 2022), KlimaDAO represents the most complex and successful form of cryptocurrencies and green finance.

The fieldwork for this thesis started in late 2021 and ended at the beginning of 2024, the crypto-world crashed and ballooned again, billions and billions of dollars were lost and gained again; the sector showed an high level of resilience. ReFi, in particular, is still flourishing. The Gitcoin platform¹³ – which will be briefly analyzed in the last section – lists and distributes thousands of dollars in grant to climate-driven blockchain projects, and we can infer that the many of them could have been inspired by KlimaDAO.

In the course of this work, what will be highlighted is the continuity between new and

¹³ <https://www.gitcoin.co/about>

old forms of finance. Cryptocurrencies mobilize actors and resources because they embed and reproduce many society-wide values, desires, and concerns, even if many influential commenters denounced the phenomenon as a mere manifestation of the Greater Fool Theory¹⁴, valueless speculative assets luring naive investors who are only looking for profits during irrational markets' conditions. These opinions, however, embed a moral judgment that we - scholars trying to produce objective and scientific knowledge - should refrain from doing, especially after stating how a "pure", emotionless economic mechanism cannot exist. From a theoretical point of view, they constitute a reductionist operation that separates these practices from their environment..

Marcel Mauss, with his humanistic anthropology, "whereby all men are equal in the common problem of the essence of man, to which everyone makes a contribution" (Valeri 2013, 264) is the author I relied upon the most.

Most of KlimaDAO's investors lost money, and the voluntary carbon market went under scrutiny, with lawsuits and CEOs' resignations. Meanwhile, the crypto market imploded after financial frauds and hacks: it would be tempting to look at these phenomena as the realm of frauds, where irrational people fall for cheap tricks by hucksters. The observer's point of view would be the "right" one¹⁵, thus resembling the mentalistic and individual analysis employed by the first British sociologists to study other cultures¹⁶; Marcel Mauss built his opera exactly from the critique of this approach, studying and framing individual actions into the whole society, from whom their meaning derived. As we will see, the stress put on the totality by Mauss will be crucial for our analysis: like the French author, we will explain the success of KlimaDAO and the apparently inexplicable trust in cryptocurrencies, looking at them as social phenomena, a manifestation of underlying trends characterizing modern

¹⁴ This, for example, is the opinion gave by the economic Nobel laureate James Heckman (2000), Thomas Sargent (2011), Angus Deaton (2015), and Oliver Hart (2016) to an UBS panel in 2018

<https://finance.yahoo.com/news/good-drug-dealers-nobel-prize-winners-snob-bitcoin-184903784.html>

¹⁵ As we will see in the literature review, this moralistic stance is still held by many scholars

¹⁶ Adopting an *uncritically* critical stance towards cryptocurrencies means repurposing the most discussed aspects of the structuralist framework, projecting the researcher's views and taste on reality and ignoring how the system works (Bourdieu 1977). Instead, I looked at these phenomena and the internal dynamics of KlimaDAO Bourdieu (1990)'s outlines on the study of rituals, relating the "practical necessities" and "real conditions" of them: rituals are official representations instituting principles for practical actings,

capitalism.

For now, it should be reminded that blockchains and cryptocurrencies do not run in a virtual space; they exist in a historical setting. Their design relies on a peculiar idea of society: humans are seen as rational actors looking only for personal profit maximization so that no one can trust each other. Cooperation is made possible through an automated and cryptographically enforced mechanism of rewards; these technologies are modeled upon the game-theoretical models which were first developed at RAND corporation during the Cold War (Mirowski 2002), and heavily influenced the development of the modern economy and computers. They probably are the closest materialization of Von Neumann and Morgenstern (2007) theories on human behaviors. These highly axiomatic hypotheses, moving from a *homo economics* idea of rationality, provide a mathematical framework to calculate and forecast decision-making processes, reduced to maximization the expectation of some utility function.

Games of Carbon Markets

These ideas of comparing reality to a game where players' behavior can be predicted since they will act according to certain universalistic anthropological assumptions are now driving institutional actors in the fight against global warming.

Carbon markets represent one of the essential tools nowadays used to respond to our environmental anxieties and fears, and they constitute a pristine example of the confluences mentioned earlier.

First, the fight against global warming has been long on the agenda of almost all governments and institutions, both public and private; the overlapping between nature and financial mechanisms constitutes a conflation that has been thoroughly studied and problematized (J.W. Moore 2017; Sovacool 2011; Bigger et al. 2018; Birch and Muniesa 2020).

Carbon markets present, however, another, *anthropological* overlap: those markets are designed on peculiar assumptions and theories about the human behavior, they embed and reproduce the same ideas on human nature behind game theory's models. They emerge from the intersection of economy, environment, and anthropology.

Interestingly, KlimaDAO embeds these values on three levels: the blockchain technological level, the incentives design of the cryptocurrency (*tokenomics*), and the carbon markets.

Carbon markets' mechanisms can be traced back to Robert Coase (Coase 1960), the first one to propose a "third way" between regulation and taxation to address the "negative externalities". In his seminal paper, *The Problem of Social Cost*, he explains that externalities (actions affecting the well-being of others without these others being compensated for the adverse effects) can be addressed through a commercial bargain between the parties involved. The American economist provides the example of a factory that pollutes the air, harming the residents of a nearby town. By paying the residents just enough to compensate them for the harm caused by the pollution (the marginal cost of it), an outcome maximizing the total welfare of the two parties is reached. Coase was part of the so-called "property rights school", whose adherents equated market failures to a lack of definition of property rights; how it has been noticed (Arrow 1984), it appears that relies on the same postulates underlying the theory of cooperative games as initially formulated by von Neumann and Morgenstern (2007, first edition 1947).

We can shortly define games here as a mathematical framework for studying how the choices made by actors affect and are affected by the choices made by other actors (Nash 1951). Classical game theory relies on several critical assumptions about rationality and human behavior: for example, it assumes perfect and infallible rationality, perfect observation, and perfect execution of strategies (Yang et al. 2011). This type of rationality is also described as *instrumental* since it assumes individuals act in a way that maximizes their expected utility or achieves their desired outcomes; individuals are goal-oriented and make choices based on their preferences and beliefs about the consequences of their actions (Colman 2003). Given its scopes and proposed implementations, game theory represents for its advocates a comprehensive instrument for understanding social interactions and

cultural phenomena, a universal toolbox to improve social sciences by seeking cross-cultural principles and providing them the biological and analytical rigor they lack (Gintis 2007). Game theory is thus treated as a *universal* science, embedding and subsuming all other social sciences - anthropology included - despite being based on *particular, historically* determined positivistic and individualistic ideas of cultures and human behavior: by employing a rigorous logical analysis, each problem can be reformulated, reduced to units and solved. This type of reasoning heavily draws from analytical philosophy (Skyrms 1996) and owes its strategical and top-down approach to the US military research labs from where it stemmed (Mirowski 2002).

The Coase theorem is a clear example of how game theory is applied to real-life problems. It is modeled upon the so-called “cooperative games”, a subset of games analyzing how groups of players can form coalitions to achieve mutually beneficial outcomes; a cooperative game involves a set of players N and a function v that associates with each coalition S (a subset of N) a payoff $v(S)$ that members of S can distribute amongst themselves however they want: the central question is how to allocate it fairly amongst players.¹⁷ Markets for pollution can be seen as a way to reach a payoff between polluters and the society/environment, or, employing the game-theorist language, the result of the bargaining process will undoubtedly be *Pareto optimal*: resources are allocated in the most efficient manner possible, and it is impossible to make anyone better off without making another worse off. Markets are the only logical, rational solution to the environmental question.

The success of these ideas should not surprise us. A few years later *The Problem of Social Cost*, J. H. Dales (Dales 1968) suggested a Coasian approach (Berta 2021) to control Great Lakes pollution, relying on a bargaining process between actors involved instead of central planning. Once the amount of pollutants per year is proposed, economic actors would decide by themselves how to reach the goal, trading their allowances in this newly constructed market. Even if under Ronald Reagan, environmental programs were halted, the 80s saw the rise of environmental

¹⁷ As noted by Arrow (1984), the unstated assumption is that every player perfectly knows every other player's payoff of each strategy strategies, a condition hardly possible to reach in real life.

market liberals (Clapp and Dauvergne 2011), and his successor, George Bush Senior, developed and implemented the “Clean Air Act”, the first nationwide trading emissions market, aimed to reduce acid rains through a market-driven cut in SO₂ emissions. Economists, lawyers, technologists, and lobbyists created a market to solve the issue of acidic rains: Bush Senior’s ecological agenda was crafted by “Projected 88”, a think-tank composed, among the others, by the representatives of big corporations. The Kyoto Protocol introduced, in 1998, international market mechanisms to fight climate change; the US withdrawal from the treaty, however, hindered the development of a global carbon market. Nevertheless, as explored by D. MacKenzie (2008), this mechanism would have shaped the following environmental regulatory policies, first in the USA to address sulphury-dioxide emissions (1992 Clean Air Act, see (Ellerman 2000)) and then worldwide (1997 Clean Development Mechanism that has been overtaken by 2015 Paris Agreement (Bridge et al. 2020)).

After their successful implementation, environmental finance¹⁸ and carbon markets were embraced and championed by the following Clinton presidencies, particularly by former Vice President Al Gore¹⁹, becoming the backbone of international treaties on climate change. When climate change emerged as a major international policy issue in the 1990s, the United States advocated for flexible, market-based mechanisms like emissions trading, while the EU initially preferred Pigouvian (Pigou 1951) carbon taxes. During the negotiations in Kyoto, the US pushed for the Coasian approach, predicting substantial potential cost savings compared to traditional regulatory approaches, and managed to insert a carbon trading scheme in the final Kyoto Protocol (1997) despite the opposition.²⁰ This instrument, the *Clean Development Mechanism* (CDM), allowed developed countries to invest in emission reduction projects in developing countries as a way to meet their emission reduction targets (Paulsson 2009). In short, the CDM allowed developed countries to invest in emission reduction projects in developing countries, which could generate certified

¹⁸ We use this word as an umbrella term to group together all forms of investments that are supposed to generate returns also for the environment

¹⁹ Notably, he launched an environment-focused investment funds in 2004 and received nobel prize in 2007 for his climate activism

²⁰ The process leading to the creation and the adoption of carbon markets on global level has been reconstructed by D. MacKenzie (2009b)

emission reduction credits (CERs) that developed countries can use to meet their emission reduction targets. This commodification of pollutants and subsequent creation of carbon markets where the State has only to set a cap (a *baseline*), a limit in this new arena, has been embraced by the Kyoto Protocol (1997) and, more recently, by the Paris Agreement (2015). The latter, in particular, through articles 2²¹, 6, and 9²³, layered a global framework for voluntary carbon markets and, more broadly, enthroned market solutions to fight greenhouse gas emissions, currently seen a large swath of agencies as the key to stopping temperatures from rising. Nowadays, two different types of markets where those credits are traded exist: the regulated, mandatory one, like the European Emission Trading Scheme, based on a cap-and-trade mechanism, and the voluntary one, employed by companies that are not required by law to offset their emissions. KlimaDAO wanted to “disrupt” the latter. Under the Paris Agreement, the issuance of carbon credits is guided by Article 6, establishing principles for their issuance and trading. One of the critical mechanisms under Article 6 is the Sustainable Development Mechanism (SDM), designed to replace the Clean Development Mechanism (CDM). Through this framework, the issuance of carbon credits follows these steps. First, a project developer identifies a project that will reduce or store carbon dioxide; to do so, it is necessary to

²¹ Line 1, Letter C: “Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

²² Line 2: “Parties shall, where engaging on a voluntary basis in cooperative approaches that involve the use of internationally transferred mitigation outcomes towards nationally determined contributions, promote sustainable development and ensure environmental integrity and transparency, including in governance, and shall apply robust accounting to ensure, inter alia, the avoidance of double counting, consistent with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement.

Line 3: “The use of internationally transferred mitigation outcomes to achieve nationally determined contributions under this Agreement shall be voluntary and authorized by participating Parties.”

Line 4: “A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to this Agreement for use by Parties on a voluntary basis [...]”

²³ Line 3: “As part of a global effort, developed country Parties should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments and channels, noting the significant role of public funds, through a variety of actions, including supporting country-driven strategies, and taking into account the needs and priorities of developing country Parties. Such mobilization of climate finance should represent a progression beyond previous efforts”

The whole document can be found at

https://unfccc.int/sites/default/files/english_paris_agreement.pdf

demonstrate its *additionality* or that the emission reductions achieved would not have occurred without the project (Kelly 2018). This assessment is carried out by an independent body (Verra and Gold Standard are the most prominent actors in this industry), which evaluates the project's baseline emissions and compares them to the reductions achieved. The project is then registered with a carbon registry, storing all credits issued and *retired*, that means bought by an actor to offset their emissions. Each credit represents a reduction in greenhouse gas emissions equivalent to one metric ton of carbon dioxide.

KlimaDAO arose against this background and partially owes its incredible success in October and November 2021 to the fact that it was launched simultaneously with the BITMO Platform during COP26 in Glasgow²⁴. Through this initiative, the Blockchain for Climate Foundation wanted to “finally operationalize Article 6 of the Paris Agreement” by the “issuance and exchange of “Blockchain Internationally Transferred Mitigation Outcomes” (BITMOs) as ERC-1155 Non-Fungible Tokens (NFTs) on the Ethereum blockchain”. International bodies officially endorsed²⁵ blockchain-based climate finance solutions.

Accountability and Responsibility

These pages were written during the summer of 2023, while my home country, Italy, witnessed a dramatic heatwave, breaking all previous records; most of them were settled just a year ago. Since carbon markets have long been in place²⁶, and yet temperatures keep rising worldwide at an unprecedented speed, we should question the efficacy of such measures. That is a crucial point for our research and would be the argument of the following lines. Coase's Theorem moves from the idea that markets are more efficient devices to coordinate actors with different goals since they remove the need for participants to actually engage in different activities and instead *delegate* to someone else in a horizontal, mutually agreed way, that is, by monetary form. Modern, general-purpose money has the unique capacity to let the

²⁴ <https://www.blockchainforclimate.org>

²⁵ <https://cointelegraph.com/news/climate-chain-coalition-advocates-for-the-creation-of-a-green-economy-at-cop26>

²⁶ The European Emissions Trading System (ETS), for example, was settled in 2005 and accounts for 45% EU carbon emissions

owner buy anything without getting personally involved.

In this sense, markets represent unique organizational devices in a capitalistic society; even if often portrayed as the opposite of bureaucratic institutions, Stanisevski (2004) is right in reinvigorating the Weberian argument that “modern bureaucracy is preconditioned by the development of the capitalist money economy” (120). Market exchanges are impersonal. They are dealt with among people with no social or familial ties; similarly, impersonality is one of the formal elements of bureaucracy: administration must be conducted “according to calculable rules and without regard for persons” (Weber 1946, 215), for establishing formal objectivity and equal standards. This implies imposing a certain distance between administrators and administrators, whose risks were famously displayed by Hannah Arendt (Arendt and Kroh 1964); the envisioned “Rule by Rules” turns out to be a “Rule by Nobody”. In her account of Eichmann, what emerges is how bureaucratic organizations, by insulating single²⁷ actors and compartmentalizing tasks, are devices to make unaccountable people involved in the organization itself. No single person or group can be seen bearing full responsibility for the action, with all the moral and ethical consequences resulting from that. Such paradoxical twist of the very scope of bureaucratic institutions has been longly observed (Fiss 1983), and did not characterize only Nuremberg’s Trial defendants.

Carbon markets can be seen as large-scale delegation mechanisms, where principals (States, large companies) decide to delegate actions to reduce emissions to an agent (NGO, small companies): the literature has already shown how this process is - in practice - not as straightforward as it was envisioned (Green 2008b). The distance such a system allows between different actors raises many questions: How do we enforce effective controlling mechanisms? How a global rulemaking instrument can be managed? Furthermore, most importantly, does delegation produce the best outcome? If yes, for whom?

Credits traded on this type of market are provided by programs like REDD+²⁸ (Reducing Emissions from Deforestation and Forest Degradation), an international initiative to mitigate climate change by incentivizing the conservation and sustainable management of forests in developing countries. REDD+ framework closely resemble

²⁷ https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

²⁸ <https://redd.unfccc.int>

the SDM. Project developers estimate how much carbon would have been released if deforestation continued at historical rates in a peculiar area (“business-as-usual” baseline); independent, third-party verifiers confirm (or reject) the projected emissions reductions against this baseline. Such projects must follow criteria and guidelines established by certification programs to ensure real emissions reductions. The (eventually) avoided emissions are issued as carbon credits that are then sold to governments, companies, or other entities who want to offset their emissions. The funds from selling carbon credits are used to continue conservation activities in the REDD+ project area. Most of the digitalized carbon credits traded through KlimaDAO rely on this peculiar framework, too.²⁹

Nowadays, this delegation mechanism is one of the critical approaches to sustainability (Dubuisson-Quellier and Lamine 2008), yet they have been controversial. In particular, the resulting complexity and fragmentation of the institutional arrangements, involving multiple actors and bodies with different roles and responsibilities, make their coordination difficult and thus resulting both in conflicts and collusions among them (Green 2008a). The distance thus ensued weakens the link between the designed carbon reduction and the real, concrete one: in the end, polluters simply buy certificates insurance for offsetting superfluous emissions; there is no actual change in the material production, only in the “ideal” and “symbolical” level represented by the accounting and the regulatory framework. As anthropology has shown through its own history, those two realms are contradictory and interrelated. Carbon markets constitute no exception, and our case study represents a typical conflict between them. In 2022, an independent investigation showed how the vast majority of credits retired through the KlimaDAO ecosystem were outdated and almost useless, resulting from unsold old hydropower project credits in India and China,³⁰ creating an immense arbitrage opportunity for their previous holders rather than effectively driving up prices of carbon assets to make polluters resort to less carbon-intense production: decade-old unsold credits (voluntary carbon markets credits are usually traded over the counter) were trading for hundreds of dollar on the blockchain.

²⁹ <https://github.com/KlimaDAO/dash-apps/issues/142>

³⁰ <https://carbonplan.org/research/toucan-crypto-offsets>

Shortly after, an investigation led by The Guardian³¹ showed how 90% of REDD+ credits issued by Verra - the company leader³² in verification processes for the voluntary carbon market - did not represent any actual carbon reduction, so the numerous amounts of companies claiming to be “carbon neutral” were not. Very few projects stopped deforestation, and baseline projections were largely overestimated. Interestingly, responses given by KlimaDAO and Verra to such accusations were similar and can be summed up as *we are not responsible; we are just following the rules*. Verra, for example, defended its controversial baselining approach by deciding to factor in local peculiarities, stating that it “has made baselines more responsive to unpredictable local changes that impact deforestation rates. For example, under Bolsonaro, Brazil’s deforestation rate went up – this scenario could not have been predicted when the baseline was set. Accordingly, Verra-certified REDD project baselines are now reassessed every 6 years, instead of every 10 years”³³, a type of reasoning not so far from orthodox economic scholars explaining economic growth through exogenous factors like technology (Solow 1956); in this way, an external, unpredictable (and thus *unaccountable* for) force is used to “bend” reality to a predetermined idea. KlimaDAO’s answer to these claims is an even more explicit demonstration of markets as bureaucratic mechanisms to *avoid* responsibilities; in a letter published on Bloomberg that is worth being cited here at large (KlimaDAO 2022b), Natasha Rousseau, spokesperson for KlimaDAO, stated that critiques “fundamentally [misunderstood] the problem our organization, KlimaDAO, is attempting to solve,” consisting in “the widely accepted need to scale up the VCM to meet the emissions reduction targets prescribed by the Paris Climate Accord [...] This is where KlimaDAO comes in. By incentivizing carbon credits to come onto the blockchain, we seek to fix the market failures that have enabled bad actors to leverage asymmetric access to information to turn huge profits while regular people are locked out of the market. Our solution increases transparency and market activity within what is currently an opaque, heavily intermediated market while empowering everyday people to participate in climate action and scale this key market”; addressing the key question of carbon offsets quality is not a real problem since

³¹ <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>

³² <https://data.ecosystemmarketplace.com/>

³³ <https://verra.org/verra-response-guardian-rainforest-carbon-offsets/>

KlimaDAO is “aligned with reputable carbon credit standards like Verra and Gold Standard as they seek to improve provenance and integrity of credits on the Voluntary Carbon Market.”

As we will see in the following chapters, I got a very similar answer when I interviewed one of the DAO’s founders: KlimaDAO is about improving current market conditions, which in the end will result in improving the environment, as the “unintended” consequence or byproduct of the market, employing the same rhetorical/moral argument dating back to Adam Smith or De Mandeville.

It should be noted that defending the present-day “business-as-usual” environmental solution, however, is not a unanimous opinion. Carbon credits are under scrutiny not only by scholars or activists but also by companies; in short, there is an open debate. Even if any correlation was denied, many economic actors like EasyJet are moving away from carbon credits after these investigations exhibited how shadowy the accounting mechanisms can be³⁴. At the same time, Delta Airlines offsets its emissions by recurring to the same type of credits composing KlimaDAO’s treasury³⁵. Furthermore, REDD+ projects were at the center of a heated debate during COP27 - held in Egypt in November 2022 - resulting in their implementation in the final declaration.³⁶

What can an anthropologist say about these themes? Journalists, scientists and activists have been talking about carbon credits for many years. Yet, a key question still awaits to be fully solved. As we saw, complex instruments like blockchain or international environmental programs seem to reproduce rather than challenge decades-old assumptions and rhetorics. Why is that? Even if the present work does not presume to provide a complete answer, it suggests a novel way to this problem.

³⁴ <https://www.theguardian.com/business/2022/sep/26/easyjet-will-stop-offsetting-carbon-emissions-from-planes-roadmap-net-zero>

³⁵ <https://www.klimadao.finance/blog/klimadao-analysis-of-the-base-carbon-tonne>

³⁶ <https://news.mongabay.com/2022/11/cop27-boosts-carbon-trading-and-non-market-conservation-but-can-they-save-forests/>

What can anthropology say?

Rather than proposing now the reader a political or ecological discussion on the actual effectiveness of carbon finance and similar orthodox, market-based measures - which have already been scrutinized and criticized by scientists (Gabor 2021; Howson and de Vries 2022a; Bracking 2015; Bridge et al. 2020; Roberts et al. 2021), showing how little environmental benefits they bring, especially compared to the monetary ones - I invite the reader to reason about the *symbolic efficacy* of carbon markets. Merely economic incentives cannot align all the actors in supporting carbon markets: if, on the one hand, there are still investors *believing* in the bona fide of KlimaDAO and hoping to get a profit at a certain point, on the other at COP27, countries from the Global South like El Salvador, Papua New Guinea, and Congo were among the supporters of the REDD+ framework, although such mechanisms exemplify how the neoliberal capitalistic accumulation needs to preserve part of natural resources in the periphery to reproduce itself in the core (Büscher and Fletcher 2015) and REDD+ itself can be seen as a clear example of neocolonialism since it tells local populations how to manage the forests they have been living in since ever (Howell 2017).

How do we explain such contradictory behaviors? This question leads directly to another, broader one:

What can anthropologists say about the current climate crisis? Which specific, unique knowledge can provide to the broader discourse and analysis on climate change? Can a discipline created to observe and study small communities in the global South produce helpful knowledge about the mechanisms employed by supranational bodies to fight climate change?

For sure, it is thanks to “hard sciences” like chemistry or physic that it has been proved without any doubt that the swift increase of temperatures in the world is strictly related to the *unnatural* amount of carbon dioxide being released into the atmosphere in the last century: if it is not just the result of geological or biological cycles, if it is not just a mere statistical fluctuation, nor it is a divine punishment, then it is a human-related phenomenon, as the word “anthropocene” (Crutzen 2006)

shows. Since it shares the same root, anthropology can say something about it, and an increasing number of publications by anthropologists, indeed, are tackling the theme (Bonneuil, Fressoz, and Fernbach 2017; Brightman and Lewis 2017; Malm and Hornborg 2014).

However, what it seems missing a unique perspective, something moving from the *differentia specifica* of our discipline that does not borrow concepts from neighboring disciplines like political science, journalism, or philosophy, nor wanders between natural sciences. Anthropology tries to understand behaviors and practices, bringing upfront what lays hidden in the background, making intelligible what could be easily dismissed as “irrational”. I suggest using this approach for modern forms of green finance too, going back to the “classics” of our discipline.

We need, of course, a definition of anthropology (and anthropologists) first. Each anthropology textbook (R.H. Robbins and Beech 2020) lists as the first “anthropologists” those scholars that - starting from the second half of the XIX century - were sent from European powers to colonies to study newly conquered populations. Lacking common ground, researchers were “forced” to listen, translate, and finally blend in with them, developing the so-called ethnographic encounter. Throughout the history of our discipline, anthropologists conducted qualitative analysis through interviews and long observation periods residing among the studied group, a methodology first seen as objective and then questioned along with the role of researchers themselves (Clifford 1983). Bronislaw Malinowski planting his tent among Trobriand islands’ inhabitants is the symbol of such a “pioneering” approach (Malinowski 2013), especially since his diaries cast shadows on the portrait of perfectly integrated and objective reporter (Malinowski 1989). Anthropology’s particular method, the participant observation, rests on long study periods on a relatively small community and can make it harder to frame observed phenomena in a bigger picture: the very expressions “*global warming*,” “*climate change*,” or “*international agreement*” imply irreconcilable scenarios with a local and prolonged analysis of tiny groups.

But anthropology is the science of studying the “otherness,” with all the moral and epistemic consequences of such a peculiar topic. Indeed, because of its specific position, anthropology has been described as a “border discipline” (Fabietti 1999), a “restless science” (Malighetti and Molinari 2016). We can speculate on what

occupying this peculiar, uncertain position might entail; as the reader will see thoroughly in the literature review, what I noticed is that anthropologists engaging with the blockchain mainly focused on one of the above-mentioned epistemological specificity of the discipline, namely the ethnographic encounter or even just the reporting, while “forgetting” what makes each discipline such, what, in short, *authorizes* us to use the term anthropology: authors themselves. Ethnographies and interviews are instruments found in the intellectual toolbox of other disciplines like business administration or management studies.

Employing concepts and ideas developed initially over more than a century to understand populations at the margin of the Euro-American world to study and explain present-day phenomena developing in the very core of the West is less a wild guess than it sounds, even because the alternative is just producing reports. Such concepts were developed to rationalize what, like magical rituals, seemed foolish according to the European public. Mainstream approaches to curb carbon emissions do not work: what is the rationality of keeping green finance and carbon markets in place? Here is where the unique anthropological method came into place. This is the core argument of this work: carbon markets are considered adequate not because they deliver the best result regarding carbon removal and economic growth but because of the position they occupy in the symbolic levels of the capitalistic world. They rely on a utilitarian idea of human interactions; such *anthropology*, however, permeates many other fields - technology in particular - thus providing a coherent framework for reading reality. Furthermore, technology and crisis have been anthropology’s usual tropes for decades.

A narrative, a myth, or a shared set of beliefs work because they answer to some social needs: game theory flourished because it provided a pattern to forecast the future, to predict uncertainty, that is by addressing a universal human need.

The inspiration for such perspective comes from Ferguson (1990), who argued that development projects often failed to achieve their stated goals, and yet they continued to be pursued because they served the purpose of expanding state and agency control and depoliticizing specific issues. In this sense, development institutions were more focused on maintaining and strengthening their power structures rather than addressing the needs of the communities they were supposed to help. By framing development as a technical endeavor, aid projects bypass

meaningful political engagement and participation, effectively sidelining local communities while reinforcing the same power structures that created those inequalities in the first instance. His text forged a new, prominent interpretative paradigm; it can be seen as a classic since it inspired a vast array of authors (O'Sullivan and Allen 2014; Bracking 2015; Ryser 2019; Haller, Käser, and Ngutu 2020). Crucial for our case study, Ferguson recurred to the metaphor of a *machine* because “The way it all works out suggests an analogy within the wondrous machine made famous in Science Fiction stories, the "anti-gravity machine," that at the flick of a switch suspends the effects of gravity [...] the development" apparatus sometimes seems almost capable of pulling nearly as good a trick: the suspension of politics from even the most sensitive political operations” (256).

The role played by these institutions and the institutions they uphold, then, does not look so distant from the role played in pre-capitalistic societies by mythology or religion, that is, solving material (and inherently political) conflicts in the immaterial, ideal world, so that conflicts in the real world would pass unnoticed.

Some phenomena repeat throughout history: even if it goes without saying that *crisis* is one of the words most used to describe our times, jeremiads - complaints about societies' decay - are a literary genre as old as biblical texts. An idyllic, golden, mythical, and forever gone past age is a common trope among various cultures because the inevitable changes faced by human groups always create concerns and fears. The etymology of the word crisis (from the Greek κρίνω, “to make a choice, to judge”) still denotes this link between changes and dangers; “crisis” can be used to describe relevantly, but generic, “changes” in historical periods, timespans where power, wealth or ideas change rapidly from some group to others. Every crisis then implies a dialectical relationship between two or more parts. “Change” is another word we use daily that, unlike crisis, does not always have a negative halo³⁷ and can be employed to signal economic, societal, or *technological improvements*. Finally, “technology” is a widely used term in official and ordinary speeches, often coupled with “progress”, an undoubtedly positive expression of common sense. So, we can trace a semantic link between the words we usually employ to describe our

³⁷ “Climate change” constitutes the most notable exception. Note that the expression “climate *crisis*” is often used as synonym

contemporary society, and we can see the 2008-2009 financial crisis as a potential historiographic breaking point. However, this “Cartesian” segmentation alone does not provide a deeper understanding of the social processes characterizing the society we live in; of course, the very daily usage of the abovementioned terms (crisis, change, technology) ends up fetishizing (Lukács 1972) them, obstructing their problematization and thus allowing the reproduction of the social conditions from which they stemmed. Even if creating a “gaze” around the origins of a particular social order can be seen as a universal way to maintain and enforce it (Godelier 1999), *crisis, change, and technology* pose another challenge to researchers because the stability is paradoxically provided by the (alleged) changes (or crisis). Contradictory practices play a relevant role in our “age of crisis”. However, we are not condemned to a perpetual state of “fake consciousness”: the more significant the discrepancies, the more energy is needed to maintain the status quo. Academics adhering to critical schools of thought should then pay attention to such inconsistencies, not to produce jeremiads and rants (Kirchherr 2022) about the current world, but to assume a robust epistemological stance. If contradictory statements imply the external, superficial union of different meanings, then a selection has been made. Showing that an allegedly neutral, objective result is subjective and understanding why and how such choices were made can constitute a “toolbox” to scientifically prove the fallacies of mainstream discourses on our various crises.

Anthropology is a discipline that has long studied crisis and their solving. I propose re-using the notion of *symbolic efficacy* by Claude Lévi-Strauss (2008) in relation to the environmental crisis and the use of technology in green finance. In his seminal book *Structural Anthropology*, Lévi-Strauss argued that the manipulation of symbols could have real effects on people's lives. He discussed how the Cuna shamans in Panama used specific incantations to facilitate difficult childbirth, arguing that the shaman's song provided a symbolic account that metaphorically manipulated the sick organ, and the healing was possible because the incantation was based on a clinical reality shared by both the shaman and the sick woman, making acceptable for the mind what was unacceptable for the body. Rituals are moments to re-affirm the coherence of the mental universe and so of the society and its members, famously comparing modern psychoanalysis to shamanistic practices. If Levi-Strauss

minimized the role of the patient, successive studies moved away from the overreaching role of the structural unconscious (he was, indeed, the founder of structuralism), putting back at the center the role and the experience of the individual in such processes. Micheal Taussig (2008), for example, claimed how both shamans and patients concur in transforming the experience of the latter since Cuna chants are sung in an esoteric language, unknown to the rest of the group; similarly, Bourdieu (1990) highlighted how beliefs and practices overlap. The social analysis cannot be reduced to the mere symbolical level, and the research has to implement a multidimensional analysis (Quaranta 2019).

Even if the works mentioned above mainly entail the field of anthropology of medicine and our work will analyze a strictly economic phenomenon, the father of modern Italian ethnography, Ernesto De Martino, famously showed how healing processes are deeply political and economic questions (De Martino 2001, 2008, 2009), so that we felt entitled to borrow a term like *symbolic efficacy*. We can shortly note how anthropology is the postmodern discipline par excellence for its very liminal, marginal nature.

Along with cryptos' and tech stock rallies, 2021 saw the rise of web3-based green financial solutions. This subject embodies the classical themes of anthropology since it is a technological solution to a crisis. Besides, since the typical anthropology syllabus does not involve computer science, programming, or financial models, a relative distance from the object of the study can be assumed, and the etic perspective can spot numerous elements unnoticed by the emic one; in fact, what emerges from this preliminary research is the number of contradictory aspects unseen by the actors. Anthropology can be the proper discipline to understand such phenomena.

Introducing now the key core of our analysis, labeling carbon markets as mere greenwashing, as mere frauds would be similar to saying that magicians or priests just take advantage of a gullible, disadvantaged public, forgetting the active role of the latter in reproducing the broader ideological universe they lived in. According to Taussig (2008), "the healing song, magical or not, is but part of a baroque mosaic of discourses [...] taking place not only through and on top of one another during the actual seance but before and after it as well [...] Sorcery and (so-called) shamanism

[...] present modes of always locally built experience and image-formation in which such social knowledge is constitutive” (460-461). Furthermore, this social world is not a superstructure imposed upon the group but is constituted by individuals that actively execute the metaphorical work necessary to the healing of the efficacy of the shamanic practices (Tambiah 1985).

Depicting the audience/civil society as a mere victim erases the “objective function” played by green finance and impact investing, that is calming anxieties provoked by global warming and the disappearing of the Keynesian welfare state in a highly depoliticized world, where elected institutions are seen as incapable of addressing societal problems.

Analysts and pundits - contemporary shamans - recite their preaches in languages unknown but understood by most while at the same time reassuring and reinforcing that socio-economic configuration that both gave them powers and created environmental issues.

In his account, Levi-Strauss explained that shamans could heal because they address the “monsters” living in the inner psyche of the patients: unlike microbes, they don’t possess an “objective existence”. The disease arises from the subjective cultural experience of the patient, and for this reason, it can be addressed by a local healer. Modern shamans, if any, can manipulate the exchange and the symbolic value, the “monsters”, not the “objective existence” of carbon; for carbon dioxide to be in the atmosphere, a fossil fuel-based, extractivist economy needs to be in place. In KlimaDAO, users adopted anti-economical behaviors because the “songs” sang by the shaman-founders resonated with mainstream techno-financial propositions. However, the environmental question remains a matter of “microbes” and “objective existence”.

Carbon markets, finance, and blockchains can be seen as anti-political devices, technologies claiming to solve inherently political issues through accounting without addressing the material conditions from which they stemmed in the first instance., They work for the actors involved because they fit the broader ideological framework of contemporary capitalism; they reflect everyday experiences and the symbolic universe of the actors themselves. They are actively participated by the various subjects, since concepts like interests’ rate, stocks and investments plan are managed by almost all households.

Here is why the metaphor of the anti-political machine is crucial for a discourse entailing technology, like ours: as Alf Hornborg (2011) brilliantly showed, the main difference between technological modernity and superstitious past is not the abandonment of fetishistic and symbolical processes, rather their replicability and overreaching extension, so that we can affirm that the world we live in is way more *ideological* than ever.

It should be noted that many of the events (the rise and fall of Sam Bankman Fried, for example) we will illustrate are under investigation by legal authorities, so fraud was probably committed, and the social order was breached. However, this does not challenge our perspective, but it tells us we are on the right track: *Why were* so many people led to act against their self-interests?

Structuralists were not the only ones interested in explaining how a whole social group reproduces itself. Concepts at stake here are classic Marxist tropes: the *false consciousness* and the *cultural hegemony*. However, we will not move from Karl Marx, Antonio Gramsci, or Louis Althusser, even though we share a similar approach to the latter by conducting a structuralist analysis through a critical lens. Rather, we will look at another French scholar, Marcel Mauss, whom Levi-Strauss heavily inspired. Crucially, he reminded us how the public itself, in the first instance, bestows powers to specific individuals because they fulfill society-wide needs. We are talking about magic.

The Magical Agents of Our Time: Technology, Economy and Green Finance

After this long detour, we should go back to KlimaDAO. In the previous section I explained and justified my methodology, and it is now time to use anthropology to decipher the digital dreams KlimaDAO represented. There is another chunk of reality it reproduces, and it is the techno-solutionism, or how vast and influential sectors of societies see technical solutions as the only way to salvation (Harvey 2003; Morozov 2013; Barbrook and Cameron 1996); many investors I interviewed held these beliefs. The *manifesto* launched within the project back in 2021 made this point extremely clear, identifying web3, DeFi, and Smart contracts as the only solutions to face the challenges posed by the climate crisis, given the inadequacy of national and international institutions: “Blockchain technology can and will open up new ways for managing our resources and collaborating across networks in the coming years [...] It will be the foundation for us to efficiently coordinate resources, outpace stale bureaucratic and political processes, and remove the need to jump through hoops to get exposure to the low carbon economy.”³⁸.

As the reader might have noticed, this type of reasoning is close to the discourse on symbolical efficacy we just made, with a crucial difference: can we keep saying that contradictions are solved in the immaterial realm if we talk about technological artifacts? We now introduce another critical point for our work: technology. In the following pages, we will unpack and introduce this concept, showing how it can be reconciled with an apparent opposite theme like the economy through a classic anthropological trope: magic. This intertwining will be further discussed in the last section.

What is “technology”?

Technology is a term that we constantly use. We are endlessly exposed to it so that we can infer the word itself - along with the material artifacts - undoubtedly has an impact on us. Starting from the '80s, it became a central theme in anthropology: the

³⁸ The *manifesto* is not available anymore on their website. An archived copy can be found on *Waybackmachine* <http://web.archive.org/web/20211022184105/https://docs.klimadao.finance/klima.fi-manifesto>

rise of material studies and STS redirected many scholars inside laboratories and firms, rediscovering the importance and the role of material artifacts in human cultures. So, what is the relationship between technology and culture? What does study a blockchain tell us about how our society operates?

To answer these questions, we must overturn some commonsense expression. The term “technology” is often coupled with “progress”, which undoubtedly has a good meaning: technological changes are usually seen as positive and distinctive traits of our zeitgeist. Or, the only way for societal changes: as anecdotal evidence, a professor in Economics at a conference I attended authoritatively stated that Information Technology is *how* our society can change and innovate.

Discourses on the blockchain heavily rely on these narratives to justify and legitimize themselves: being an advanced technological device is one of their main “selling points”³⁹.

Moving from libertarian premises (Golumbia 2016) and reshaping the contraposition between politics and markets, in blockchain rhetoric, humans are depicted as corrupted and unreliable agents, while machines represent their exact opposite: incorruptible, transparent and fair mechanisms that can be trusted because they do not need any social institution to work. These oratories, however, were not invented by blockchain and cryptocurrency pundits and enthusiasts; on the contrary, they arose on the fertile ground laid by governmental institutions.

In the last decades, as the research strain called “critical accounting” has shown, western societies witnessed an unprecedented spread of cost-benefit analysis, accountability, and bureaucratic regulations in the name of transparency and objectivity, coupled with the neoliberal shift of decisional mechanisms from the politics to the markets. The expansion of these policies has been linked to a generalized sense of mistrust toward the others and the extraordinary development of markets (Porter 2020; David Graeber 2015; Power 1994). A general sense of suspicion cannot but be the other side of letting free markets organize the allocation of (supposedly scarce) resources and the idea that we are all *hominī oeconomici*, exclusively look after our self-interest. Thanks to its (alleged) “anti-political” neutrality, providing as much data as possible to a “rational” audience is seen as the

³⁹ As we will see in the next chapter, this project initially was meant to study Green Asset Wallet. This company, as one of the former interns told me, decided to adopt this technology to run their platform *exactly because* blockchain is an advanced solution

best solution to settle the uncertainty generated by this social environment.

A fundamental part of our puzzle is still missing. We still have not answered a fundamental question: what is technology? Even if until now we talked about *material* infrastructures (a blockchain consists of lines of code that were written and that runs on a computer), the very term “technology” comprises the word “technique,” which means immaterial knowledge.

We face a contradiction, and, as for “economy”, a strict definition will not work. A good starting point could be a dialectical thinker like Karl Marx; the German philosopher did not develop a complete theory about technology but grasped its direct link with broader societal values and beliefs. Remarkably, he defined technology as “the active relation of man to nature” (Marx 2004, 493) that “discloses man’s mode of dealing with Nature, and the process of production by which he sustains his life, and thereby also lays bare the mode of formation of his social relations, and of the mental conceptions that flow from them” (176). In his view, technology is strictly related to his definition of the economy as a historical process, which is one of the ways through which societies reproduce themselves ⁴⁰.

We cannot detach technology from the socio-economic background from which it stemmed, and it is strictly related, especially for a technology like a blockchain so strictly dovetailed with money and financial operations.

Despite being a scholar often seen in opposition to Marx for his views on power relationships and history, similarities can be found in Micheal Foucault; any discussion on technology, would be incomplete without mentioning the French philosopher, given the role of this theme in his production.

Even if the French author never proposed a unified theory of technology (Behrent 2013), in his vocabulary the term assumed two different meanings, both encompassing an *immaterial* dimension, the first referring to how modern systems control individuals and populations, the second as a value-free methodology to understand how power shapes human conduct and how power relations work (ibidem); to talk about technology means to talk about power. This definition is

⁴⁰ It would be erroneous, however, to conflate Marxian historical materialism and economicism. As reported in the Theses on Feuerbach, between structure and superstructure, material and immaterial, there is always a constant dialogue.

surprisingly similar to the one given by Marx.

Nevertheless, since economy and power relationships almost overlap, and talking about technology also means talking about the economy, a *Maussian*, totalizing approach can encompass all these different shades of meanings.

Technology is an ambivalent term, embodying a double and contradictory nature, and enmeshed with societal values: studying technological devices is a unique chance to study how modern society works, choosing a peculiar point of view. They work not only because of their inherent mechanics, but because a group of people is believing and making them work. Through which lens technology should be observed? How should we analyze it?

A strain of anthropology provided an interesting perspective, twisting the common sense about technology: many scholars reversed the traits usually assigned to technology - like rationality, impartiality, modernity, and progress - and treat it like its opposite, *magic* (Hornborg 2016; Gell 1992). Cryptocurrencies, it should be noted, are often nicknamed “*internet magic money*”, and many blockchain-related projects recall this aspect in their very name⁴¹, thus hinting that we might be on the right track.

Magic and economy: a preliminary introduction

Anthropologists, however, did not always hold the same views on magic. Scholars like Tylor and Frazer painted magic in terms of individual psychology (Valeri 2013) and, through an evolutionary framework, as a form of pseudoscience preceding religion and proper “Western” science, assumptions that superseded in the intellectual toolbox of the euro-american thinkers (Tambiah 1990), with magic, religion and science sedimented into distinct domains.

Time has passed, and the discipline has long changed, showing how magic is not a remnant of an old past but rather a modern phenomenon, nor is it a manifestation of irrationality. In the canonical *Witchcraft, Oracles and Magic among the Azande*, Evans-Pritchard (1937) showed how magic and witchcraft help explain causation and misfortune for the Azande. They provide reasons why specific things happen, coexisting with a logical worldview and not opposed to rationality: magic is logically coherent in the Azande worldview, even if it does not match Western conceptions.

⁴¹ For example, the crypto tokens \$MAGIC, \$SPELL and \$MIM (magical internet money)

Magic works in its cultural universe; for the Nilotic population, magic rituals relieve anxiety and create an acceptable expression of conflict or desires.

Magic and the occult, however, are still recurring topics for scholars focused on the African continent: the advent of many contemporary trends led to the expansion of this phenomenon. Geschiere (1997), for example, noted how beliefs in witchcraft and the occult in Africa directly express contemporary social tensions shaped by globalization, urbanization, and political instability. In contemporary Cameroon, witchcraft accusations allow people to explain misfortune and express anxieties related to an unequal social change: the occult provides a language for criticizing power imbalances and corruption, allowing people to explain why development and democratization have not delivered their promises.

The advent of neoliberalism constitutes a turning point for spreading magical practices (H.L. Moore and Sanders 2003). The implementation of structural adjustment programs in the 1980s-90s - a direct consequence of the substantial re-evaluation of the dollar - led to reduced state services, unemployment, and economic precarity for many Africans, fueling the need to explain this rapid and brutal worsening of life condition, thus seeking solutions through occult means.

Economy, magic, and technology appear to be in a strict relationship, especially when we account for what magic does. According to Marcel Mauss (2005:76), magic is “the art of changing [and] of doing things” in a way that is not mechanical but symbolical and yet with a real impact on society⁴², refusing explanation of magic as a ‘tissue of inventions and hoaxes’ (40). Magicians arise at the intersection of symbolical and technical actions, ideality, and materiality, in a fashion not so distant from technology as we described before.

To explain the complexity of the picture we just painted, going back to Marcel Mauss seems the right thing to do. Magical acts derive their efficacy from collective ideas about unseen powers that give them an out-of-the-ordinary potentiality (Skovgaard-Smith and Hirst 2023); for the French author (Mauss 2005), magic is inherently a societal force and he invites us to observe this phenomenon through this lens “since it is only in the milieu, where these rites occur, that we can find the *raison d’être* of those practices” (12). Magic and magical elements occupy a separate role in the

⁴² And thus, going back to Hegel, we can look at magic as a *rational* activity

texture of a group: a magician is defined by Mauss as someone “set apart” (29) from the rest of the society since their value derives “from the relative position they occupy within society or in relation to society” (148) and it is precisely “this separateness which endows them with magical power” (36-37).

Magicians make things happen. They can do that because the social group whom they are part of bestowed them such powers due to some of their “abnormal” (unexplainable or socially unclassifiable) characteristics (Mauss 2005: 28): “It is public opinion which makes the magician and creates the power he wields” (40). However, since they constitute the exception compared to a normal state, magic can be seen as a way to explain and govern a society's centrifugal, pathological forces. Only a few of them can be admitted: each center can have a limited number of peripheries. Moreover, in those peripheral spaces, disruptive forces can be discharged; a long strain of authors, starting from Levi-Strauss and Ernesto De Martino (Valeri 2013), showed how figures like shamans and sorcerers often perform healing rituals not only on a single patient but on the whole society, constituting necessary agents to rebalance a group. We are going back to politics again. Only in the naivest functionalism a group can reproduce without any incongruence. The realm of politics can be summarized, in fact, in two questions: how to govern changes? How do we absorb a potentially disruptive force?

The paradigm of magic, then, seems then an excellent way to describe phenomena arising at the intersection of technology, economy and politics like green finance or cryptocurrencies; despite being trends appealing to different narratives and audiences and being (apparently) unrelated, they are undoubtedly centrifugal forces, representing and repressing (potential) critiques of the current socio-economic system. Maybe these scopes can tell us about deeper enmeshment among them. The Maussian “pursuit of a whole” (Hart 2007) authorizes us to stretch boundaries between them and look for deeper connections. If this analogy might appear unsettling or bizarre, it is not for the distance between “modernity” and “backwardness”, but rather for their proximity, as Graeber (2005) famously pointed out: social relations and social phenomena always contain a certain degree of arbitrariness. And arbitrariness defines contemporary capitalism (Baudrillard 1994).

We already showed how blockchains and green finance share the same roots, the

implementations of logical games to real-life situations. What we have not already outlined is how they integrate with the broader cultural milieu, what makes them “total social facts”. They share the same theoretical framework developed in the US think tanks during the Cold War and stemming from the desire of scientists working for the US Army after WW2 to predict, control, and influence the behavior of societal actors. Despite being portrayed as neutral, logic-driven technologies, they embed and reproduce a clear political view.

As Mirowski (2002) has shown, at the dawn of nuclear competition, countless research programs and scientists moved from the impossible dream of reducing the complexity of human interaction to highly abstracted, hyperrational formulas, making traditional democratic forms of governance and government redundant and implementing society-wide army’s hierarchical chain of powers. This was the program behind the development of cybernetics (Wiener 1948), a research agenda that “took computer-controlled gun control and layered it in an ontologically indiscriminate fashion across the academic disciplinary board [...] turning itself into a universal metaphysics, a Theory of Everything” (Pickering 1995, 31). Game theory and cryptography played a crucial role in creating this unifying theory⁴³. These latter, who blossomed during the Cold War, provided the very backbone of *Operation Research* (OR) programs, the “social science done in collaboration with and on behalf of executives” (Blackett 1962, 201) that aimed to coordinate humans and machine through mathematics and neoclassical economics. This approach could not but rely on a highly abstract and transcendental language, mainly because it had to account for uncertainty and potential *irrational* (deviating from the norm) behaviors. Out of Mirowski’s extensive work, we can extrapolate two crucial arguments for our thesis: first, the collapse of boundaries between different fields, and second, the role of predicting and anticipating potential mischievous and malicious behaviors. Moving from this framework, we can reconcile the development of computer simulations and mathematical games with Mauss’ theory of magic. As magicians and magical practices in “traditional” societies, the formers deal with the realm of “abnormalities,” potential but necessary pathologies of a society that help to express and build the concept of “normality”.

⁴³ Interesting for our discourse on environmental finance is to note how critical scholars (Hornborg 2023b) pinpointed how capitalistic modernity homogenized both nature and ideas.

According to Mauss (Valeri 2013), magic deals with potentially transgressive or prohibited behaviors, and in fact, through all the history of Christianity (Pietz 1987), magic was seen as the manifestation of negative and evil forces; among the various representations of magical power, one of the most famous and undoubtedly related to the dangers of magic is Goethe's poem *The Sorcerer's Apprentice* ("Der Zauberlehrling"), where a young sorcerer tries to enchant brooms to perform his chores, just to create chaos that the older wizard then solves. Famously, in *The Communist Manifesto*, Marx and Engels (1967) compares the bourgeoisie to "the sorcerer who is no longer able to control the powers of the nether world whom he has called up by his spells." Marx and Engels are not the only economists seeing in capitalism the display of mystical forces and dark agents; in their literature review, Skovgaard-Smith and Hirst (2023) show how anthropology and sociology long noticed how the leading figures of current capitalism (entrepreneurs, managers, traders, consultant) resemble who, in other cultures, would deal with the unknown and defined as a magician, sorcerer, shaman, and similar practitioners.

The Mana

The subject of our investigation fits this background. Something is unsettling in looking at human and non-human life forms only through a mathematical lense, as in the utilitarian thought constituting our subject's epistemological (and ideological) background. Marcel Mauss stressed the extraordinary of magical agents by using a "troublesome notion" (2005: 134) like *mana*. Being central to Mauss' philosophy and having had an enormous impact on anthropology, we should devote a few lines to this concept, directly quoting the French author. *Mana* is a word found in all Polynesian languages but indicates a series of phenomena in many populations: it "is not simply a force, a being, it is also an action, a quality, a state. In other terms, the word is a noun, an adjective, and a verb [...] One says of an object that it is mana to refer to this quality; in this case, the word acts as a kind of adjective [...]. People say that a being, a spirit, a man, a stone or a rite has mana, 'the mana to do such and such a thing'. The word mana is employed in many different conjugations—it can be used to mean 'to have mana', 'to give mana', etc. On the whole, the word covers a host of ideas which we would designate by phrases such as a *sorcerer's power*, the magical quality of an object, a magical object, to be magical, to possess magical powers, to be under a spell, to act magically. The single word embraces a whole series of notions which, as we have seen, are inter-related,

but which we have always represented as separate concepts. It reveals what has seemed to be a fundamental feature of magic—the *confusion between actor, rite and object*. It is really mana which gives things and people value, not only magical religious values, but social value as well. An individual's social status depends directly on the strength of his mana, and this applies particularly to roles in secret societies. The importance and inviolability of property taboos depend on the mana of the individual who imposes them. Wealth is believed to be the result of mana. On some islands *mana is the word for money*. [...] The idea of mana consists of a series of fluid notions which merge into each other. [...] mana is a thing, a substance, an essence that can be handled yet also independent. That is why it may only be handled by individuals who possess mana during a mana action, that is, by qualified individuals during the course of a rite” (ivi: 133-134. Italics are mine). The richness and complexity of such a notion makes it the ideal candidate to describe emerging forms of green finance, which try to solve the climate crisis through accounting *tricks*. Making such a claim without any supporting material would be unfair (and unscientific). Nevertheless, I perceive something unsettling in the calculations and predictions characterizing these forms of investing, based on the consequentialist utilitarianism (Parfit 1984). The idea behind carbon markets and, broadly speaking, orthodox approaches to the green economy is to produce results in the *long run* so that daily initiatives should be judged *a posteriori* for their results, neutralizing or postponing potential critiques: an inherently *anti-politics machine*. In KlimaDAO, this type of reasoning was explicit; the trading of low-quality credits was justified by the “greater good” of providing liquidity and scaling up voluntary carbon markets⁴⁴. A similar answer was provided to me by a core developer when I asked them to comment on the same matter: according to them, KlimaDAO is a neutral technology, and “DeFi tech stack could be applied to help overcome [voluntary carbon markets] failures”. As we will see in a short, these mechanisms of unaccountability constitute a crucial function in blockchain communities.

But KlimaDAO, a (relatively) small and eccentric economic entity located at the fringe of the financial market, was only replicating mainstream theories and rhetoric that can also be found in the “temple” of economic orthodoxy. Indeed, an example of the uneasiness mentioned above can be spotted in the 2018 Nobel Prize in Economics

⁴⁴ <https://governance.toucan.earth/t/increase-quality-of-the-base-carbon-tonne-bct/39>

winners Paul Romer and William Nordhaus; the scholars were awarded "for addressing some of our time's most basic and pressing questions about how we create long-term sustained and sustainable economic growth" since "economists have generally not studied how nature and knowledge are affected by markets and economic behaviour"⁴⁵. Having received such a medal, they definitely have *mana*; yet they possess it also because what they wrote can be alarming for non-utilitarian people.

Paul Romer, for example, is famous primarily for showing how technological progress can be modeled within growth theory as endogenous processes rather than exogenous factors (Romer 1986): technology constitutes a *positive externality* of human activities on the society. This type of consequentialist reasoning can lead to paradoxes, and all types of justification. Given the role attributed to technology, the American economist advocated for the establishment of "charter cities"⁴⁶ in underdeveloped countries, letting the richer (and more technologically advanced) ones preside chunk of territories so to serve as driving force for the growth.

William Nordhaus is more relevant to our discourse, and we will devote a few lines to him. He integrated the "Solow growth model with an important set of spillover effects by including the global warming caused by carbon emissions [...] pioneering the development of integrated assessment models (IAMs)"; he was awarded the prize because such models made it possible to calculate precise trade-offs between lower economic growth and lower climate change, and stressing the role of the *social discount rate* and the broader costs of adjusting economies to climate change, "evaluating how to guide the market economy towards emission levels that properly balance societal costs and benefits. This question cannot be addressed without a model in which – as in reality – humans are affected by the climate at the same time as the climate is affected by humanity's economic activities". The Yale professor already in the '70s (William D. Nordhaus 1974) began exploring the relationship between pollution and economic growth, pioneering the economic analysis of climate change. His discounting model, however, has been highly criticized⁴⁷ because it

⁴⁵ <https://www.nobelprize.org/uploads/2018/10/press-economicsciences2018.pdf>

⁴⁶ <https://www.theatlantic.com/magazine/archive/2010/07/the-politically-incorrect-guide-to-ending-poverty/308134/>

⁴⁷ <https://thenextrecession.wordpress.com/2018/10/09/climate-change-and-growth-nordhaus-and-romer/>

might heavily underestimate the actual costs of climate change. Pricing is the expression of a mathematical, quantitative evaluation, while human and natural life are the very definition of qualitative, subjective values. This process cannot but embed a certain degree of arbitrariness; as the Intergovernmental Panel on Climate (IPCC 2022) noted, “many impacts, such as loss of human lives, cultural heritage, and ecosystem services, are difficult to value and monetize”. William Nordhaus, during his very long career, famously revised and co-authored the most ever sold economic textbook, *Economics* by Paul Samuelson (P.A. Samuelson and Nordhaus 2010). Samuelson, rightfully considered one of the most important neoclassic, conceptualized (among many others thesis) the *factor price equalization* theory (Paul A Samuelson 1948): free trade will equalize the prices of factors of production, such as wages and rents, across countries so that each nation will specialize in producing goods that they can produce relatively efficiently, and then trading with other countries to obtain those that they cannot produce efficiently. Factors substitution is crucial since it allows producers to adjust their production techniques to the relative prices of factors.

This neoclassical approach, where nature, economic growth, and human life are seen as exchangeable factors in an equation, sustains Nordhaus’ models to assess climate change costs (William D Nordhaus 2017), that *unsurprisingly* turn out to be extremely low: “Including all factors, the final estimate is that the damages are 2.1% of global income at a 3 °C warming, and 8.5% of income at a 6 °C warming” (1519). It should be noted that those numbers come from a baselining methodology - the same one used to issue REDD+ credits - estimating how much lower global GDP would be in the future compared to what it would have been; damages are assumed to be a “quadratic function of temperature change and does not include sharp thresholds or tipping points” (W. Nordhaus and Sztorc 2013). As an economics professor sarcastically commented, “If the predictions of Nordhaus’s Damage Function were true, then everyone [...] should just relax. An 8.5 percent fall in GDP is twice as bad as the “Great Recession”, as Americans call the 2008 crisis, which reduced real GDP by 4.2% peak to trough. But that happened in just under two years, so the annual decline in GDP was a very noticeable 2%. The 8.5% decline that Nordhaus predicts from a 6 degree increase in average global temperature [...] would take 130 years if nothing were done to attenuate Climate Change, according to Nordhaus’s model [...]. Spread over more than a century, that 8.5% fall would

mean a decline in GDP growth of less than 0.1% per year. At the accuracy with which change in GDP is measured, that is little better than rounding error. We should all just sit back and enjoy the extra warmth.”⁴⁸.

We can understand this irony since oddities and quirkiness are central to moving laughs. However, as we stated before, they are also central in Mauss’ mana theory: the duo *mana*-magic neatly portrays not only the utilitarianism underlying contemporary green finance but also its advocates and, as we will see in the last section, it can be employed to understand also the career of Sam Bankman-Fried (SBF). Rather than hagiographic movies like *A Beautiful Mind* or panegyric articles on the mathematical prodigy of the moment, these *mana* people are better described by a satirical, black comedy movie like *Dr. Strangelove*; indeed, the inspiration for the eponymous character was a convex combination of Herman Kahn, Henry Kissinger, and John von Neumann (George, Kubrick, and Southern 1998).

To further stress the link between green finance and *mana*, we might conclude this section with an historical introduction to the broader concept of *Social Responsible Investments* (SRI). As it is known (Sparkes 2003), religious groups played an essential role in *ethical* investing, excluding (or privileging) certain companies for non-economical reasons. The relationship between (Christian) religion and finance is a long, thorny one, and has been extensively studied elsewhere (Stimilli 2016). We want to focus here on the chapter that started in the 60s-70s. Protests against the Vietnam War polarized US civil societies, with universities and religious bodies questioning whether they should own shares of companies profiting from that war. In 1971, two Methodist ministers launched the first “modern” SRI fund (Sparkes 2003, 49), that excluded both “sin stocks” as tobacco and gambling and companies involved in the war. The stance on South Africa’s apartheid represented another keystone for the development of SRI; during the ‘80s, especially in UK and US, a lot of pressure was put on the institutions financially involved with Pretoria; again, churches were at the forefront of such movement (ivi:55) that - according to Sparkes (2003) – slowly drained the apartheid regime. Other chapters of that volume clearly show how churches, from Australia to Sweden, lead the shareholder activist movements, funneling capitals toward ethical change. Not political. This is a crucial

⁴⁸ <https://economics.com/steve-keen-nordhaus-climate-change-economics/>

difference, that helps explain current enthusiasm for these instruments, and help explaining the role of religion in it.

According to Mauss, religion and magic differ because the first is public, open, the second one is private, hidden from the rest of the group. Yet, they both arise because a social entity renounced to part of their powers and give to them, an unintelligible process for the actors called *fetishism*.

French revolution constituted a watershed because cancelled the idea of intangibility of ruling bodies; governors are responsible toward parliaments and, in the end, towards the electoral body. An explicit, intelligible codified list of rules limits their powers, and sets the condition for their election. In a short, the obscure, implicit rituals surrounding the attribution of powers were made clear and – theoretically – accessible to anyone. How can institutions arising from arbitrary, undemocratic processes bring social change? This is the crucial question we will try to answer in this manuscript. Indeed, KlimaDAO succeeded also because presented an *a-political* (or *anti-political*, as we will see later) solution, mirroring a trend nowadays hegemonic. SRI was born to oppose and contrast political decisions without, however, engaging with politics. The Vietnam War was first and foremost a war moved by political and ideal reasons, two different worldviews faced and fought on the battlefield; the conflict ended after a faction was defeated, and left Saigon in a hurry. At the same time, the segregationist South Africa – supported by Ronald Reagan during the last phase of the South African Border War - fell after a decade-long war against Cuba-backed Angolan army and internal ANC armed insurgency. In Vietnam and South Africa, the changes hoped by Western civic society were reached thanks to the armed struggle of local political parties. If in a post-democratic (Crouch 2004) world, the re-proposal of apolitical actions can reap many consents, doubts about their efficacy arise.

The fetishism of the blockchain

Through the lens of magic, we can state that green finance and cryptocurrencies both constitute the other face of our economy, representing the opposite but necessary side. This means the creation of antinomies, which are paradoxical only for an external observer. For example, even if green finance rose against ever-increasing fears and concerns about the environmental degradation generated by a profit-driven and oil-based economy, “big oil” corporations like Repsol successfully

issued a green bond (Repsol 2018). Financial investments are made to create monetary profits; when it comes to green finance, these profits are often extracted from the Global South (Howson and de Vries 2022b; Brightman and Lewis 2017), thus reproducing global inequalities sustaining capital accumulation in the centers (Hornborg 2011; John Bellamy Foster and Holleman 2014). Finally, turning anything into valuable assets - even negative externalities in the case of carbon markets - cannot but resemble alchemists (Salamon 2020) looking for the philosophical stone. It would be tempting to frame these investments as mere greenwashing or corporate propaganda, and undoubtedly, there is a percentage of guilty conscience among actors promoting green finance. However, *they work*: investors pour liquidity into green bonds, companies devote resources to buy carbon credits, and consumers prefer environmentally friendly labeled commodities. As anthropologists, the main question should be, *why* do they work? An answer can be that green finance stands as a magical ritual response to these dangers so that they are solved at the symbolic level. Here, the term ritual must be read through Van Gennep as a set of actions supported by beliefs necessary to maintain social order and stability during times of change or crisis by providing a structured way for individuals and communities to navigate transitions and adapt to new roles or statuses.

Magical rituals help a social group to accept the unacceptable, providing a sense of continuity and predictability in the face of uncertainty and stress, creating a sense of order and control, and promoting social bonding.

The social group is reinforced thanks to the ritual resolution of its anxieties. Green finance, by turning environmental problems into assets to be traded on markets or as investment opportunities, expands the capitalistic form of production that, in the first instance, created these issues: a paradox, an incongruity ends up reinforcing the society instead of damaging it. So, if the answer to the dangers caused by capitalism seems to be more capitalism, as Mark Fisher famously noted, it is not because of some unique characteristic of neoliberal economies but rather because “modern” societies work according to the same principles as the pre-capitalistic ones, which were as well ridden with political and social conflicts often solved in the symbolical sphere.

Paradoxical movements are at the center of Mauss’ theory on magic, and returning to his essay is crucial for understanding such phenomena. First, it is necessary to remember his methodology: for the French scholar, the wholeness of a group is

greater than the sum of its constituent parts (Mauss 2005, 107). Consequently, it is "the whole society [that] suffers from the false images of its dream" (155): this thesis, in the end, can be seen as a lengthy inquiry into a classical anthropological theme, especially among Mauss' followers: fetishism.

Marcel Mauss studied the "dynamic integrity" (Hart and Mauss 2007) of societies "by considering the whole together, [...] to perceive the essential" (Mauss 2005: 275). Therefore, how core values are built and maintained and how those values influence the social order and relate to centrifugal forces are key questions, and the line between economic anthropology and political anthropology appears blurred. The notion of *fetishism* - an inherently Marxian term - is used in anthropology to analyze how a power structure is maintained, reproduced, and justified by the "gaze" floating around its origins (Godelier 1999): incongruencies that come up during this process are usually suppressed through (variably enforced) collective amnesias (Graeber 2001). What goes forgotten is how divisions of power and hierarchies are - like commodities in the Marxian theory - human-made constructions due to particular historical conditions and thus prone to change.

This will be evident when we analyze how, in DAOs and, more in general, in the crypto-world, the concept of *decentralization* is held and maintained; current literature shows how, in this universe, there is an underlying, unsolved tension between the core values of any blockchain (namely, the lack of any center and the horizontality) and the different values and powers held by the different member of every community, so that both centers of powers and different ideas exist. The solution designed to deal with discontent is its negation: participants in a blockchain that disagree with others can *hard fork*, that is, "secede" and create a new blockchain with no links with previous transactions. To admit that blockchain and cryptocurrencies are hierarchical and divided would admit that the whole idea behind the blockchain - replacing social links with computer puzzles - failed if we defined societies in a Nietzschean way, as stratified structures where individuals abdicate part of their will to others in the name of intangible powers (e.g. religions). Satoshi Nakamoto wrote the Bitcoin white paper to get rid of that, to make a self-interested regulated mechanism; this, by extension, implied the possibility for an anti-social community to exist, which, after almost fifteen years from the first blockchain, did not materialize. However, hard forks are rarely adopted by a community so that we can ensure certain harmony and a sense of equality exists despite an extremely unequal

environment⁴⁹. How, then, can the group survive if daily experiences contradict its beliefs?

It seems that when Satoshi designed Bitcoin, they did not think this technology would have gone so far and gained all this success, which implies being used by large communities with necessarily conflicting ideas and interests. As we will see in a short, Bitcoin is rooted in the *ordoliberal* ideals, consisting of little, self-sufficient communities: such “small-scale” capitalism was envisioned to avoid the (class) antagonism generated by the modern industrial metropolis. In this framework, conflicts cannot be imagined, let alone solved. Except their solution is not essential. This is where the concept of fetishism comes in. To explain that we can briefly introduce the “not your keys, not your coins” motto. Whenever an exchange fails, and people lose their money, or whenever a DAO steals funding, crypto-twitter users blame the subject who incurred the financial loss since they deferred trust to a third party rather than relying on themselves and thus on a personal, cold-storage digital or hardware wallet. This process of blaming seems to hit one crucial aspect; in magical rituals, according to Mauss, magic per se is never questioned, and if the spell is missed, practitioners are held accountable. If a ritual fails, it is their fault; the efficacy of the system of beliefs is never questioned because questioning this system would mean questioning the social group itself. Contradictions are not solved because there is no need to, they are not perceived as such from the actors. Guilt and blame are distributed similarly in the magic and crypto “sphere”: single users are seen as the sole responsible for the loss, while technology’s design is never questioned; as it will emerge from my interviews, it seems that developers never really thought about flaws in the actual usage of their code and, more broadly, about the limits of the blockchain. This is extremely interesting when it comes to decentralized protocols, like *DeFi* (decentralized finance, a type of platform where smart contracts execute trades), where the very non-existence of the human factor is often the reason leading to a permanent loss.

In these platforms, trust is put into the code and smart contracts, not into institutions. What if code gets exploited and funds stolen? Who is to blame for the subsequent financial loss? Transactions on the blockchain cannot be reversed by design. An

⁴⁹ For example, mining is firmly in the hand of few companies that can afford machines and energy to mine bitcoins; similarly, the 27% of all bitcoins are stored in the 0.01% of wallets

Ethereum developer I interviewed did not find these questions relevant and eventually blamed end users since they could not analyze the smart contract they put their money on. The fiction of technological neutrality (Hornborg 2016) is thus maintained by blaming the victims; victim-blaming is, indeed, one of the many ways a social group explains misfortunes and accidents (Mary 1992, 5), with its fixed sets of rituals for repairing at it. Durkheim's thesis (Durkheim 2014) on the political use of deviancy can be seen here in action: by criticizing individual users behaviors' (e.g. greed, tomfoolery, technological illiteracies are among the most common trope), ties are strengthened across the community, reinforcing the overall value system. This process is crucial for legitimizing the existence of a blockchain; as we saw, decentralization represents an ideological pillar of the communities, and current literature -as we will see- shows how actors would go against their own self-interest to preserve it.

In a society, trust - a belief implying letting the guard down, making a sacrifice - is put into people that can be held accountable (for example, kids, by definition, cannot be trusted, and parents account for their actions), so into people that have a moral or legal obligation toward those who put trust in them. This means the existence of a central authority - spiritual, legal, divine - capable of regulating this system and holding people accountable; in a purely decentralized system, like the one imagined by pundits and enthusiasts of cryptocurrencies and blockchain, accountability and responsibilities cannot be administrated. Or only the victim can be blamed for the loss incurred. The sense of guilt plays a pivotal role in Western morality and legal system; as Carl Schmitt cogently pointed out (Stimilli 2016, 136), it is a concept that is difficult to define because of its peculiar religious, moral, and "meta-legal" nature. Walter Benjamin (Benjamin 2017) further stretched this line of reasoning, stating that the question of guilt is a "myth", implying the separation of a fully sovereign subject from their surroundings, thus capable of judging and exercising their powers through a legitimized form of violence. We meet Nietzsche again: the German philosopher, in "The Genealogy of Morality" (Nietzsche 1998), famously showed how *debt* and *guilt* are conflating terms (in German, the word *schuld* encompasses both meanings): feeling *guilt* toward someone else allowed the creation of a sense of obligation, creating thus the basis for an economic contract. Cryptocurrencies arose against the idea of credit money, pushing the individualistic component of capitalism to its limit and solving this internal contradiction between credit and individualism in favor of the

latter; coherently, they cannot imagine forwarding guilt and blame on anybody but the single actor.

A purely decentralized system cannot exist, and, in fact, scholars I spoke with are currently researching the theme of accountability and ethics in blockchain-based organizations and are finding difficulties in rightly attributing responsibilities in such a network.

This, however, constitutes a short circuit only for external researchers. It is not for pundits, traders, and developers since it resonates very well with the individualistic ethos of capitalism, creating a circularity reinforcing the crypto-community beliefs despite the frequency of multi-billion dollars scandals: blockchains are a typical example of Mauss' total social fact. As Skovgaard-Smith and Hirst (2023) states, magical practices prevail, not because people are driven by irrational beliefs, delusion, and inability to perceive contrary evidence, but because the reasoning that explains contrary evidence is part and parcel of the collective logic of magic.

Finally, decentralization seems to perform the same role as myths and narratives that unify a community: by moving responsibilities onto single actors, the system is left immune. Plus, a myth does not need to be fully coherent with daily experiences to work because, like magic, its effectiveness derives from the broader social framework and narratives: the individualization of guilt and responsibility perfectly resonates within an individualistic society. Decentralized platforms work not because they can administrate accountability most efficiently but because people think so; they are symbols - something that *stands for* - of contemporary society's values and inspirations.

The process of blockchain (supposed) neutrality and thus transparency is relevant in our case; after journalistic investigations questioned the effectiveness of the carbon credits bought and sold on KlimaDAO, while Verra claimed no responsibilities for such trades and halted any further issuance of digital carbon credits from its registries⁵⁰, both KlimaDAO⁵¹ and Toucan⁵², the startup which provided the

⁵⁰ <https://www.bloomberg.com/news/articles/2022-04-07/the-biggest-crypto-effort-to-end-useless-carbon-offsets-is-backfiring#>

⁵¹ <https://www.klimadao.finance/blog/verra-public-consultation-klimadao-response>

⁵² <https://blog.toucan.earth/response-to-verras-announcement/>

technological infrastructure to *bridge* existing carbon credits on the blockchain, defended their actions by paradoxically stressing the inherent transparency of blockchain platforms, twisting the accusations of shadowy practices. Instead of reading such statements as mere public relations strategies for damage control or seeing terms like “transparency” as marketing baits, I took them seriously since they perfectly resonate with the social frame mentioned above.

In an apparent contradiction, technological developments made responsibilities personal again, and claims on transparency obfuscated power structures.

A last note on the theoretical framework. Given the role we are attributing to magic in our study, the reader might ask why we did not use the paradigm of religion to explain them, especially since capitalism and religion have been long seen as two faces of the same coin (Agamben 2007; Benjamin 1972). Even if Mauss preferred the term "magico-religious" to describe the overlap and interconnectedness of magic and religion, being magic and religion the two poles of the same question (Skovgaard-Smith & Hirst, 2023), it should be noticed that magic, according to Mauss (2005), differs from religion because participants resort to the former to receive material gains; magic rituals are held, for example, to receive a bountiful harvest or to make someone fall in love, while religion appeals to society-wide, “higher” needs. Furthermore, we can see magic as a “smaller” phenomenon compared to religion: magic is less systematic and institutionalized, private, and secret; it is associated more with individual specialists and deals with more ambiguous, undefined phenomena compared to codified religious theology (Valeri 2013). According to the picture we just painted, green finance and cryptocurrencies can be better described as recurring to the notion of magic; they are indeed phenomena stemming from the current economic system, and the focus of this research is indeed not on capitalism per se, but instead on these manifestations of it.

Historical-Moral Aspects of the Blockchain

The same framework can be deployed to analyze the blockchain. Indeed, even from another angle, cryptocurrencies represent a ritual way to solve fears and desires generated by capitalism's most recent developments without questioning it. To prove this, we should now shortly recollect Bitcoin history, highlight interesting parallels to the '70s neoliberal turn, and provide an anthropological framework to understand

them: this section aims to introduce the reader to a moral and political economic analysis of the blockchain.

Satoshi Nakamoto designed the first blockchain amid 2008's economic crisis, when the whole banking system was on the verge of collapse, representing the libertarian answer to an ever-expanding and shadowy financial world deeply intertwined with politics. The collapse of giants like Fanny Mae, Morgan Stanley, and Lehman Brothers was the result of the unprecedented expansion of subprime mortgages (Mian and Sufi 2009). The development of *credit default swaps* (CDS) - financial derivatives providing insurance against debt defaults, widely used before the 2008 financial crisis to insure against defaults on bonds backed by subprime mortgages - allowed banks to expand credit towards unqualified borrowers and speculators. Moving along a trend started in the '80s, the years preceding the *Global Financial Crisis* witnessed an unprecedented expansion of financial products (Lapavitsas 2013), since commodities once given for granted or heavily subsidized like housing became vehicles to extract financial profits, pushing their price and fueling a real estate bubble.

When it burst in 2007-2008, defaults on subprime mortgages rose sharply, triggering a wave of CDS payouts, pressuring an already distressed financial sector even more, with many banks and financial firms on the brink of collapse. To avoid an escalation of the crisis and the complete freeze of the entire banking system, the Federal Reserve stepped in, saving institutions deemed to be "too big to fail"; the total cost of the bailout program (*Troubled Asset Relief Program*) was around 700 billion dollars⁵³ led many people to distrust the banking system and the government, seen as shadowy interrelated and disconnected from the "99%" of the population. So, 2008 was undoubtedly a decisive moment for capitalism itself, shaken at its very heart - Wall Street - by its own contradictory development and search for profits, the superfetation of highly risky financial products tightly connected with tangible assets on the one hand and the dovetailing with state institutions despite decades of rhetoric (and politics) about free markets on the other. This point of crisis generated many centrifugal forces; if in the collective memory, images of "Occupy Wall Street" activists marching in front of the New York Stock Exchange represent what that

⁵³ <https://home.treasury.gov/data/troubled-assets-relief-program>

period represented and what futures were imagined, another underlying and centrifugal force was growing in the post-bailout world. That force was, of course, the Bitcoin.

As we will explore in detail in the main body of this work, the ideas behind cryptocurrency were not new: in the Bitcoin whitepaper, we can find centuries-old ideas on how money works and how society should be regulated. In particular, by capping the total monetary amount, Bitcoin digitally enforces the gold standard, recreating the scarcity principle in the virtual space and eliminating any intermediaries between a person and their own money.

Behind these tropes can be recognized centuries-old fears, myths, and contradictions generated by the development of capitalism; we will list a couple of examples here. A fundamental notion for any discourse on cryptocurrencies and capitalism is private property: to work, markets for commodity production need clear and enforceable laws about ownership. A “pure” free, unlimited market never existed since there has always been the need for an external authority to put this system in place and make actors playing according to the rules (Polanyi 1957). Deploying the Polanyian framework (Polanyi 1965), we can outline the ambiguous coexistence between different “modes of distribution”, namely *redistribution*, where goods and services are collected by a central authority and then distributed according to custom or law, requiring central coordination and hierarchies, and *market exchange*, where goods and services are exchanged on markets through monetary prices set by supply and demand.

Top-down state interventions conflict with the idea of self-regulating actors and individual freedom’s superiority; after the crisis of the Keynesian state in the ‘70s and the subsequent rise of neoliberal thinkers, this contradiction has often been solved blaming the state institutions and powers for the economic crisis, advocating for deregulations and less redistributive policies: in a nutshell, their answer to the capitalistic crisis was more capitalism.

Monetarists (Friedman 1953a, 2017, 2020) and *public choice* (Buchanan 1975; Buchanan and Tollison 1984) scholars provided the scientific backbone of such critiques; these researchers, moving from an utilitarian anthropology that perceive democratic voting as incompatible with personal freedom (Arrow 2012), saw government interventions as inherently unfair and conducted in the name of personal interests rather than the public good. As we will explore later, these theories are

deeply intertwined with recent developments in finance and technology, constituting the bedrock against which blockchains and DAOs developed later on.

When the Federal Reserve printed “out-of-thin-air” the 700 billion needed to save the banking system in 2008, anarcho-capitalists saw it as the proof of political corruption and a deliberate attack to devalue citizens’ wealth (Golumbia 2016). Bitcoin was designed to answer FED’s expansionary policies, reinstating the scarcity principle and showing how central banks and governments were not needed to run economic activities. So the answer to an economic crisis created in the first instance by the lack of regulations (such as the abolition of the Glass-Steagall Act) and the superfetation of highly risky financial assets (e.g., CDS) was an unregulated (and *decentralized*) security backed by the proof of a solved mathematical puzzle; the solution to a crash caused by unrestricted greediness is designing a technology rewarding the type of behaviors. As in the ‘70s, the outcome of an economic crisis is a force reinstating the system itself, even at the cost of getting rid of many elements (e.g., credit-based financial derivatives). How is that possible?

Economic anthropology is not new to this type of paradox: this is where, again, Marcel Mauss’ lesson on gift exchange became relevant to understanding current scenarios. To do so, we should introduce his theory on gifts, which we will explore later since blockchain’s architecture poses some challenges to it. In his *Essai sur le don* (Mauss 2002), the French anthropologist famously devoted many pages to the *Kula* exchange, a ceremonial gift exchange system practiced in the Trobriand Islands (Melanesia) and first described by Bronislaw Malinowski (2013). Participants enter this ceremony by traveling the archipelago’s islands clockwise or anti-clockwise to trade, respectively, valuable items like *vaygu’a* (necklaces) and *mwali* (armbands); these exchanges are not immediately reciprocated, and the system is based upon a vast network of trusted peers. The purpose of such trades, indeed, is not to acquire material wealth but rather political and social influence and prestige; only noblemen take part in it, and it is carried in a disinterested way (Mauss 2002: 28). This false modesty hides *kula*’s competitive nature: gifts exchanged are not equivalent, and each participant aim to put the receiver in a position of perpetual indebtedness. A social, and not an economic return was pursued: rather than according to their physical properties (dimensions, decorations, colors), necklaces and armbands derive their value from their histories, from the circulation among

high-ranking kula players (Weiner 1992: 135). To employ a metaphor dear to many of the people I spoke with during my work, items in the *kula* are *Non-Fungible*: "Each one, at least the dearest and the most sought after [...] has its name, a personality, a history and even a tale attached to it." (Mauss 2002: 30); an armband cannot be exchanged for another armband, and vice versa, so that their reciprocity resembles a marriage between a male and females according to Mauss (33).

Then, what forces drive these objects? Why do they have to circulate in that specific way? Even if it is reasonable to speculate that Marcel Mauss suspected or wished that *vaygu'a* and *mwali* possessed a spirit akin to the Polynesian *hau*, he did not venture that far, simply admitting that they cannot but have a sacred nature (Godelier 1999: 81).

An interesting answer to these crucial questions has been provided by Annette Weiner (1992). The American anthropologist has the merit of reiterating a long-forgotten feature of Maussian (and Malinowskian) work: Trobriandian chiefs did not bring all their shells into the kula; they left out the priceless ones, those embedding "magical potency, sacred prerogatives, political legitimacy, and life-giving [...] social controls" (3), which women possessed. A similar scenario was found by Mauss (2002: 55) himself in the Kwakiutl Potlatch rituals, where "a certain number of objects, although they appear at the potlatch, cannot be disposed of [because] these pieces of 'property' are sacra that a family divests itself of only with great reluctance, and sometimes never", adding in a successive footnote (57) that "there were two kinds of copper objects: the more important ones that do not go out of the family and that can only be broken to be recast, and certain others that circulate intact, that are of less value, and that seem to serve as satellites for the first kind". In her book "Inalienable possessions: the paradox of keeping while giving", Weiner shows how, in different societies (eg. Medieval Europe, Melanesian Islands), power is given to individuals thanks to their ownership of immovable, *inalienable* revered objects or through possession of those that are thought to embody historical connections, going beyond current days (Weiner 1992: 42); gift exchanges within Melanesian societies are possible because exchanged presents draw value from "the radiating power of [...] inalienable possessions [kept] out of exchange" (150): their possession guarantees the inscription into a superior cosmological order (4), capable of unifying and regulating everyday' life. These artifacts would give the owners external, supernatural legitimacy and magical powers (136) that would let them distinguish

and stand above non-possessors, giving them authority over the group's identity and defining its past, present, and future (8). In this way, the author shows how exchanges are, in the end, moved by historical and political forces (27)⁵⁴, answering fundamental societal questions, namely how to govern changes. As Weiner put in the title of her book, we find again a *paradox*: inevitable variations and modifications inside a group are controlled by defining fixed cornerstones around which movements are articulated. Gifts are possible because some objects cannot be given away; controlling what can go and what cannot means controlling the social reproduction of the group.

We can now leave Pacific Ocean gift circuits and return to the Global North's financial trades. As Maurice Godelier (1999) interestingly remarked, those principles can be found in our societies as well, questioning rhetoric on the total commodification brought by global capitalism; the Marxist anthropologist reminded us how *sacra* like constitutions or national treasures play the same role as the immovable Kwakiutl copper heirlooms. The discourse mentioned above on technology comes in handy; as we saw, the difference between material and immaterial artifacts is nuanced, as the stress put by Godelier (205-207) on the inalienability of constitutions shows: the exercise of powers, once regulated and legitimized by sacred objects (or *fetishes*), is now authorized by another man-made yet individuals transcending artifact, the law (a modern form of *fetish*, we might add). During decisive moments for the reproduction of the society as a whole, like a crisis, what does *not* move and, instead, imprints the direction of the movement are the most sacred principles and heirlooms: they might change owners (Weiner 1992:100), but their position in the social order remains the same thanks to their supernatural source of authority.

Through this paradigm, we can better understand the apparent paradoxical ideological apparatus and practices⁵⁵ characterizing the anarcho-libertarian answers to capitalistic crisis. Another interesting parallel can be shortly drawn between the '80s and the second decade of the twenty-first century: while, during the former, US

⁵⁴ The reader might recall here the already mentioned comments on fetishism by Pietz and Graeber

⁵⁵ For example, the eclectic Bitcoin maximalist Max Keiser (<https://twitter.com/maxkeiser>) routinely tears up dollar bills to physically manifest the inner emptiness of fiat money.

government spending arose despite cuts on public spending and many ideologues were employed by public institutions, during the latter, Bitcoin and cryptocurrencies - along with other volatile assets - vastly benefitted from the expansionary policies they rose against in the first time.

Indeed, while it can be assumed that dovish, expansionary policies might have helped growing interests toward a highly risky asset like Bitcoin, it should be noted that its price was determined, until 2019 at least, mainly by other factors. As many older studies showed, the cryptocurrency's price has been determined by its attractiveness for internet users (Kristoufek 2013), its fixed supply interacting with an elastic demand (Buchholz et al. 2012) or its marginal cost of production (Hayes 2018), with other studies denying any correlation with broader macro-financial developments (Ciaian, Rajcaniova, and Kancs 2016), relative independence from other market's variables (Jakub 2015) or even a *negative* correlation with stock prices (J. Wang, Xue, and Liu 2016).

However, as time passed, a relationship with monetary policies began to develop. So, cryptocurrencies became mainstream not only because of their non-speculative applications or the vast amount of new users but also because they started following broader macroeconomic trends and became less dependent on their inner characteristics. In particular, starting from the last bull run - during which KlimaDAO was launched - cryptocurrencies' price movements began to show a strong correlation with macroeconomic policies despite remaining an asset class with some peculiarities (Fig. 1). However, many relevant actors began to state the opposite exactly when this link openly manifested and advocated for a more hawkish FED, somehow replicating the monetarist.

To prove this point is crucial for our discourse because it will show the presence of paradoxical and anti-economical behavior among crypto-enthusiasts, namely the stubborn refusal of dovish policies, providing a rational explanation for it; in the end, economic anthropology always tried to explain "irrational" practices since Malinowski's account on the *kula*. We will test the Maussian theoretical framework first by providing an objective depiction of economic reality, showing a correlation between Bitcoin and NASDAQ. We choose this benchmark not only because the latter represents tech companies but also because it over-performed the S&P500 index in the last decade, as Bitcoin did, and presents a stronger sensitivity with the cryptocurrency, as the following figures show. Then, I will analyze cryptoenthusiasts'

ideal world by looking at a popular *meme*.

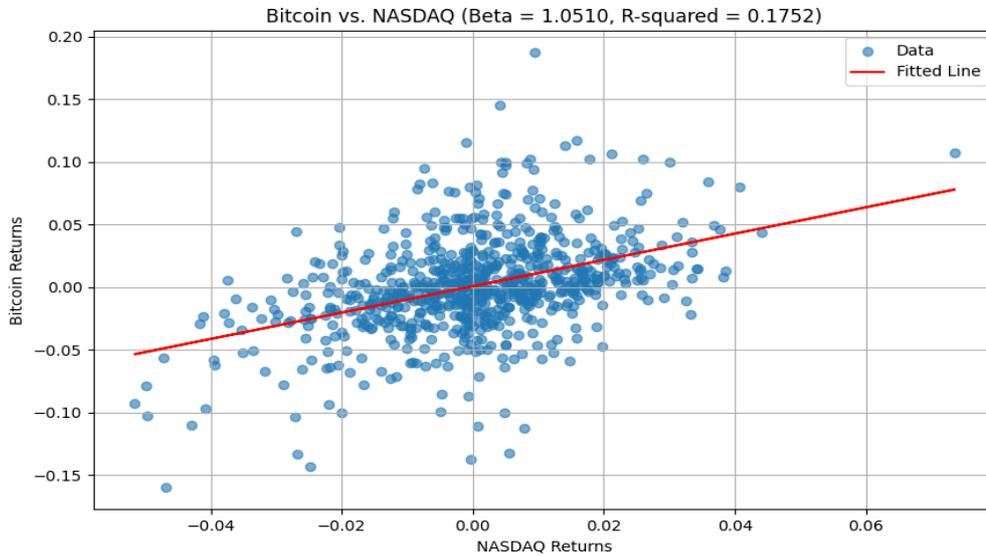


Fig. 1 Data from Yahoo Finance, September 2020 - September 2023
However, this relationship with NASDAQ began to develop only around 2019;
before, the correlation was almost non-existent (Fig. 2 and 3).

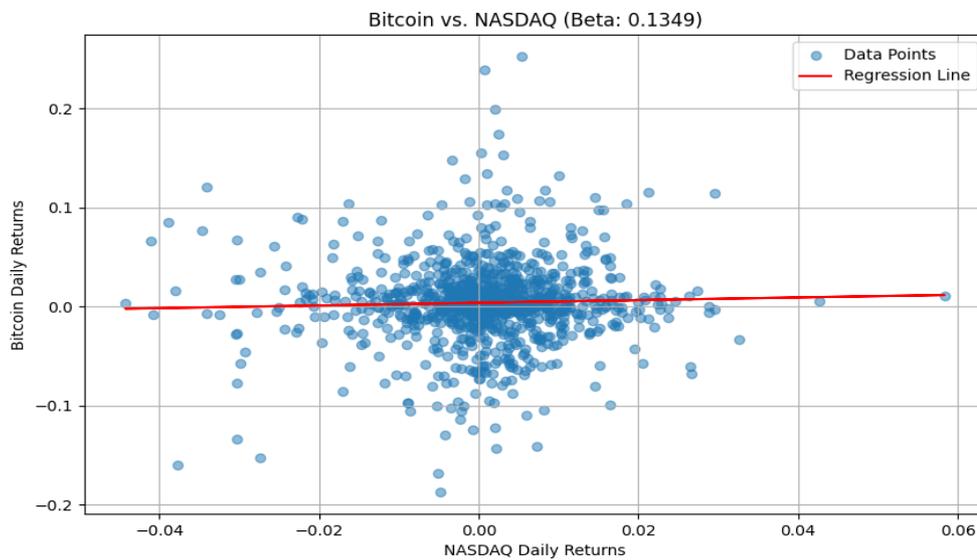


Fig. 2 Beta Bitcoin to Nasdaq, September 2015-September 2019, Data from Yahoo Finance

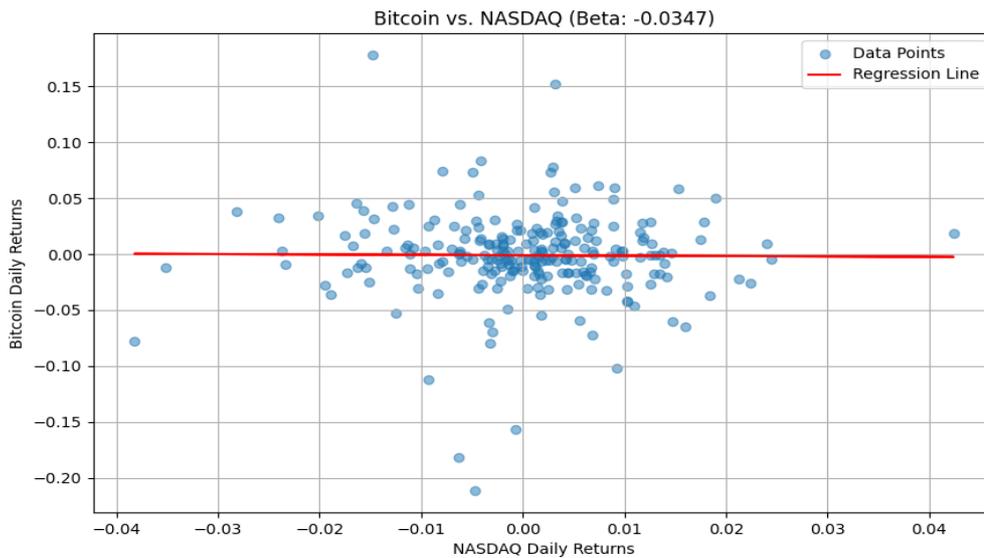


Fig. 3 Beta Bitcoin to Nasdaq, September 2011-September 2015, Data from Yahoo Finance

However, many crypto-users advocate often fail to recognize this link and keep vowing for unregulated, independent (from macro trends) cryptocurrencies while criticizing a low-interest rates economic environment; in short, they keep repeating far-right economic key points, something that has already been analyzed at large (Golumbia 2015).

For example, a popular *meme* shared among the crypto-community is the so-called “money printer goes brrr”⁵⁶ (Fig. 4)

⁵⁶ <https://knowyourmeme.com/memes/money-printer-go-brrr>



Fig. 4

This meme was first shared on Twitter in March 2020 to make fun of anarch-capitalists (represented by the yellow-black bow tie) after the Federal Reserve widened its asset portfolio to prevent a broader financial collapse due to COVID-19. Shortly after, the meme was shared on the subreddit r/Anarcho_Capitalism⁵⁷ with a twisted meaning, making fun of FED's attempts to avoid a market crash. In this new form, it became viral among crypto enthusiasts⁵⁸ to mock and satire fiat money, central institutions and regulated public companies, exorcizing perennial libertarian fears regarding public debt through irony (Fig. 5). Memes represented in figures 4 and 5 are a clear representation of "digital metallism" (Swartz 2018, discussed in the literature review section) - one of the two dominant economic imaginaries among

⁵⁷https://www.reddit.com/r/Anarcho_Capitalism/comments/fjl5fa/ahhhhhhhhh make the federal reserve stop/

⁵⁸ For example, the website [MoneyPrinterGoBrrr.com](https://www.moneyprinter gobrrr.com) shows in its homepage cryptocurrencies prices along with the meme. Moreover, this sentence widely circulated among influential crypto-twitter accounts, often reaching thousands of "Likes"; notably examples are constituted by Anthony Pompliano (<https://x.com/APompliano/status/1403084211871956996>, <https://x.com/APompliano/status/1403084211871956996>) The Wolf Of All Streets (<https://x.com/scottmelker/status/1463866536674869251>, Tyler Winklevoss (<https://x.com/tyler/status/1254077026765602816>), RIZZO (https://x.com/pete_rizzo/status/1443570137144205312) and CZ Binance (https://x.com/cz_binance/status/1408275209979760644)

blockchain-communities⁵⁹ - a cyberlibertarian version of monetarism and market deregulation



Fig. 5

Through Weiner and Godelier (and Mauss), we can now explain this paradox and show how contradictions reaffirm the unity.

It should be first stated that expansive policies do not challenge the current scenario, and the subsequent decade-long low-interest rates environment can be read as an “innovative” instrument put in place to save contemporary capitalism (Varoufakis Blog). Such interest rates did not imply a shift in power relations among actors, nor directed economic activities toward other aims than profit-seeking. So, even if expanding a central bank’s assets implies abandoning many neoliberal

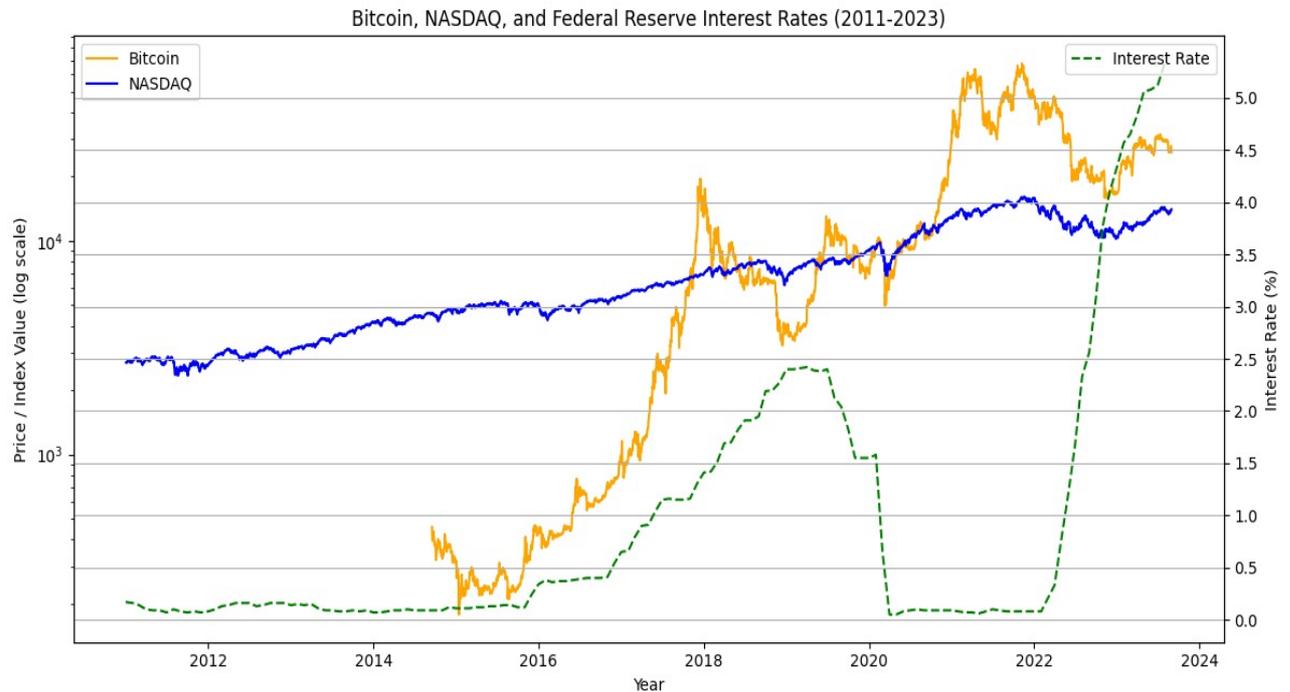
⁵⁹ The second one is “infrastructure mutualism”, and stresses technological experimentations, as well as new forms of cooperation and solidarity. Even if deeply linked to VCs, KlimaDAO is rooted in this imaginary

conceptions like the CB's independence or money endogeneity, its core values and *inalienable possessions* are left untouched.

Recent monetary policies' developments seem to confirm CBs' neutrality more as an ideal rather than an implementable politic: starting from 2008, quantitative easing – central banks' balance expansion through assets' buyback – has now become a systematic instrument for FED, BoJ, and (to a lesser extent) ECB. Rather than pursuing an ideological purity or saving irrelevant parts of it, reproducing the whole system by any means is of the utmost importance for all human groups, included our neoliberal society. Even a small-government advocate like Milton Friedman (2020) recognized that if the FED had stepped in before 1929's crash, the Great Recession could have been avoided: conferring to the State the role of markets' referee means also saving the markets from themselves when necessary. The subsequent liquidity injections effectively benefitted the markets and inflated stocks' prices, especially the technological ones: from 2009 to 2022, the NASDAQ index grew 30 times, while the Dow Jones registered a 450% growth. These measures benefitted the crypto market, especially after FED's financial response to the COVID-19 emergency. Despite the economic gains provided by such (neoliberal) policies, crypto enthusiasts remained vividly critical of any institutional financial actor, as we saw; Bitcoin is considered unrelated to inflationary monetary policies because it embeds, like gold, an inner value; it is decentralized and deregulated, although the lack of a central authority is what makes many crypto-frauds happen.

Why do actors in these markets seem to embrace anti-economic behaviors? An answer can be found in cryptographic technologies' magical and ritual aspects. Sacrificing the *precious* tenets by casting them into a modern potlatch, the *sacred* ones who dictate the direction of the economies were saved. Indeed, the governmental “money printer” largely benefitted public companies; looking at US stock prices and returns, many studies observed a direct correlation with interest rates (Giovannini and Jorion 1987; Huang, Mollick, and Nguyen 2016; Gao, Ren, and Umar 2022), especially for the NASDAQ index (Olokoyo, Ibhagui, and Babajide 2020). Given tech-companies' astonishing returns, it is not hard to see the foremost position played by the “virtual class” (Barbrook and Cameron 1996) and its immovable role for contemporary capitalism. This should bear no surprise to the reader; as we already said and as we will explore in the last section, contemporary capitalistic institutions have been influenced at large by modern computers (and the

inner utilitarianism moving their engineers), so that Turing machines and their heirs can sit along with Godelier's constitutions among modern-day *sacra*.



Data from Yahoo Finance, FRED

The same can be said for those who opposed such measures and the revised “money printer” meme. How can a generally right-leaning audience vows for an economic crisis?

First, it should be stated that it is not rare for enthusiasts to see cryptocurrencies and smart contracts as a new, more fair and inclusive economic system (Cunha, Soja, and Themistocleous 2021), suppressing capitalism⁶⁰ (at least in its current “crony”⁶¹

⁶⁰ As an enthusiastic economic professor I interviewed told me

⁶¹ “Crony capitalism” is a concept widely used in academic literature to describe the phenomenon of close relationships between business and government officials leading to preferential treatment and economic advantages for those with political connections, whose usage is rising also in online political discourses.

Surprisingly, I couldn't find any literature on its current usage in social media: however, by observing and monitoring crypto-enthusiasts libertarian accounts, I couldn't but notice how many times this term was employed, especially from small accounts (only a tweet overcomes one thousand “likes” <https://x.com/JeffBooth/status/1424768314119700481>, while in the whole month of Jan 2021 the term results mentioned in 57 tweets along with “bitcoin”) seeing cryptocurrencies as a way to “fix” it. Its usage by those users is coherent

form), like the latter was merely symbolized by Wall Street hawks or big companies tightly working with the government, not by a socio-economic apparatus mainly forwarded to profits' accumulation.

Indeed, those discourses never question (or even notice) the *homo economicus* anthropology embedded in the Bitcoin whitepaper - a pattern we already highlighted for carbon markets and that we will explore further - nor seem to be aware of other economic systems or regimes of values. They could not question capitalism because the latter is seen as a core part of human experience: it cannot be contested because it goes unnoticed. For example, KlimaDAO's words on the role of technology and markets are not (only) marketing instruments, rather neatly represent the ideas on society, economy, and politics of blockchain enthusiasts: a speaker at an academic conference I attended made carbon-copy talking points, stating that blockchain technology can improve society by addressing market failures and enabling new "business models for public goods", even if regretfully added that we are still not "decentralized enough" for them.

The wholeness of crypto-discourses can explain the elitism I noticed in these communities. When analyzing documents produced by crypto-enthusiasts or observing their interactions, their sense of *distinction* toward those who are not "into crypto" and exclusivism well represented by the *orange pill* meme⁶² cannot but stand

with the right wing critiques of capitalism we already mentioned, where the conflation of the state with markets, rather than a "feature" of market economies (Polanyi), is seen like as a recent, dangerous phenomena contaminating the "beauty" of markets, even cryptomarkets vastly benefited from these policies. Interestingly, in the after of the 2009 financial crisis this term has been embraced by both protest movements, Occupy Wall Street and Tea Party (Aligică and Tarko 2014).

Many blockchain-focused outlets covered the term, for example CoinGeek (<https://coingeek.com/bitcoin-and-crony-capitalism/>) and Coindesk (<https://www.coindesk.com/markets/2023/04/06/bitcoins-tight-correlation-with-nasdaq-to-sp-500-ratio-muddies-the-safe-haven-narrative/>)

⁶² During last years, far right and misogynistic online communities started to employ the phrase "taking the red pill" (Dignam and Rohlinger 2019), a clear reference to the movie "Matrix", to manifest how they choose to not believe mainstream narratives and instead "wake up" and denounce the truth. The meme "orange pill" among Bitcoin enthusiasts openly moves from this background, stressing the difference between those still believe in the fiat financial world and this who embraced the Bitcoin revolution; it should be noted that orange is the color of Adderall pills too. In a telling passage for our discourse, the most popular Bitcoin blog, *Bitcoin Magazine*, explained "Escaping the monetary Matrix requires choice. Luckily, *game theory* (italic by me) has provided the masses with two pills for intellectual consumption that are very complex. You are taking the orange pill, which represents Bitcoin, freedom and monetary sovereignty or the blue pill, which means fiat

out. This *cultural* difference between “crypto people” and “non-crypto people” was further stressed by the following speaker. In a session devoted to the new regulations on crypto-assets enacted by the MICA act EU ⁶³ - a new EU-wide regulation to provide a unique legislative framework for cryptocurrencies and harmonize national legislations on the subject - the host lamented the new constraints put on decentralized finance (DeFi) platforms, eventually stating how “regulators lack digital mindset”, an opinion shared by the audience as well: during the discussion, one of the previous presenter, a professor, openly blamed EU’s commission “cultural issues, while for a student the fault was for their lack of “scientific mind”.

Since these rhetoric characterize daily practices and the reproduction of a community, it should bear no surprise that in the context of an existential crisis (March 2020), when the reproduction of the social group as a whole was in danger both for the worldwide panic in front of the Coronavirus and for the subsequent extraordinary expansion of State’s powers and prerogatives, secondary identity elements had to be discussed and eventually sacrificed to preserve the “sacred” ones (profits, private property, small government), or the latter were to be affirmed again, for example in the re-appropriation and re-signification of the meme “printer goes brrr”. To answer our prior question, they were not hoping for an economic crisis to happen; they were struggling to survive as a community. Indeed, despite often claiming to be moved exclusively by rationality and boast blockchain decentralization, crypto enthusiasts’ groups are still ridden with moral and social dilemmas; even if daily experiences contradict the imagined reality, they keep perorating the “myth” of Satoshi and, more broadly, the ideas coined at RAND corporation or on the Mont Pelerin. As the literature often mentioned, many

money, debt and blissful ignorance. [...] Do you remember the years before Bitcoin? Being helpless, saving your money for a home or car then, boom, the value of your dollar is lowered and the home you saved for is now three times more expensive. Bitcoin is about freedom from just that. If you think it is about how much the price will increase for a single coin in fiat dollars, there is a lot about this technology you do not know. Those who believe they have overdosed on the orange pill get called Bitcoin maximalists. Still, maximalists can be toxic to some people not ready for the intensity of belief that stirs up in their veins of evangelism” <https://bitcoinmagazine.com/culture/bitcoin-orange-pill-theory-reality>

⁶³ <https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica>

enthusiasts would renounce economic gains to preserve them: blockchains run first not only on computers but also in an *ideal* world.

The other contradiction, directly stemming from the same utilitarian background, is between big and small firms and how to regulate potential disruptive forces. Acquisitions and the creation of conglomerates are strategies used to fight the declining profit rate, characterizing the capitalistic mode of production and lowering costs of production; the sudden creation of monopolies then endangers competition's principles and horizontality upon which free markets are built. However, massive industrial clusters and big companies also imply the presence of large strains of crowded working places, where the labor shares the same routine and same interests, notwithstanding pitiful living conditions, especially during the first and second industrial revolutions: that is why Marx saw in the proletariat the revolutionary class *par excellence*. And that is why conservative liberals scholars like Röpke were against a pure laissez-faire state and advocated "to enable as far as possible everyone to have access to private property; [...] the reduction of huge urban sprawls and the replacement of large suburbs with a policy of medium-sized towns, the replacement of the policy and economics of large housing blocks with a policy and economics of private houses, a politics of "small farms in the countryside, and the development of [...] non-proletarian industries, that is to say, craft industries and small businesses; [and] the decentralization of places of residence, production, and management"(Foucault 2008, 147). These ideas - conceived during the Republic of Weimar and further developed during the '40s (ibidem) - found fertile ground with the development of global capitalism; starting from the '70s, the (American) public growth concerns about the role and power of big corporations (Coleman 1982), feeling themselves powerless in front of anonymous, multinational companies, ending up adopting an even greater individualism and skepticism as a result, as the comprehensive support for neoliberal policies has shown.

Bitcoin clearly moves from this background, envisioning a world of decentralized individual agents freely exchanging digital gold without the needs of corrupted politicians and bankers, small communities motivated by the same beliefs in free market principles and detached from the logic of the broader economy. In fact, how it will clearly emerge from the literature review, is that cryptocurrencies do not have

proper conflict-resolution mechanisms - which imply having a structured, para-political organization - showing their direct genealogy with the utilitarian and petite-bourgeois individualistic answers to the crisis of capitalism, individuated in creating smaller, detached communities. In an astonishing parallelism with Röpke, the only way to express dissent in a blockchain is to create a *hard fork*, to split and create a new blockchain; when I asked an Ethereum Foundation developer their opinion about the consequences of this model of governance, they told me how they never really thought about such “*philosophical*” questions, a very telling answer that does not need further explanations.

That is why we employed the notions of magic, fetishism, and inalienable possessions: despite embedding critiques of the economy and society, Bitcoin expresses discontent in a way that does not question the capitalistic system itself and keeps reproducing many of its ideological standpoints. Cryptocurrencies and blockchains’ promises, moving from a vague critique of capitalism and yet using the same vocabulary and underlying values, convincingly appeal to a vast array of “discontents” besides stereotypical US’ conservatives fearing governmental tyranny, we can find Global South entrepreneurs struggling with a dollar based-economy, techno-utopists believing in the quasi-thaumaturgic power of technical development, “regular” wage-laborer trying to buy out a lottery ticket and so on.

This long but necessary introduction did not explore KlimaDAO’s history and development in detail, yet addressed the core argument of the thesis, which turned out to be a very “classic” anthropological theme: the management of disagreement and antagonism. Blockchains and carbon markets can be seen as rituals satisfying a group’s needs without challenging the material and ideological basis generating those needs, with contradictions reaffirming unity. In this scenario, relaying on Mauss’ magic theory is an obvious choice: as Skovgaard-Smith and Hirst (2023) nicely states, “magical practices prevail, not because people are blinded by irrational beliefs, delusion and inability to perceive contrary evidence, but because the reasoning that explains contrary evidence is part and parcel of the collective logic of magic”.

I came to these conclusions after an extended exploration of these communities, trying to find a balanced, scientific way to portray and understand them. These

preliminary theoretical findings will be supported by ethnographic material collected during the first two years of my Ph.D.

Che fare?

Before ending this first section, I would like to add a personal note even if I told. During a conference, I was asked if my work was not “too pessimistic” and what alternatives I proposed. I think those are valid questions that probably have been formulated also by the reader and thus deserve to be answered.

Moving from the former, even if in the last section a paragraph will be devoted to analyzing possible sustainable employments for cryptocurrencies and will be individuated in the CBDCs (central bank digital currencies), I would like to stress the fact that this is an economic anthropology work, in which I attempted to develop some reflections on the role of technologies and finance in our society, trying to understand which objectives functions and roles they play in contemporary capitalism; despite the argument being political, I avoided political considerations as much as I could: first because I am not a political scientist, second because I wanted to deliver a manuscript as scientific as possible and third, solving world’s problems goes way beyond my capacities. Of course, if any decision maker decides to adopt new policies after reading it, I would be pleased. It would be hypocritical, however, to state this work is value-free, especially dedicating so much energy to showing the inherently political nature of institutions and technologies seen as “anti-political”.

We can now go back and answer the first question; “pessimistic,” I assume it was a polite way to say, “too much critical”. Unlike the former one, this adjective has two conflating meanings that are expressed in the English language, but not French, German, or Italian, as the (recently passed away) philosopher Gianni Vattimo noted (Vattimo 1990): *criticism* and *critique*. While in everyday language, they both refer to a moral, negative judgment of an action or a person, in academia, the first is employed to indicate deep analysis of a peculiar subject, with a judgment not necessarily negative, while the second - like in the Kantian *Critique* - refers to general enquires, examining the structure of the thought and (almost) lacking moral

evaluations ⁶⁴. This work is not pessimistic, yet undoubtedly represents both a *criticism* and a *critique*: if my words move negative feelings in the reader, it is because I tried to portray an objective painting of reality.

Indeed, I would be sincerely surprised by the contrary. If we look back at the current state of affairs, we see political leaders cheering another World War, the carbon in the atmosphere reaching unbearable levels, and skyrocketing inequalities; in this context, the Italian scenario showcases peculiarities relevant to this work: opponents get moral (and not politically) *criticized*, so that spaces for *critiques* are shrinking fast, also among academics, leaving little or no space for politics. The result of such discourses is a general feeling of *conformism*, an endless repetition of words and slogans by the same actors; it should be stressed that these processes have been led by the state, where the progressive militarization of the territory (proliferation of laws, incarcerations, street patrolling by militaries and similar actions) has been coupled and legitimized by the ideological construction of the public enemy, a second-tier class of citizens deserving less rights in the name of securitarian ideals and claims, whose inner *political* nature of such policing and its intertwinement with the economy has been explored by few anthropologists (Costantini 2022).

Now, we can link this detour to the rest of the work; indeed, a widespread response in both political and popular comments is that - despite socio-economic and environmental indicators portraying a decaying and sick country - this is the best possible outcome for Italy. But this type of reasoning reverberates the *baselining* methodology used to assess carbon offsets, assigning present-day values according to a future imagined following the same pattern as today: in both cases, we face a myth legitimizing current power structures.

In the end, if this work will move moral judgments like “pessimistic” or “too critical” is because it tries to break with the mythological (and moral) approach characterizing the business as usual, providing a deeper understanding of many phenomena often gave for granted, thus performing its role as a scientific text.

⁶⁴ There is also of course a third meaning, the *literary criticism* which does not necessarily indicate judgements, but rather a deep analysis of a text, but this definition falls outside the scope of this paragraph

Interlude

From GAW to Klimadao

The following work originally intended to study another subject. This chapter is about the first ideas I intended to develop for this thesis.

Before shifting towards blockchain for green finance, the project I submitted back in 2020 proposed to investigate the use of the blockchain and green bonds, using an anthropological perspective and employing the theoretical framework on the exchange. The idea was to focus on three main areas: the socio-economic relations that generated the bond and the sociality that stemmed from it, the encounter between different actors' sustainability visions, and the social impact of blockchain technologies. My fieldwork should have been Green Assets Wallet (GAW), a project launched in 2018 by Stockholm Green Digital Finance, "a not-for-profit centre tasked to accelerate green finance and investment through fintech innovations"; GAW claimed to bridge the gap between traditional and green investments by using blockchain technologies, providing a unique platform for investors, issuers, and validators. Many reasons led them to choose blockchain: programmatically enforcing standards, higher quality data to help qualify what could be labeled green, and better transparency. In October 2019, they started looking to promote investment in Kenya and released a guide for investing in Africa. Even if they eventually released a guide to invest in Africa, they did not issue a bond. After a few months, it got rid of all references to the blockchain; a former intern I interviewed told me that implementing such a system of verification proved to be too complicated than expected, while the transparency of a blockchain did not constitute the selling point as expected: the impossibility to modify data inserted frowned users since made impractical to fix errors in reporting and, in any case, this un-alterability did not assure the quality of the data submitted to the platform. As of July 2023, the website (greenassetswallet.io) is not reachable.

This startup immediately caught my attention. Besides implementing the blockchain and green bonds – a requirement for my position – it embedded many peculiar aspects that made it look like a sort of litmus test for the contemporary economic system. If GAW enshrined widespread techno-solutionism, it also represented the shift in Swedish capitalism and, broadly speaking, of Western capitalism. It received

funding from Mistra⁶⁵, a Swedish agency funding a “wide-range research to benefit society,” collaborating with academic institutions, companies, public agencies, and other stakeholders. According to its website, Mistra funds long-term initiatives “to create strong, world-class research environments [...] to solve important environmental problems [and] to strengthen Swedish competitiveness”, embedding the conflation of economic⁶⁶ and non-economic factors characterizing a growing number of public and private investments. More telling, however, is Mistra’s history: it was born in 1994 after the dismissal of *löntagarfonder*, or wage-earners funds. Initially proposed in the 1970s by economist Rudolf Meidner as a way to gradually socialize industry in a capitalist framework, they were established in stages, with the first created in 1983. The plan was for the funds to gradually gain influence over Swedish companies over several decades, conceived as a long-term transition to socialism through reforms: wage-earner funds held shares in companies proportional to the company’s wage bill, to gain majority control of firms after several decades, since unions’ representees controlled them. Nothing similar has ever been proposed in Western capitalism. However, the funds never held more than a few percentage points of shares in most companies and were opposed because of their anti-capitalist implications. The new liberal government elected in 1991 dismantled them, especially for ideological reasons, since their actual impact on businesses had been negligible. *Löntagarfonder* liquidity, then, converged into pension funds investing in small-cap firms and startups and to new and already existing research institutions to turn them into private entities (Westerberg 2022).

If Mistra was born because of the arrival of the “neoliberal turn” in Scandinavia and the subsequent dismissal of the welfare state and the expansion of financialization processes (defined by Lapavistas (2013) as the expansion of finance to non-business entities), Green Assets Wallet represented the further step capitalism had taken, on a geographical and an ethical level. It expanded in Sweden, a country once known for the relevant role assumed by the State, that swiftly changed its politics right after the collapse of the Soviet Union, trying to become a financial hub and innovator; it should not surprise then that first green bond was issued by the

⁶⁵ <https://mistra.org/vart-kapital/#eng>

⁶⁶ This adjective should be read here according to its marginalist sense, that is how scarce resources are allocated to satisfy unlimited wants; the latter, in a capitalistic economy, coincide with profits’ research

Swedish bank SEB in 2008⁶⁷, and the same bank later helped the launch of GAW⁶⁸. Green bonds are a type of bond issued to finance environmentally friendly projects. Issuing green bonds involves three main actors: issuers, validators, and investors. GAW released a guide for each one. Unlike traditional bonds, proceeds from green bonds are allocated for projects with a positive environmental impact. This role is carried out by validators, third-party organizations that assure investors that the proceeds from the bond will be used for environmentally friendly projects. It should be noted, however, that regulations governing green bonds are not legally binding in all cases, and they mostly rely voluntarily⁶⁹. The International Capital Market Association⁷⁰ (ICMA) and the Climate Bonds Initiative⁷¹ (CBI) are the two leading organizations in the green bond market, and they developed the most accepted guidelines and widespread certification scheme.

So, despite the massive blow to their credibility and rationality after the subprime crisis, banks and financial institutions decided to expand their operation toward non-economic activities, impersonating the role of politics and intellectuals: “In a world with ever-increasing awareness on climate concerns, green bonds raise industry engagement by encouraging investments in sustainable projects, processes, and technologies” we can read on SEB’s website. This shift toward broader political and social issues by financial institutions and through financial instruments⁷² is well represented by a critical part of GAW’s project, which was devoted to developing green finance in Africa. This continent, it should be reminded, is already well integrated into international financial markets: after benefitting in the ‘70s from the rising prices of raw materials and crop cultures, African countries expanded their borrowings (in US dollars) to support development, only to experience a shocking debt crisis when the Reagan administration raised interest rates in the following decade; the subsequent IMF intervention led to privatizations and opened their markets to international capitals (Stiglitz 2002). The cultural consequences of those policies are a well-known topic in anthropology (Comaroff and Comaroff 1993). In the

⁶⁷ <https://sebgroup.com/investor-relations/debt-investors/sebs-green-bonds>

⁶⁸ <https://www.ledgerinsights.com/green-assets-wallet-bond-blockchain-seb/>

⁶⁹ <https://www.bloomberg.com/professional/blog/green-bonds-green-green/>

⁷⁰ <https://www.icmagroup.org>

⁷¹ <https://www.climatebonds.net>

⁷² Global issuance of Green, Social, and Sustainability (GSS) Bonds ten folded between 2016 and 2021, according to a World Bank (2022) report, going from 111 billions \$ to 1151 billions \$, just to fall 729 billions in 2022, with green bonds representing 64% of them.

now offline page devoted to investing in Africa⁷³, GAW mentioned their participation at the “Green Fintech Opportunities Workshop” hosted by the Nairobi Securities Exchange. Kenya has, in fact, one of the most advanced financial and technological infrastructures in Africa (Nelms et al. 2019: 16), especially for mobile banking, so to be called “Silicon Savannah”. This dramatic technological growth, however, widened inequalities. While credit access was easier, austerity measures caused unemployment and lower salaries, leading millions of Kenyans to borrow money through micro-lendings. Many of them could not pay off their debts, falling into a circle of “perpetual debt” (Donovan and Park 2019), so including the “unbanked” in financial relations created a society where thousands struggle to repay their debts. The overlapping of so many topics (technology, trust, finance, north-south relationship, climate) on a singular and societal level drew my attention, but I had to shift my focus since I got no answers from this Stockholm-based startup. Since I wanted my research to focus on blockchain and green finance, I ended up studying KlimaDAO and applied broader research questions on the blockchain and green finance I developed for Green Assets Wallet.

⁷³ An archived copy can be found on archive.org
<https://web.archive.org/web/20200721122432/https://greenassetswallet.org/africa-guide-investors>

The Hau of Green Finance

The position has been founded through the ERC project “Impact HAU”, a research grant aiming to apply the notion of the “Hau” to the impact investing and, in general, to the “moral turn of finance” (Dal Maso, Tripathy, and Brightman 2022). Recent years saw a Cambrian explosion for this new type of investment, where the financial return is not the only metric that matters for investors, and social or environmental returns are factored in by the various stakeholders.

In particular, the idea was to rely on Marcell Mauss’ notion of gift to explore this new phenomenon; the French author – nowadays considered the father of economic anthropology and whose intellectual legacy still influences contemporary authors – challenged the traditional, Christian notion of gift as a pure act of generosity in his 1923 seminal text on the gift. According to him, gifts are never free, and they involve three obligations: giving gifts to people out of one’s own volition, accepting a gift when offered, and reciprocating by giving back another gift when a gift is received; his essay is then an inquiry on *why* gifts have to be reciprocated, or why this peculiar type of exchange arises. Mauss believed the answer resided in the notion of *Hau*, a Maori term that refers to an indivisible element consisting of *mauri* (life force), *wairua* (spirit), and *mana* (power). Moving from the sources he consulted (it should be reminded that the French ethnographer did not conduct any field work), the hau always wishes to return to its place of origin but can only do so through the medium of an object given in exchange for an original gift, and failure to return a gift can result in serious troubles, leading to the death of gift recipients. Gifts thus contain a mysterious power that forces the recipient to make a return, and he calls this “the spirit of the gift”; the hau is a spiritual force that seeks to return to its original owner or place of origin. A gift is forever bound to the giver, and it never entirely changes ownership: rather than the norm of reciprocity, the principle of keeping-while-giving can explain the obligation to return a gift. Ambiguity and opacity reside behind what is usually perceived as a pure act of generosity: a relationship that is not necessarily equal is established among parties, and something back is expected when is given. Kindness is not free.

The last sentences, however, should not be interpreted as arguments in favor of the old trope of the *homo oeconomicus*; if the latter posits the actor as an individualistic

agent, fulfilling only their own goals and looking for material gains and the inexistence of something called society as notably stated by Mrs Thatcher, actors engaging in gift exchanges are imbued with societal norms and look to (re)create societal ties and the subsequent sense of mutual obligation and reciprocity. Marcell Mauss described these precapitalistic forms of exchanges as “total social fact”, since they have implications exceeding the economic and involving legal, political, and religious spheres of the society; they transcend the materiality of everyday life and connect participants to a spiritual, immaterial realm greater than them: the society, precisely. As later commenters will show – I am referring to Maurice Godelier – the *Hau*, the spirit of the gift, is nothing but the society manifesting and reproducing itself.

The absence of markets does not equate to the presence of equality, and “traditional” forms of exchange might not necessarily lead to equality. Mauss himself noted the existence of agonistic gift exchanges, where the explicit aim of participants is to put receivers in a perpetual condition of debt, to give away gifts so valuable that cannot be reciprocated; the most famous ethnographic example is the *potlach*, where Qwakiutl chiefs challenged themselves to acquire power positions through ritual form of conspicuous consumptions. This north-western Pacific practice fascinated anthropologists since Franz Boas has been discussed for over a century (Wolf 1999) and provided relevant insights on the capitalistic economy to a philosopher like Bataille. Even if the episodes detailed by ethnographers record a “deranged” version of the *potlach*, mainly consisting in the destruction of commodities, because of the encounter with the whites – suppression of traditional forms of power, introduction of a whole new range of commodities, population decimated by war and epidemics – behind this ritual lays an idea that seems to contradict Western rationality (and legitimized colonial authorities’ discriminations), that is acquiring power not by hoarding riches, but by donating them. To a socio-economic system based on endless accumulation of profits, this sounded like an anathema; however, a very long tradition from Veblen to Graeber highlighted how forms of conspicuous consumption have always been intertwined with power. The maussian notions of *Hau* and total social fact, along with the area of studies it generated, seem to fit for a possible inquiry of these peculiar forms of investments that consider economic and non-economical returns. It is hard, in fact, not noticing a similarity between the non-economical aspects characterizing gift-giving ceremonies

described by Mauss and, for example, the (apparent) generosity of companies and funds investing in products from which others than shareholders will benefit. The French ethnographer can be used to understand “moral finance” both if adopting a positive or a critical stance toward the matter. Through the concept of “total social fact”, he provides a frame, a compass for a long journey. This means, for my case studies, rather than moving from the official theoretical discourse sustaining green finance, viz. the discounting of externalities and their subsequent marketization (Coase 1960) upon which current answers to the climate crisis are built upon (D. MacKenzie 2008), formulating instead new research questions: how green finance relates to the society? What can it tell about our current socio-economic system? Even though I shifted my subject, research questions I formulated about GAW permeated and influenced my research; they rely on a personal re-interpretation of Marcell Mauss.

Since his legacy profoundly influenced my academic production and appears in the very name of the project that financed this work, it is better to spend a few more lines on it. The aim is not to produce an account of his legacy but rather to provide the reader with the theoretical frame I used.

To better understand Marcell Mauss’ opera and employ it to understand present-day capitalism, we must remember that it cannot be detached from his political view: he was a socialist advocating not for the abolition but for a reform of capitalism, a third way between market and communism. The ethnographic material on gift-giving ceremonies he studied gave him the necessary inspiration to accomplish this. His political credo can be found in the last chapter of the *Essais sur le don*. In the precapitalistic forms of generosity exercised by noblemen, he saw a principle of aristocratic expenditure that modern capitalists should adopt too, openly urging them to take the ethical responsibility their position implies. By looking back to the “archaic”, new moral principles can be developed considering both realism and idealism; he envisioned a harmonious society equally driven by economic and non-economic principles (in the sense of donations and enlightened patronage from the rich and a sense of cohesion and pride from the labor). The “third way” and the rediscovery of generosity will constitute a political paradigm for a long strain of authors, from Karl Polanyi (1957) and his call for *re-embedding* the economy into the society to the anti-utilitarian movement founded by Alain Caille (1989); from this point of view, then, the “moral turn” of finance could be read as the way current socio-

economic system decided to face its consequences and finally understood the importance of generosity.

This straightforward interpretation, however, reminds us of the political and historical aspects behind gift exchanges and munificence. While Claude Lévi-Strauss (1987) stressed the unconsciousness and thus structuralist aspects behind the *hau*, Maurice Godelier (1999) notably emphasized the social and historical aspect of *The Gift*. The latter – through Anette Weiner’s *Inalienable Possessions* (Weiner 1992) - proved the importance of sacred, fixed things: these kinds of objects are gifts from the gods, which belong to a superior cosmological order. They constitute cultural and material resources used by human groups to reproduce themselves and are imbued with the ideologies at the very base of societies. Through their immobility and inalienability, they allow the circulation of other objects. However, their sacredness is always historical: the *hau* is a socio-political act. For Godelier, this is a universal assumption. If Samoans remove fine mats strictly linked to a familiar’s identity from circulation, the West has inalienable possessions, too, as constitutions or bank reserves. The immobility of sacred objects allows the circulation of the other. If we assume the temporality of sacredness and morality and their inner man-made nature (Graeber 2005), a link between power relationship and exchanges can be established: as a “pure” gift exchange does not exist (Parry 1986), a “pure” commercial exchange neither exists; every trade is imbued with historical driven moral aspects (Graeber 2011). Given the nexus between morality and power relations (Godelier 1986), and given the nexus between power relationships characterizing the capitalistic commodity exchange (Marx 2004) or the traditional gift exchange (Bourdieu 1977), and how a sentiment like *trust* plays a pivotal role also in economic exchanges (Gudeman 2009) we can see how exchanges are inherently politically driven. We can rely on the maussian legacy to understand current-day scenarios. For example, the work of Godelier showed us how societies reproduce themselves through the circulation of alienable possessions, while within the collective alienation (Graeber 2005) process - they overlook the human forces that made such movement possible in the first instance. Green finance can, therefore, be studied through the lenses of Godelier’s theory; my first idea was to see bond circulation as a way our society reproduces contemporary neoliberal socio-economic relations. By focusing on market-oriented solutions, actors do not look for alternatives to capitalism since every green investment aims to produce profits, too.

Instead, they would reassure the same system that produced the crisis in the first instance. Even at first glance, green investing seems to contradict one of the principles upon which modern capitalism is built, shareholders' value; anthropology, however, ever since Van Gennep showed how these mechanisms are central in every culture and how moments of crisis in a community are occasions to reassert and reinforce current power structures, rather than substituting with new ones. The very word *bond*, moreover, also reveals how morality and debt often ambiguously overlap, and an increasingly popular research strain (Stimilli 2016; Agamben 2009; Graeber 2011) is showing how current finance is recreating dependency mechanisms not so distant from those characterizing pre-capitalistic societies (Parry and Bloch 1989), where credit and exchanges were regulated through informal mechanisms and personal knowledge rather than through an external one like the economic market.

However, anthropology also taught us how cultures are not static blocs, and changes are always possible: it is imperative to question whether new technologies, such as blockchain, or new forms of investment could lead to a cultural shift. For example, even if my stance toward the subject is critical⁷⁴, the performativity effect (Austin

⁷⁴ A recent, provocative paper on the effective quality of critical enquires on sustainability is sparking debate (Kirchherr 2022). The author claims that even if research these topics is burgeoning, most of the articles that are now being published in many interdisciplinary journals may be categorized as "scholarly bullshit.", mostly engage with the latest buzzwords (e.g., circular economy), while not contributing to a scientific knowledge on the topic. The following archetypes are identified by the author: boring question scholarship, literature review of literature reviews, recycled research, master thesis madness, and activist rants. Given the peculiar topic I identified, the risk of producing "scholarly bullshit" is inevitably high: many authors, journalists and association already denounced the numerous flaws surrounding the green finance, notwithstanding the ongoing critics and the "stigma" surrounding blockchain; it is tempting to just describe these phenomena as sophisticated scams and greenwashing operations. I recognize the arguments of my thesis are highly divisive and central in many online debates, and I am aware of possible bias held by myself. To avoid producing something that adds nothing to the scientific discourse, I decided to avoid some growing fields in current anthropology (eg. tokenizations, degrowth) and rather focus on some "traditional" anthropological themes, that seldom have been applied to cutting-edge technology like magic. Even if the perspective I adopted cannot but be labelled as "critical", this adjective shouldn't be read in his moral(istic) sense, rather than in its academic and philological sense; what Kirchherr (2022) seems to denounce is the conflation of these two aspects in current academia, and this trend cannot – in my opinion – be detached from the growing polarization of discourses, something I experienced engaging with sources and actors. A critical, ecdotic analysis can counter this trend: starting from Malinowski, anthropologists are required to hold a detached and distant position from the subjects they were studying and refraining from producing moral statements, like Levi-Strauss constantly reminded us; only in this way the "other" can be understood. This

1975) of rhetoric and practices surrounding this field might produce some tangible effects within the actors, despite the abovementioned capitalistic setting, as we will see, financial markets are a field where things can be made with words (Callon 1999, 1998b).

Are investors becoming more concerned about the environment thanks to the constant repetition of these discourses? The standard critique of performativity – in short, that effects are not produced by words themselves, but by *who* proffered them (Bourdieu 1991; Mirowski and Nik-Khah 2007) – might be countered since people talking about solving climate change are people bestowed with resources and agency so that their words can lead a change; moreover, green finance born because investors felt their money should not go financing some unethical activities (Berrou, Ciampoli, and Marini 2019). Its existence proves the importance of non-economic, cultural factors in the capitalist economy, thus legitimizing an anthropological inquiry on the latter; many critical scholars have already conducted thorough investigations (for example, see Brightman and Lewis 2017; Bracking 2015; Bridge et al. 2020; Bigger et al. 2018), which will shortly illustrate later. The other leg of my research entails the role of the blockchain in green finance. As we will show in the next chapter, social scientists have said very little about this technology, despite its very design, which embeds and reflects peculiar ideas on classical anthropological themes like trust and exchange. The whole idea behind a blockchain is making a transaction possible without the need for the parties to trust or know each other or to rely on a third party. In a nutshell, this is made possible thanks to cryptographically enforced transparency. Even through this quick sketch, many research questions and insights emerged; for environmental anthropologists and scholars, investigating the blockchain might be a fruitful activity given its tremendous growth.

Since the project I studied, KlimaDAO ended up with hundreds of dollars of loss for many investors, it would be wrong to focus extensively on the technology rather than on the social forces that made this financial catastrophe possible, even if some blockchain peculiarities undoubtedly played a considerable role, yet I noticed there is something else. Or, to say better, the blockchain infrastructure, especially when used

distance, moreover, forces the researcher to slow down and avoid the polarizing tone embedded in social media; we might call it “critical without criticizing”.

in a financial context, offers us an extraordinary figure of our society, forcing us to widen our initial statements. The maussian concept of “total social fact” cannot but be used to untangle this mix of enthusiasm, beliefs, technology, finance, and failures. But KlimaDAO still offers us many ways to strictly reason about blockchain and green finance, especially if confronted with the current literature. Its analysis will embed those two strains, one devoted to its specificities and the other to broader social and anthropological themes.

When I first approached the theme, I could not imagine how events would develop. Nevertheless, I individuated many recurring themes and theoretical questions, which was a valid compass for my inquiry. Blockchain and green finance are highly controversial and polarizing topics because of their very apparatuses; there is a paradox between their superficial, *phenomenal*, and apparent aspect that seems self-explanatory and is naively used as a selling point by pundits and investors and their internal, *noumenal* highly-controversial mechanisms that make these devices work. For example, a central topic in any blockchain-related conversation involves the higher transparency led by this technology: can it lead to a greater environmental consciousness among the investors and lessen the obscurity characterizing financial operations (Arjaliès et al. 2017)? Or through its automated data management, is this technology more similar to a “strong and decentralized panopticon”(De Filippi and Hassan 2018)? Does the discourse of incorruptibility and transparency, central in any blockchain, settle the moral concerns about green finance (Sanderson 2018)? Trust is another key theme, crucial for both the blockchain and the various declinations of finance; given the role of credit, modern capitalism can be described as a trust-based economic system (Polanyi 1957; Graeber 2011), especially if we account for the recent development. Trust is, first and foremost, a feeling emerging from established relationships or from the will to establish one; this term entails some sort of social ties.

As we shortly mentioned before, establishing societal ties is an ambiguous operation because relationships are not necessarily equal, and societies imply hierarchies: anthropologists (Godelier 1999) and linguists (Benveniste 2016) point out how the recipient of the faith, the person who is trusted, can effectively exercise a persuasive power upon the people trusting them. Trust and faith imply a momentaneous act of generosity and self-denial hoping for a future benefit: it is not a case that Walter Benjamin (1972) famously described capitalism as a religion based on the sense of

guilt,

Blockchain seems to contradict all of these, or, to formulate it better, born from the contradictions between a system relying on and criticizing at the same time the notion of debt. From this point of view, blockchain embeds one of the many contradictions characterizing our socio-economic system so that a deep analysis can help us understand the world we live in; but since it seems to contradict many theoretical standpoints our discipline is based on, it also tests our current knowledge. For example, how can anthropological exchange theories and their stress on the notion of trust (Graeber 2011) relate to distributed ledgers' "trustless technology" (Miscione and Kavanagh 2015)? Godelier (1999) and Weiner (1992) showed us that the presence of sacred, fixed elements in society allows the circulation of others, and as we said before. However, the blockchain is a peer-to-peer network designed to allow movements without the need for any authority: can this new technology oppose these anthropological assumptions? What kind of sociality creates this technological "Cambrian explosion" (Nelms, Maurer et al. 2018)? Can its decentralization shape a more horizontal society, or its obscure intrinsic jargon (Tapscott and Tapscott 2016) and its embedded libertarian values (Golumbia 2016) are shaping "gated communities" (Nelms, Maurer et al. 2018)?

As we just saw, analyzing the blockchain and its applications, which means try answering the abovementioned questions, constitutes a theoretical challenge for anthropologists that, however, can be used to test many current projects and policies

Second Part: Practice

Blockchain and anthropology

What is a blockchain

On the first of November 2008, the anonymous user Satoshi Nakamoto posted a white paper named “Bitcoin: A Peer-to-Peer Electronic Cash System” on a cryptographic mailing list⁷⁵. The document outlined a payment system based on a “purely peer-to-peer version of electronic cash” relying on cryptographic techniques, with network participants managing currency minting and circulation. The system was designed to create an electronic currency that did not rely on the contemporary banking system principles, reasserting the principle of scarcity in the digital world: the “double spending” problem that cash money solves through its materiality while credit cards, cheques and wires through a central clearing house (the banking system), is resolved thanks to a decentralized network of computers deciphering cryptographic hashes: when a new transaction occurs, it is sent to the network and validated by the nodes according to a set of rules encoded into the blockchain protocol.

Nodes are computers running software that enforces the rules of the network protocol itself; they store a copy⁷⁶ of the blockchain ledger and update it whenever new valid blocks are added. Since everyone can download and run the software, blockchains are a way to distribute and decentralize data. To be considered valid, a transaction needs to be digitally signed⁷⁷ with the sender's private key to prove authenticity. Once the identity is authenticated, nodes verify if sufficient funds are in the sender's account, including the fees, checking against the blockchain's ledger, and if the transaction obeys additional, blockchain-specified rules. Invalid

⁷⁵ <https://www.mail-archive.com/cryptography@metzdowd.com/msg09985.html>

⁷⁶ As per July 2023, this copy occupies about 500 Gigabyte

⁷⁷ The digital signature is a process involving cryptography to digitally validate identities, assuring the recipient about the integrity of the message and the validity of the sender. It involves the “hashing” of the message, that means running it through a mathematical algorithm that converts it into a fixed-length alphanumeric string that cannot be reversed. Hashes are fast to compile but almost impossible to decipher without the proper key; each digital signature is unique and links a peculiar message to a sender and to a receiver. Nodes use the sender's public key to check the signature. If it was signed by the corresponding private key (a randomly generated large alphanumeric code that can be accessed only by the owner of the wallet and that is mathematically connected to the public one), the transaction is valid.

transactions are rejected, while valid transactions are bundled together, publicly announced, and copied on each ledger, forming a new block referencing the previous block via a cryptographic hash. This links all the blocks together in a way that makes tampering with historical transactions difficult: to reverse a transaction means to reverse all the previous ones on all the copies. In the *proof-of-work*⁷⁸ protocol, computers in the node compete to solve the mathematical puzzle constituting transactions, executing a vast number of calculations according to the blockchain algorithm; those puzzles are easy to verify but require much computational power to decipher. Machines involved in this operation are called “miners” because the first one capable of finding the right solution and thus adding the block to the public ledger gets rewarded – in proof-of-work protocol – with some coins created or “mined” through this process. Satoshi originally named this system *blockchain*; while its token *Bitcoin*, the total supply is limited to 21 million units to control an otherwise inflationary mechanism, with ever-diminishing rewards. Every four years, rewards are halved⁷⁹: right now, it is 6.25 BTC per block and should halt around 2100.

Blockchain and anthropology: a literature review

Concepts contained in that white paper were not wholly new: already in the ‘90s, computer experts were discussing cryptographic digital money (Barbrook and Cameron 1996), and Satoshi Nakamoto himself openly refers to cypherpunk⁸⁰ ideas; furthermore, the history of computers, cryptography, and modern economic thought

⁷⁸ Proof of work (PoW) is the *consensus mechanism* (in blockchain networks, this term designates the system used to achieve agreement and validation on the state of the ledger) used by protocols like Bitcoin and relying on energy-intensive computing hardware for security. A more recent consensus mechanism is Proof of stake (PoS), that relays on staking to validate transactions: participants stake their coins by locking them up in specialized wallets to become validators in the network. The more coins staked, the greater chance of being selected to create new blocks. Moreover, staked coins act as security deposits, so that malicious behaviors would lead to their lost.

⁷⁹ This phenomenon is called “halving” by the community

⁸⁰ Cypherpunk is a movement born at the end of the ‘80s that advocates the use of cryptography to protect citizens’ privacy from government and big companies. A brief of the movement, the political role of privacy and its influence for the subsequent development of Bitcoin can be found in Swartz (2018)

is tightly intertwined (Mirowski 2002). The dramatic success of Bitcoin and other cryptocurrencies – which reached a total market cap of almost 3 trillion during November 2021 – can be attributed thus both to a favorable ideological ground and to the right timing: Bitcoin was launched on the eve of and as an answer to the 2008 financial crisis when the whole credit system was questioned⁸¹, even if it ended up benefitting from the decade-long low-interest policies from the Federal Reserve and other central banks that pushed financial assets, especially the risky ones.

The scientific interest in Bitcoin and blockchain arose over the years, and in their systematic review, G.-p. Wang et al. (2021) showed how the first paper on these themes appeared in 2013—that year recorded only three publications, while 1148 papers were published in 2018. The authors also show how most of the 2451 papers examined are published in the computer sciences and engineering research fields, with social sciences constituting a fraction of that sample.

Our analysis confirms these findings: in the following sections, an extensive paper review will show how – apart from a few exceptions – cryptocurrencies and blockchains are still neglected topics by social sciences and, in particular, anthropology. Furthermore, we will find the current state of the art of the discipline on this theme, identify potential gaps in the literature, and outline new lines of research. This analysis will lead to

A literature review of blockchain and Bitcoin built upon only anthropological journals would result in a modest number of papers; for example, only ten papers have been published among the journals of the *American Anthropologist Association*⁸², five in a special issue of *HAU Journal of Ethnographic Theory*⁸³ about, two in *Anthropology*

⁸¹ The first Bitcoin block, mined on January 3rd 2009, embedded the message “The Times 03/Jan/2009 Chancellor on brink of second bailout for banks”
<https://www.blockchain.com/explorer/blocks/btc/00000000019d6689c085ae165831e934ff763ae46a2a6c172b3f1b60a8ce26f>

⁸²
<https://anthrosource.onlinelibrary.wiley.com/action/doSearch?AllField=Bitcoin+OR+blockchain&startPage=>

⁸³
<https://www.haujournal.org/index.php/hau/search/search?query=Bitcoin&authors=&title=&abstract=&galleyFullText=&suppFiles=&dateFromMonth=&dateFromDay=&dateFromYear=&dateToMonth=&dateToDay=&dateToYear=&dateToHour=23&dateToMinute=59&dateToSecond=59&discipline=&subject=&type=&coverage=&indexTerms=>

Today⁸⁴ while none in the *Journal of Contemporary Ethnography*⁸⁵, *Current Anthropology*⁸⁶, *The Annual Review of Anthropology*⁸⁷, *Journal of Political Ecology*⁸⁸, *Anthropological Quarterly*⁸⁹ and *L'Homme*⁹⁰. Blockchain and Bitcoin are secondary research topics in current anthropological literature. However, they are not neglected; as the introduction has shown, cryptocurrencies and blockchain embrace different aspects: the Bitcoin whitepaper spans from computer sciences to political economy while mentioning a typical anthropological theme like “trust” many times. Furthermore, the libertarian ideas and the energy-intensive mining process (“Proof-of-work”) offer additional lines of inquiry.

A multidisciplinary approach seems to be a prerequisite for any social scientist approaching cryptocurrencies. Most of the literature we collected comes from non-anthropological journals: among the papers we collected, only eleven were published in anthropological journals, while thirteen were in social sciences journals; proper qualitative ethnographies of these online communities are still rare, even if in the last couple of years more attention was paid them: exceptions are constituted by Lustig and Nardi (2015), DuPont (2017), Faustino (2019) Rmit and Zargham (2022); Faria (2021); Faustino, Faria, and Marques (2021). To find relevant literature, in fact, first, we collected data from journals’ databases and Google Scholar, then used Litmaps to find similar papers and the connections between them: each line in the graph represents a citation, while the size represents the total amount of citations received

84

<https://ra.i.onlinelibrary.wiley.com/action/doSearch?AllField=blockchain+OR+Bitcoin&SeriesKey=14678322>

85

<https://journals.sagepub.com/action/doSearch?field1=AllField&text1=blockchain&field2=AllField&text2=Bitcoin&publication%5B%5D=jcec&publication=&Ppub=&access=>

86

<https://www.journals.uchicago.edu/action/doSearch?field1=AllField&text1=blockchain&field2=AllField&text2=Bitcoin&publication%5B%5D=ca&publication=&Ppub=>

87

<https://www.annualreviews.org/action/doSearch?content=articlesChapters&target=default&field1=AllField&text1=Bitcoin&field2=AllField&text2=blockchain&publication%5B%5D=anthro&Ppub=&Ppub=&AfterYear=&BeforeYear=>

88

https://journals.librarypublishing.arizona.edu/jpe/search/?article_search=blockchain&title=on&abstract=on&authors=on&keywords=on&full_text=on&orcid=on&sort=title

89

<https://www.jstor.org/action/doAdvancedSearch?q0=Bitcoin&pt=Anthropological+Quarterly&f0=all&c1=AND&f1=all&acc=on>

⁹⁰ <https://search.openedition.org/results?q=Bitcoin&s=L%E2%80%99Homme&pf=OJ>

by other; in total we found 85 papers and four book chapters, while ten papers have received zero citations. Some papers, furthermore, stand on the map detached from the others; they are the proceeds of a book symposium on *The social life of money* (Nigel Dodd 2016) hosted by *HAU Journal*⁹¹.

In the following sections, we will highlight the main thematic areas in the literature; a recurring topic is the contradictory nature of blockchain and the impossible dream of an antisocial community. Even if Bitcoin was designed to replace communities and trust with mathematical puzzles credit, the human factor abruptly reemerged shortly after the first nodes ran and kept influencing the current trillionaire market. Interestingly, the interlacement of human and non-human factors is mirrored by the interdisciplinary character of the publications surrounding cryptocurrencies

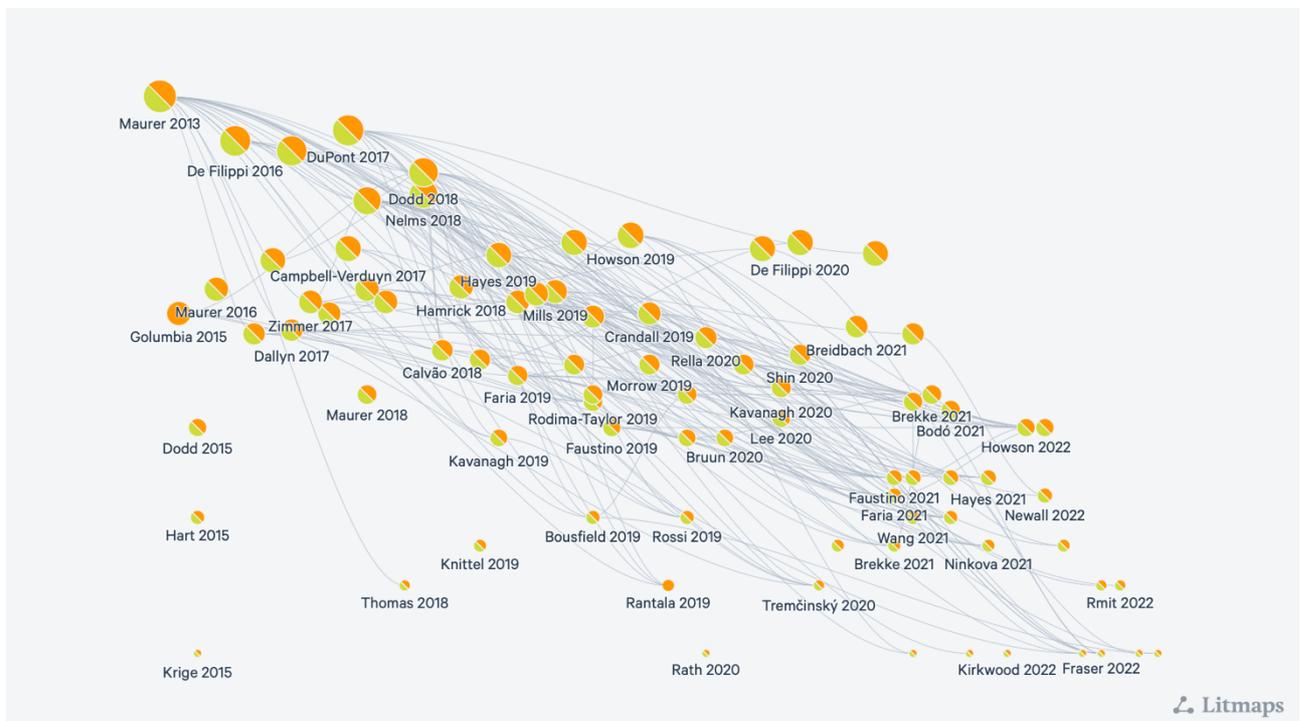


Fig. 1 Map representing the social sciences papers on blockchain and cryptocurrencies I used to draft this chapter. Generated through Litmaps

With over 270 papers referring to it according to scite.ai⁹², the most cited piece written by an anthropologist on cryptocurrencies is Bill Maurer, Nelms, and Swartz

⁹¹ They are, moreover, the only papers mentioning “blockchain” or “Bitcoin” published by *HAU*

⁹² <https://scite.ai/reports/when-perhaps-the-real-problem-yXQnzx>

(2013); the decade-old paper, published however in a semiotic journal, is a broad description of Bitcoin's mechanisms and its community's principles and ideas, in particular the importance attributed to privacy, the support for gold standard ("digital metallism"⁹³) and the general mistrust towards banks and payment processors. These narratives – classical anarcho-capitalist viewpoints (Golumbia 2015) – are still popular among popular books on the blockchain (Ammous 2021, 2018). The paper, however, shows its age, since mining operations' scalability and cryptocurrencies' trading; fourteen years after the first block, the computational capacity needed to perform "Proof-of-work" operations to mint new Bitcoins far exceeds the one a regular computer can reach, with mining operations nowadays run by large companies often located in the Global South, where energy prices and environmental regulations favor these enterprises (Howson and de Vries 2022b). Today, the vast majority of Bitcoin and other cryptocurrencies, even those using the less energy-intensive "Proof-of-stake" method (Zhang and Chan 2020), are acquired on crypto exchanges, regulated platforms that allow customers to buy, sell, and move crypto-assets; despite the stress on the decentralization put in the Satoshi's whitepaper and that still permeates narratives around the blockchain (Sansone et al. 2023; Langenohl 2022; Rmit and Zargham 2022; J.K. Brekke 2021), Bitcoin shifted towards exchanges because of its code: the algorithm is designed to add a new block every ten minutes, with a decreasing ("halving") reward system. So, in 2023, every day, about 900 Bitcoins are mined, while, on average, half a million Bitcoins are traded⁹⁴: since the usage far exceeds the capped production, an enormous market for regulated⁹⁵ middle-bodies emerged, despite the rhetoric of early

⁹³ As we will see, this concept will be illustrated and expanded by one of the coauthor of that paper in Swartz (2018)

⁹⁴ <https://coinmarketcap.com>

⁹⁵ Bitcoin's popularity grew dramatically among with the launch of *SilkRoad* in 2011, a darknet marketplace where the cryptocurrency was used as a mean of payment for illegal drugs; since then authorities has always been concerned about potential illegal uses of cryptocurrencies. Moreover, given the vast amount of money nowadays involved and their similarity with traditional financial and commodity exchanges, all centralized cryptoexchanges (CEX) are required to abide fiscal law and KYC ("know-your-consumer") regulations to operate in Europe and US. Recently, many decentralized exchanges (DEX) – where trades are executed among participants thanks to *smart contracts* – emerged, but converting fiat currencies to crypto still require to expose personal data and, given the fact that each transaction is public, is possible to link each trade to the person who ordered it. To avoid this tracking cryptocurrencies like *Monero* or services like *Tornado Cash* were developed; recent US' sanctions on the latter show, however, how the current legal

enthusiasts (Bill Maurer, Nelms, and Swartz 2013) and current Bitcoin *maximalists*. The latter are fringe but vocal of crypto-users rejecting all cryptocurrencies but Bitcoin (Huber and Sornette 2022), seen as the truly decentralized and censorship-resistant cryptocurrency because it is proof-of-work mechanism and the anonymity of Satoshi Nakamoto.

However, this is not the only contradictory development of Bitcoin. Another aspect mentioned in Bill Maurer, Nelms, and Swartz (2013) that will become central among crypto-enthusiasts is the debate on the very nature of Bitcoin, whether it represents an asset or a currency, whether it is a speculative investment opportunity or the beginning of a revolution. Even if this discussion is central among enthusiasts and has created a strong sense of identity in a trillionaire market, the literature on this phenomenon is still relatively small.

This division shaped two opposite types of investors: one active, the “degen” (Quiniou 2022) and representative of the broader *YOLO capitalism* (Chohan and Van Kerckhoven 2023), and one passive, the HODLer (Yogarajah 2022) or “diamond hand” (Ghelani 2022) that is someone believing in the “project” behind the cryptocurrency and that will not sell despite a potential loss. The former played a relevant role during cryptocurrencies’ 2020-2021 bull market when the crypto market cap went from 150 billion dollars (the fifteenth of March 2020) to 3’000 billion (the ninth of November 2021); in particular, *altcoins*⁹⁶ skyrocketed after Reddit r/Wallstreetbets users short-squeezed Game Stop’s during January 2021, and, in general, the arising of “*meme investing*” as a form of rebellion against corporate finance and its predatory logics (Chohan 2021): Bitcoin and cryptocurrencies appeal in fact to those dissatisfied with current economic system (N. Dodd 2018), even if in the end they seek to profit from it.

The discussion on the nature of cryptocurrencies echoes broader discussions on the thorny theme of the origin and the socio-economical function of money. For economic theory, money performs various functions: store of value, unit of account,

apparatus is challenged by the development of these technologies (De Filippi, Mannan, and Reijers 2022). Before the appearance of CEX and DEX, most of transactions were effectively done in person and settled with cash; this method today represents a negligible fraction and sellers apply a premium on each transaction.

⁹⁶ Cryptocurrencies other than Bitcoin are often called “altcoins”

and medium of exchange⁹⁷; stable value and wide acceptance are essential characteristics of any currency. Bitcoin and other crypto assets, however, displayed extreme price volatility during the years, and they are still priced in dollars; every exchange shows how much fiat currency is needed to buy a unit and not vice versa, but the volatility is precisely what attracted millions of users hoping for remarkable profits. As per their acceptance, very few vendors accept payments in cryptocurrencies: the only function they seem to perform is the store of value, as the bestseller *Software* implies (Lowery 2023). This, however, might be one of the reasons behind their success.

Given the scarcity of non-technical literature on Bitcoin, it would be interesting to briefly explore non-academic literature or what enthusiasts, pundits, and investors say about this cryptocurrency. Surfing through *cryptotwitter*, that is how the vast network of Twitter accounts promoting and talking about cryptocurrencies is often referred to⁹⁸, and it is common to stumble upon a *meme* or a tweet calling bitcoin “digital gold”. For example, Micheal Saylor⁹⁹, whose company Microstrategy became one of the biggest Bitcoin buyers, made him one of the most famous names in the field. He primarily writes single-sentence, solemn tweets comparing bitcoin to a new form of gold, money, and its almost supernatural, divine characteristics, with attached futuristic, oneiric images depicting the bitcoin symbol ₿: this cryptocurrency is “the perfect money”¹⁰⁰, “hope”¹⁰¹, “inevitable”¹⁰², “energy”¹⁰³, “the cure”¹⁰⁴, “power”¹⁰⁵ and, of course, “digital gold”¹⁰⁶. The pinned tweet¹⁰⁷ on his profile summarizes these supernatural characteristics: “#Bitcoin is a swarm of cyber hornets serving the goddess of wisdom, feeding on the fire of truth, exponentially growing

⁹⁷ In marxist theory, in advanced capitalist economies, money can perform a fourth function, “money as money” or “world money” (Lapavitsas 2016)

⁹⁸ During my digital ethnography I noticed how these accounts speak mostly exclusively about cryptocurrencies, while explicitly political content represents a minority of it despite the anarco-libertarian roots.

⁹⁹ <https://twitter.com/saylor>

¹⁰⁰ <https://twitter.com/saylor/status/1677660554834456582>

¹⁰¹ <https://twitter.com/saylor/status/1678025653126324225>

¹⁰² <https://twitter.com/saylor/status/1679468477432692736/>

¹⁰³ <https://twitter.com/saylor/status/1684907905856757760/>

¹⁰⁴ <https://twitter.com/saylor/status/1685289579203485696/>

¹⁰⁵ <https://twitter.com/saylor/status/1682362137732083715>

¹⁰⁶ <https://twitter.com/saylor/status/1688505806990295041/>

¹⁰⁷ <https://twitter.com/saylor/status/1307029562321231873>

ever smarter, faster, and stronger behind a wall of encrypted energy.”

Similar posts and memes can be found on many accounts and different platforms¹⁰⁸.

Bitcoin then possesses a semi-divine aura not because it has a clear use-value or real-world usages (besides a hedge for inflation), but precisely because it differs from daily-life activities the cryptocurrency promises its users - those who believe in it - a better world. In a very *hyperreal* (Baudrillard 1994) fashion, boundaries between what is real and what is a promise blur, and so any reference to material, existent world; we will develop this point later.

What is interesting to note is that those narratives fit what anthropologists already said about gold and jewels. For example, according to Maurice Godelier (1999), the precious metal derived its value because of its sturdiness, since it is the only metal still capable of standing shine and solid after centuries: bitcoin enthusiasts legitimize its value because of the robustness of an extended proof-of-work network, not for real-case scenarios. Similarly, David Graeber (2001) how commodity money has always been constituted by something with no proper use-value: “It is remarkable how many of the things adopted as currency in different parts of the world have been things otherwise used primarily, if not exclusively, as objects of adornment”.

So, if Bitcoin succeeds as a reserve asset, as a store of value, it will fail as a currency and means of exchange; *pace* Satoshi Nakamoto, today Bitcoin embeds both metallist and cartalist because a community arose precisely out of the scarcity and technocratic claims surrounding the blockchain and cryptographic tokens reflect and embed the social factor they were supposed to suppress.

This contradiction is also illustrated by the interview N. Dodd (2018) had with a crypto-trader, where it emerges how the capped supply plays a primary symbolic role among Bitcoiners so that if the total supply were to be doubled, none would use the coin even if all the other features (privacy, decentralization, security) remained the same. This paper is among the most cited on the subject by other anthropologists

¹⁰⁸ I found many times screenshots of translated Saylor’s tweets on the Italian *Facebook groups* on cryptocurrencies. Interestingly, many commenters criticized and questioned these posts and similar ones presenting self-fulfilling fatalistic and almost apotropaic tones. As the literature will show, bitcoin and cryptocurrencies users are a heterogeneous group, where individuals are moved by different values

and provides a balanced account of the Bitcoin world: despite the libertarian background of this technology, it would be a deductive bias to classify every Bitcoiner as a “right-wing extremist” (Golumbia 2016, 2015), mainly because the community plays a symbolic “counterpower” towards Wall Street, as noted by anthropologist Brett Scott¹⁰⁹, and as Dodd (2018) points out in his paper, the concerns about the privacy emerging from Bitcoin whitepaper and communities also symbolizes a reaction to the concerns generated by the growing “economy of data” made possible by internet. It should be noted, then, how Nigel Dodd has the merit of exposing in his papers the various contradictions characterizing the Bitcoin network, where the rhetoric of horizontality, uncritically accepted by Bill Maurer, Nelms, and Swartz (2013) is challenged by every increasing computational resources for mining that only significant clusters of servers can provide, and where a sense of community and sociality growth among Bitcoiners despite individualistic and atomistic “technology of mistrust” (Nigel Dodd 2014, 362) embedded in the code. Social scientists challenged the techno-utopian claims made by Satoshi Nakamoto about trustless money (and thus economy) where cryptographic blocks replace human relations; in fact, how it has been thoroughly demonstrated by many authors (Nigel Dodd 2014; Simmel 1978; Lapavistas 2003; Graeber 2011), money and society are deeply intertwined, and monetary reforms and experiments have been proposed during time of crisis¹¹⁰, while Bitcoin was designed precisely to sever this relationship. The impossibility of this project has been shown by the legal scholar Primavera De Filippi (De Filippi, Mannan, and Reijers 2020; De Filippi and Loveluck 2016); in the 2016 paper, *The Invisible Politics of Bitcoin*, De Filippi and Loveluck show how the management of peer-to-peer online communities involves a political dimension, that cannot be dealt exclusively via algorithms and entails disputes between different ideals. Decentralized networks are inherently political projects because they aim to organize and enable relations between individuals without a third party interfering or coordinating them. A typical issue in P2P networks is trust management, which Bitcoin addresses through the public-private keys on the *blockchain* and the *Proof-of-Work* consensus protocol. What was a social issue is now rendered as a technical problem.

¹⁰⁹ <https://www.kingsreview.co.uk/essays/a-dark-knight-is-better-than-no-knight-at-all>

¹¹⁰ For an overview of the “special purpose money” and an analysis of the most famous case, the *Bristol Pound* see Marshall and O'Neill (2018)

However, what happens when the code itself has to be changed? In 2015, the one MB block size limit was seen as an impediment to the Bitcoin network's scalability since it limited the number of transactions that could be processed. There was a fierce dispute among developers because this issue had ideological implications: if overcoming the one MB threshold was necessary to attract more users, on the other hand, this would have undermined the decentralization of the network because fewer nodes¹¹¹ could have afforded the required computational capacity, undermining then the decentralization of the network; what could have appeared as a mere technical inquiry was a question ripe of moral values. The community hesitancy led two programmers to create a soft *fork*¹¹², Bitcoin XT; its launch proved to be highly controversial, and the paper recollects how, at that moment, both crypto users and media felt Bitcoin was about to implode: fierce discussions arose on the internet, with insults and mutual exclusion from forums and chat groups. However, Bitcoin XT did not convince most of the nodes, and it was eventually abandoned, opening the path to other hard forks. Satoshi Nakamoto and early developers thought creating a self-governing infrastructure where coordination and conflicts were addressed more efficiently mathematically, horizontally, and utilitarianly through forks and rewards was possible. However, as the case of Bitcoin XT has shown, politics reemerge as the spectre of centralization: interests at stake are too different among various stakeholders (traders, miners, coders), and very few people can intervene on the code and make their voices heard.

The literature on Bitcoin seems to agree that nowadays, rather than fulfilling its purposed role as money, the cryptocurrency fuels discussions on the role of governance and money in current society; this topic is investigated through the analysis of the different "techno-imaginaries" driving the community explored by Swartz (2018). According to the researcher, and echoing the discrepancies analyzed by tensions arise between hobbyist and industrial Bitcoiners, especially on the meaning of "peer" in a "peer-to-peer" network; the two historical dynamics that paved

¹¹¹ A node is a computer holding a copy of all transactions in a blockchain and then validating transactions

¹¹² A *fork* is a situation where a blockchain splits into different chains because one or more nodes want different features to be implemented. Rules introduced by a soft fork are compatible with older version, so that older nodes can operate and validates transactions on the new network; an hard fork, on the contrary, is a permanent change that creates a new blockchain that is not interoperable by nodes that did not upgrade

the way to Bitcoin's success, namely the 2008 financial crisis and the social media business model based on data mining, are reflected in the two distinct techno-economic imaginaries populating the crypto-discourse: the infrastructural mutualism and the digital metallism, resonating with and amplifying the distinctions between the two groups that initially shaped and influenced Satoshi Nakamoto's whitepaper, the cypherpunk, and the crypto-anarchy¹¹³. Digital metallism, the digital re-proposal of classical liberal theory on commodity money's scarcity and libertarian dreams of apolitical and independent money, constitutes a core element in the imageries of the Bitcoin community (as we saw in the case of the trader interviewed by Dodd in 2016), is a theory of social interactions according to Swartz (2018): its autonomy from central banks value is transmitted to its users, that can use it to trade as peers. Bitcoin is a self-sovereign currency, and its users, by extension, are self-sovereign individuals, an old anarchic and libertarian trope that lures people into believing in the inevitable collapse of the central banking system: transformed into an investment, a claim on an imagined future, Bitcoin is hoarded and loses its function as a mean of exchange. Its value, contrary to gold, does not derive from physical properties but from what a shared, public mnemonic device like the blockchain says about it: Bitcoin also embeds a chartalist theory of money. The second leg of Bitcoin's techno-imaginaries is what Swartz calls *infrastructural mutualism* and can be connected to the stress put on coding by cypherpunks, the other group constituting the community according to the author: the latter see Bitcoin as an alternative payment system that relies on cooperation to work, engulfing a mutualistic vision of technology and society. Those two aspects were dovetailed when the community was born but slowly diverged to irreconcilable positions. According to the author, mutualists saw mining as a collaborative project to extract a censorship-resistant currency while anarchists as a way to store a speculative asset; the subsequent employment of collective "mining pools", graphic cards instead of CPUs and ASICS (Application Specific Integrated Circuits, special hardware built for the exclusive purpose of mining Bitcoin) made impossible for individuals to run a node. The abovementioned divisions came to the fore when the relatively small

¹¹³ For crypto-anarchists, having a monetary system dethatched from governments is pivotal for a truly free market society. Narayanan (2013, 76) shortly describes it as "a political philosophy that, in its idealized form, recognizes no laws except those that can be described by math and enforced by code"

Bitcoin community gained international popularity in 2011, when the sanctioned *Wikileaks* resorted to Bitcoin for donations, attracting new users and driving up the price; however, few Bitcoiners were unhappy about those speculative and hoarding practices, realizing that volatility was detrimental to its use as a currency and a betrayal towards the anti-establishment principles behind the whitepaper, recreating all financial infrastructures it was supposed to suppress. Satoshi Nakamoto also distanced himself from this newly acquired fame.

Many authors agree that, despite the original claims, Bitcoin and blockchains did not create an automated network, and the social aspect plays a pivotal role in regulating conflicts and shaping the decisions of users, coders, and investors. The relevance of “the social” has been widely acknowledged by the payment industry that, as shown by Nelms et al. (2018), is currently banking on the significant trend characterizing contemporary capitalism: personalized experiences for services and commodities, including payments. According to the professionals interviewed, new technologies must “embed payment in social experiences or build the social into the experience of using those technologies” (13). Trust, decentralization, and disintermediation are key concepts constantly deployed by actors in the payment industry¹¹⁴; in their speeches, however, they employ a peculiar notion of social, according to the authors, the economy of “just us”. In opposition to XIX and XX-century statistical accounts, this term denotes the creation of algorithmically adjusted individual profiles according to tastes and preferences. While the infrastructures, in their ideal form, guarantee the participation of everyone as a “peer”, in practice, they result in semi-closed circuits and gated groups, including and excluding at the same time and recreating centralities. The authors then investigate how the broader understanding and consideration of public concerns and politics in payment systems is lost when the framework of the economy of “just us” is adopted. Bitcoin and the blockchain infrastructure are seen as crucial elements for implementing a trustless yet trustworthy payment system; the exclusion of state entities, however, may lead to exclusionary economies and societies, and Nems et al. suggest accounting for the possible political and social results from the antisocial and (apparently) apolitical design of the implementation of these technologies.

¹¹⁴ The paper is the result of the attendance at 2013 and 2014 Money2020 conferences held by payment industry stakeholders

Notably, Nems et al. speculate on the possible evolution and spilling of blockchain technologies in other domains rather than payments and the following type of communities that could emerge; the idea behind a blockchain is, as we already have seen, to connect users horizontally through a shared database of transactions. Bitcoin protocol, however, has several limitations outside the trading of the cryptocurrency itself: the Ethereum blockchain (Buterin 2014b) was launched to overcome them and make it possible to build and execute more complex applications (dApps) like *smart contracts*¹¹⁵, and implement “automatic” organizational governance as a DAO (*Decentralized Autonomous Organization*), and laying the basis for the web3¹¹⁶. However, despite few experiments, web3, dApps and DAO remained in the background of the crypto-space until the last *bull market*: the 2020-2021 boom cycle was indeed characterized by the hype surrounding such terms (Quiniou 2022); as of today, few studies have been conducted on this evolution on the scene (Rmit and Zargham 2022; J. Brekke, Beecroft, and Pick 2021), and is still too early to say if web3 and DAOs are concepts set to remain in the crypto-sphere¹¹⁷.

The most comprehensive and cited study on this peculiar development of blockchain technologies is DuPont (2017), which analyzes the rise and fall of the first *Decentralized Autonomous Organization* in 2016. This community, simply named “The DAO”, was intended to allow investors to invest and manage new enterprises directly on the Ethereum blockchain, creating a new way to fund; the Ethereum

¹¹⁵ Smart contract is a term coined by Nick Szabo (1996) indicating “new ways to formalize the relationships that make up [...] institutions [...] made possible by the digital revolution”; such contracts are *smart* “because they are far more functional than their inanimate paper-based ancestors. [...] A smart contract is a set of promises, specified in digital form, including protocols within which the parties perform on these promises.” Smart contracts are then self-enforceable contracts on a pre-determined set of conditions that does not require an external authority to execute them

¹¹⁶ Web3 is a concept conceived by Ethereum cofounder Gavin Wood in 2014 to describe a possible transformation of the current centralized infrastructure of the internet toward a more decentralized one thanks to the blockchain
<http://gavwood.com/dappsweb3.html>

¹¹⁷ Given the overwhelming role played by venture capitalists in founding many web3 projects, harsh critiques arose from Bitcoin maximalists like Twitter-founder Jack Dorsey. Echoing the discussions on the block size in 2015, fears about centralization fuel the current debate on the web3.
<https://www.theverge.com/2021/12/21/22848162/jack-dorsey-web3-criticism-a16z-ownership-venture-capital-twitter>

founder Vitalik Buterin also backed the project. Providing a blueprint for all other DAOs, not only it stored all the transactions and self-executed scripts and applications but also provided token holders with a voting power directly proportional to the number of tokens (limited in number and sold during a 28-day “creation phase”) committed to projects, theoretically creating a self-owned and autonomous decisional organization, virtually free from any human intervention; however, shortly after the successful launch, the code was exploited, thus draining millions of dollar in Ethereum and the founders had to step in to mitigate losses, hard-forking Ethereum to restore the stolen funds: the study made by DuPont (2017) analyzes the difference between which “granular” governance structure was promised by the community members and, in contrast, what was observed after the hack. The author shows how, even prior to the launch, many community members and researchers were concerned about security issues, and a call for a temporary stop was well received by the community itself, but Stephen Tual, one of the critical leaders of the project, stepped in and reassured the community; eventually, he will confess DuPont how the unexpected fame of the project ended up worrying him, along with growing numbers of bugs in the code founded. The attack withdrew \$250 million in tokens from the treasury; funders and developers immediately pressured major crypto-exchanges to halt the trading of the stolen tokens even if that meant immense reputational damage and the subsequent collapse of ETH; in the following month, a letter supposedly written by the attackers sparked an ideological debate that divided the community and, in the end, the very Ethereum project; attackers moving from the influential slogan “the code is law” (Lessig 2000), they claimed to have only found out a “legal loophole”, so that efforts to reverse their actions would be morally wrong. In the following weeks, a hard-fork version of Ethereum was released, allowing to move all the tokens on a new chain, effectively erasing The Dao failed project. If this decision was welcomed by what DuPont calls “moderates”, a vocal ideological minority saw this episode as a betrayal and censorship, refused to update their nodes and kept mining on the main blockchain and giving to “Ethereum Classic” (ETC)¹¹⁸, a still active and traded coin. Perhaps unsurprisingly, DuPont found out that most of the investors were simply interested in a high-risk initiative and that the ideological and moral-driven members were overrepresented; nonetheless, it can be

¹¹⁸ <https://ethereumclassic.org>

stated that the online discussions mainly hinged around the theme of governance in the digital space, with the author relying on the concept of “algorithmic authority” (Pasquale 2011; Campbell-Verduyn, Goguen, and Porter 2017) to describe the various governance relations emerging in community discourses. This notion used has been used in literature (Lustig and Nardi 2015; De Filippi and Hassan 2018) to analyze critically the “code is law” slogan: in its original version (Lessig 2000) the motto argues that algorithms by self-executing and enforcing rules rendered the category of law redundant (rather than constituting a new form of it), these scholars see in it a form of biopower that goes against the interests of its subjects (Introna 2016). The tension between this new form of legal authority and the proper legal system, a tension that is tantamount to the tension between the techno-utopic promises and the actual failed project and the difficulties of coordinating different interests in a full algorithmically and decentralized way, often emerged in the online discussion, with members seeing the failure as a “life lesson”, other praising the pragmatism of Buterin and other core developers and a vocal minority horrified by the centralized turn. The game-theoretical prescriptions and assumptions upon which The Dao was built that see humans as rational, skeptical, and profit-seeking agents failed when the project faced exploitation, with the founders recurring to “traditional” forms of governance by trust and authority. However, despite the various drawbacks, the author sees The DAO as a remarkable experiment of future forms of governance made possible by technology, paving thus the way to non-speculative applications of cryptocurrencies and blockchains.

Since a blockchain is a way to store information in a shared and unmodifiable database, this technology is currently being implemented in various non-speculative scenarios.

For example, it should be noted how DuPont himself proposed a philanthropic project to be founded by The Dao, leveraging blockchain’s transparency to address accusations often moved to charities about their “financial mismanagement and opaque governance”.

The supposed transparency of a blockchain network is often praised and proposed as a key solution to solving social problems, particularly climate change. Despite the role nowadays bestowed upon financial institutions by international bodies (Berrou, Dessertine, and Migliorelli 2019; UNEP 2016) for addressing environmental issues,

carbon markets still lack investors' confidence due to fear of greenwashing and double-counting. For this reason, many actors see the blockchain as a fundamental tool for improving and scaling the impact investing and, in particular, green finance (Sansone et al. 2023; Siphthorpe et al. 2022; Hull, Gupta, and Kloppenburg 2021; Dorfleitner and Braun 2019); similarly, distributed ledgers have been often promoted as a key to improve institutions and break from poverty in the Global South (Thomason et al. 2018; Kshetri 2017), while other scholars are studying how to employ this for a better governance of common goods (Rozas et al. 2021a). An entire section of the journal *Frontiers in Blockchain* is devoted to the exploration of the moral and ethical employment of the blockchain¹¹⁹.

It should be added that the “transparency” of blockchain networks simply means that each record is publicly announced and registered on a shared ledger and is rendered immutable. At the same time, the quality or meaning of the input data is not assessed, leaving room for possible abuses and turning charities into tools to reinforce current inequalities.

Peter Howson has extensively and critically studied this theme (Howson and de Vries 2022a; Howson 2022, 2021a, 2021b, 2020; Howson et al. 2019b, 2019a). The scholar coined the term “crypto-colonialism” to indicate when blockchain technology is used to extract economic benefits from the Global South, exacerbating existing colonial path dependencies and perpetuating inequalities in the guise of pursuing a common good, such as protecting the global commons and improving refugees' lives. Blockchain-based interventions would be similar to development agendas imposing structural economic reforms and strictly related to neoliberalism: Howson coined the term “crypto-carbon” to discuss how the rhetoric of blockchain-enabled forest protection is ultimately dependent on market-based mechanisms, with the imaginary of more effective “green capitalism” shaping much of the neoliberal unconscious behind such efforts.

A few points emerge from the body of literature we reviewed. First, they are a divisive theme, with enthusiasts like Maurer or DuPont, harsh critics like Golumbia or Howson, and a few balanced accounts like Dodd. Second, despite the clear emergence of classic anthropological themes like biopower, machine fetishism,

¹¹⁹ <https://www.frontiersin.org/journals/blockchain/sections/blockchain-for-good>

critical accounting, or contradictions, none of these studies is soundly grounded in literature or employs a robust theoretical framework. An influential paper like Nelms et al. (2018), despite openly addressing the possible risks of depoliticizing the economy and society, does not frame such concerns into the broader critique of anti-politics (Ferguson 1990). Another element crucial in the design of blockchains and their application that has not been systematically explored is game theory. This theme, only shortly mentioned in De Filippi and Loveluck (2016) and DuPont (2017), has been central to the development of computing, cryptographies, and mainstream economics (Mirowski 2002) and presupposes a utilitarian idea of human relations, yet anthropologists have not assessed its role.

This lack of dialogue with the broad existing literature and with classical authors and concepts¹²⁰ matches another general point: blockchain and cryptocurrencies seem to appear underrepresented in current economic anthropology despite the economic and political dimension they currently play. For example, only Tremčinský (2020) produced an account moving from the maussian literature on the economic exchange, while Lee (2020) introduces the anthropological concept of “magic” to explain the beliefs of crypto-traders; we will go back to this study later. The results are partial accounts of these phenomena. In the following lines, we will highlight some of the gaps we identified during the literature review, focusing mainly on monetary theory, and, moving from a couple of less-cited studies, we will advocate for more comprehensive studies.

Most of these accounts are descriptive, with few interviews or proper prolonged ethnographic interactions among the members of the studied phenomenon (DuPont (2017); Lustig and Nardi (2015), Rmit and Zargham (2022), Faustino (2019) and Quiniou (2022) constitute partial exceptions). Surprisingly, despite being money and moneyness central themes in economic anthropology and sociology, the current literature on cryptocurrencies rarely dialogues with them. A partial exemption is constituted by Bill Maurer - in particular (2018) – and researchers in his group (Nelms et al. 2018; Swartz 2018). Those scholars analyze cryptocurrencies relying on Keith Hart’s (2000) and Viviana Zelizer’s (1997) theories on money; these

¹²⁰ For example, papers published on the *Journal of Classical Sociology* never mention “blockchain” nor “Bitcoin”

concepts, to put it short, emphasize that money is a social relationship that connects people and reflects the values and social relations of a particular group, so that money is not just a physical object, but also a way of keeping track of social obligations¹²¹. Being the blockchain a system of shared and decentralized bookkeeping, it is drawing the attention of authors seeing money as a social construct because they see it as a way to democratize money and trades (Barinaga 2020). So, most of the critical social scholars to analyze the blockchain relies upon a *carthalist* conceptualization of money that opposes neoclassical and monetarist views: for the latter, money is exogenous, a variable independent from economy and society. The discussion on money, however, is central in Marx's writing (De Brunhoff 2015); neo-Keynesian and carthalist philosophies have been often criticized by Marxist scholars - see, for example, Lapavitsas (2003) and Fine and Lapavitsas (2000) – because the overreaching role attributed to social, non-economic factor of money led to ignoring the role of production relations and class in shaping capitalist markets and money; the political and historical aspects embedded and reflected by money are overlooked. The debate on current or possible applications of blockchain and cryptocurrencies results is missing a critical viewpoint. We did not find an insightful analysis of these technologies that properly situates them into a broader macroeconomic and historical context (if we excluded the hyper-critical texts produced by Golumbia and Howson), nor the objective blockchain and cryptocurrencies in contemporary capitalism been studied. The contradictions highlighted by many previous studies are not put in a dialectical relation within a broader macroeconomic discourse, confronting them with the capitalistic ones and reducing possible research questions and outcomes. A reason Bitcoin fails as a currency, for example, is because it contradicts current trust-based credit money. According to Marxist authors, commodity money has been replaced by fiat money because gold no longer satisfied the needs of a modern capitalistic economy (Lapavitsas 2016). Why are metallist and digital metallist theories and rhetoric so popular among crypto users? How the far-right libertarian ethos behind Bitcoin (Golumbia 2015) relates to the unquestionable benefits crypto-assets received from a decade-long quantitative easing? The reproduction of a social group despite its

¹²¹ This historical conception of money is openly stated in Swartz (2018): "Taken as a methodology, this temporal view of money opens a more precise question about Bitcoin: What specific pasts does it pull into the present to pattern what range of possible futures?"

contradictions is a classical theme in anthropology: analyzing cryptocurrencies using such a framework and in light of macroeconomic and monetary theory can constitute a prolific terrain of inquiry.

In the most cited studies, however, Bitcoin is analyzed concerning the payment industry and, in general, within finance (B. Maurer 2016a; Bill Maurer, Nelms, and Swartz 2013; see, for example, the "special section on blockchains and financial globalization special section on blockchains and financial globalization" of *Global Networks*: Bill Maurer 2016b; Campbell-Verduyn and Goguen 2019; Bousfield 2019).

A broader account is provided by less cited studies like Lee (2020) and Faustino, Faria, and Marques (2021). The latter, in particular, despite not "discussing the 'moneyness' of Bitcoin", offers a fascinating anthropological insight into the crypto-world: the paper explores the role played by technology in shaping myths and rituals of the crypto communities, applying the classic anthropology's categories to this particular setting; given its original approach, we should discuss it briefly. Authors interestingly note that the Bitcoin whitepaper was published during a period of crisis, and the figure of Satoshi Nakamoto ended up representing the contemporary anxieties towards the centralization of power, offering the image of a hero-hacker capable of restoring equality through code. Employing a classic anthropological analysis, they note how Bitcoin's whitepaper is considered a "sacred text" that inspired the production of similar documents for every crypto-project, with each one embedding different values and/or rhetorical devices, and how communities hold their ritual celebrations through in-person conventions and meetings, where charismatic speakers re-affirm unity and cohesion narrating myths and tales on the Bitcoin network. Faustino, Faria, and Marques (2021) note how scholars seldom explore these quasi-religious aspects surrounding blockchain enthusiasts despite contributing to reproducing the "business as usual" in the financial world. By adopting blockchain solutions to manage payments and transfers, banks and fintech startups embrace the ethical and moral characteristics attributed to the blockchain, removing the need for structural reforms.

The "enchantment of technology" (Gell 1992), even if not explicitly mentioned, is central in Lee (2020), where the author explores the "spell" Bitcoin cast upon South Korean society during the 2017-2018 bull market. The author moves from what a burgeoning literature calls the "re-enchantment of the world", that is, the return of

irrational, esoteric, and magical practices because of financial capitalism's radical uncertainty; its "magical spirits" transformed the more disciplined workers into "gambler subjects", lay investors willing to bet on the market and questioning its predictability. Lee (2020) employs the term "magical capitalism" to describe not only the rituality surrounding this new form of investors – that, as we saw, is crucial according to Faustino, Faria, and Marques (2021) – but also its performativity effect, linking thus classical takes on magic (Mauss 2005) and the "performative turn" in the sociology of finance (Callon 1998b). The Bitcoin frenzy in South Korea is described as a cultural phenomenon reflecting the growing inequalities in the country, where a generation saw cryptocurrencies as a way to escape the economic harshness of post-development Korea. Starting from the 1997 crisis, Koreans began investing in financial markets to supplement the precariousness of jobs imposed by the neoliberal turn, while stories of success began to circulate, encouraging a growing number of households to take the risk and invest first in the housing market, then on stocks and now on cryptocurrencies. The radical uncertainty, a key characteristic of the Calvinist doctrine of salvation and that, according to Weber, was converted into the labor ethic and discipline necessary to sustain capitalistic expansion, here is reversed: instead of seeking salvation, taking part in "rational" activities, disillusioned workers now engage in speculative and gambling practices. In fact, financial markets are now seen as a "giant casino" where investors try their luck for future profits and not a rational device to allocate resources; given the high volatility of Bitcoin price, lay investors are skeptical about the effectiveness of technical analysis. This ineradicable unpredictability leads the author to frame the Bitcoin frenzy into the broader discussion on the "re-enchantment" of the world caused by the expansion of neoliberal politics (Comaroff and Comaroff 1993): the return of magical and esoteric practices is the other side of the coin of the inexplicable fluctuation of global markets influencing actors' life. The author notes how expressions of hope are uttered like magical formulas when Bitcoin hits a target price, while when the price fell, responsibilities were attributed to government officials warning words on the Bitcoin frenzy: the performativity aspects of current financial markets are interestingly linked by Lee (2020) to the anthropological theory of magic.

Closing a gap

To summarize, we saw how most of the studies on the blockchain rely little on extensive interviews or “classical” notions.

An noteworthy and relevant aspect those papers does not question is the broader, political and ideological role played by the technology itself; several critical scholars (Malm 2016; Hornborg 2016, 2011, 2001, 1992; Harvey 2003) showed how technological devices depend on, and help to reproduce peculiar power configurations, and they can do so precisely because they are usually seen as value-free, neutral objects. This mystification process through the apparent aura of objectivity given by numbers and quantitative data – the very definition of fetishism (Graeber 2001) – has been noted as one of the essential characteristic of contemporary neoliberal capitalism by critical accounting scholars (Porter 2020; Strathern 2000; Power 1994): studies on the blockchain, then, cannot ignore these perspectives on contemporary capitalism.

A broad, interdisciplinary approach, linking their material, technological aspects to the ideological ones (Godelier 1986) appears necessary to understand what the proliferation of blockchains and cryptocurrencies can tell us about our society. They emerge at the intersection of technology, economy, and ideology, reminding us how they are deeply intertwined. Moreover, they remind us how societies are inherently complex organisms that can thrive despite their contradictions: blockchains and cryptocurrencies rely upon human relations to work, yet they were built to make them redundant. They were designed to serve individualistic purposes but are currently deployed to serve social and environmental purposes.

Anthropological classical themes, then, constitute the proper theoretical toolbox to analyze the rise of the crypto world. A comprehensive analysis of the phenomena grounded in theory and ethnographies is lacking. KlimaDAO, due to its peculiar nature, represented a unique occasion to do so.

Indeed, what I found extremely difficult during my research was unraveling the various topics and closing a knowledge gap between me and my interlocutors.

Taking their comments, interviews, and various documents at face value would have resulted in a very partial picture. Like more “standard” ethnographies, first, I had to locate and understand what my field was about: this meant understanding what blockchain and cryptocurrencies - “exotic” places for most anthropologists - were about and “translating” them into a language accessible to social sciences scholars.

KlimaDAO's peculiarity - carbon offsets storing - meant a deep dive into fields already known to anthropologists, even if, as it will be evident in the next chapter, I found the leading research's strains unsatisfactory. The incentive mechanism was another brainteaser I had to decipher, and, again, this meant venturing out into the new forms of *Decentralized Finance* and their design, realms only partially explored by anthropologists. However, some recurring concepts and ideas will emerge through these literature and documental reviews, allowing us to draw some interesting theoretical points.

As thoroughly discussed in the first section, we can see how actors in green finance, decentralized finance, and blockchain all employ similar terms and concepts. The question then is which type of literature can relate to this "form of life"? Ludwig Wittgenstein's (Wittgenstein 2010) concept here might be helpful to understand the technique I used. "Forms of life" refers to the broad cultural and social contexts within which language games are played; words do not derive their meaning from the correspondence with essential, fixed properties or objects but rather from their use within specific *language games*, so from their daily use and the activities they are part of.

The term "game" underscores the fluidity of language: just as games have many forms with different rules, language has diverse applications, each with its own logic and grammar. Games display a network of overlapping similarities, where different games share various features with each other, creating a complex web of relationships rather than a fixed boundary defined by common properties: even if fixed definitions do not exist, speakers still understand each other because a cluster of words "resemble" a cluster of meaning. The more I studied KlimaDAO, the more I noticed how themes and concepts conflating each other were, instead, surprisingly related. A "familiar resemblance" (Wittgenstein 2010) exists between blockchains and green finance: they are both part of the capitalistic "game". For this reason, I think the broader social and cultural context has to emerge when these themes are approached; otherwise, a significant part of their essence will not be grasped. As we saw in this section, underlying affinities do not always emerge in the literature concerning blockchains and their applications; a similar scenario characterizes many studies surrounding the other "branch" of the family, the carbon offset.

Carbon Markets and Anthropology

As we already mentioned in the first section, the VCM industry went through serious scrutiny during the time of this research. Previously, we stated that economists created these markets, employing STS (*Science and Technology Studies*) terminology, and relied on the analysis provided by Donald MacKenzie, since the Scottish sociologist probably is the most cited among social scientists studying carbon markets: his *An Engine, Not a Camera* (2008) scores 4163 citations on Google Scholars. In that book, applying the notion of *performativity* (Austin 1975) to financial markets and expanding Callon's (Callon 1998b) ideas that "economic, in the broad sense of the term, performs, shapes and formats the economy, rather than observing how it functions" (2), the author showed how economists actively took part in creating new financial markets, proving its point by showing - among others - how carbon markets were conceived and put into place through the second half of the twenty century. We relied on the historical framework he provided as well.

However, the recent evolution of the voluntary carbon markets (VCMs) landscape reminded us of the ambiguity of the term "economy" and how the symbolic and material levels should not be conflated. If it is undoubted that they worked (economists and lobbyists effectively mobilized other actors and resources, creating new legal and technological infrastructures), on the other hand, they did not *work* since their impact on the environment was barely noticeable. Interestingly, KlimaDAO replicated this pattern: in terms of the distribution of tokens and locking of carbon certificates, the protocol worked, while at the same time, most of the investors lost their money, and worthless carbon credits found a new life. Its founders *performed* the crypto economy, which meant very little for many economic actors.

To eliminate this paradox, we should first understand what "economy" means. So far, we adopted a Marxist-inspired anthropological framework to talk about KlimaDAO; this work, then, distances itself from STS and ANT (*actor-network theory*) studies, the most prominent blueprints used in social sciences to unpack carbon markets. Given their foremost influence on anthropology, a short introduction and problematization are needed; furthermore, we will show the reader unsuspected underlying connections between this school of thought and the moral and ethical philosophical statements used by the proponents of non-speculative and "for good"

implementation of the blockchain, which we named “crypto altruists”. This way, we will reconstruct part of the ideological background against which klimaDAO arose. ANT is a theoretical framework that originated in science and technology studies during the 1980s. Developed mainly by sociologists Bruno Latour and Michel Callon, ANT posits that human and non-human entities (such as technology, animals, or ideas) play roles as "actors" within a network. Unlike traditional social theories that differentiate human and non-human agency, ANT argues that agency is distributed among a network's actors. It emphasizes the relationships, connections, and associations that hold these actors together. Through this lens, society, science, and technology are understood not as separate domains but as entwined entities continually shaping one another.

Science and technology studies scrutinize how knowledge is produced, legitimized, and disseminated and the broader implications of scientific and technological innovations for society. Central to STS is the idea that science and technology are not neutral but rather deeply embedded in cultural, social, and political contexts; as a result, it adopted a critical perspective on the authority of science and the impact of technology on everyday life. Donna Haraway is a prominent STS scholar we will encounter in the last section. She is best known for her concept of the "cyborg" (Haraway 2013), a hybrid figure that challenges traditional distinctions between nature and culture, human and machine, made possible - among other things - by developing cryptography.

Both ANT and STS challenge the idea of science as a value-neutral enterprise; in this way, however, a study of the objective role played by certain elements in a determinate economic system becomes impossible by definition. Drawing from interdisciplinarity, they focus on networks so that knowledge, technology, and economic facts result from the interaction between human and non-human entities, suggesting a distributed and relational agency. ANT has been described as a material-semiotic method, wherein it considers the materiality (things, objects, artifacts) and semiotics (meanings, symbols, discourses) of relations in networks so that, rather than developing a unique theoretical framework, its scholars focused on empirical case studies (Law 2008): in the pioneering *Laboratory Life: The Social Construction of Scientific Facts* (Latour and Woolgar 1979), Bruno Latour and Steve Woolgar drew attention to how scientific facts are socially constructed, inviting readers to be reflexive about the nature of scientific knowledge itself, while reflecting

on their own ethnographic writing. Despite social relationships occupying a crucial role in this framework, little or no space is devoted to the political-historical developments that generated them in the first place: attributing agency to immaterial objects necessarily means that politics play a not-so-relevant role, differentiating ANT from more heterodox theories.

Indeed, Micheal Callon, rather than on the economy, focused on "economization" (Callon 1998b), the intricate relationship between theoretical economics and its practical application in the real world, emphasizing the role of economics in shaping and influencing the economy the process through which entities (objects, services, relationships, etc.) are made calculable, comparable, and exchangeable, ultimately making them part of economic circuits or markets (Çalışkan and Callon 2009): economization is the process by which actors assemble and qualify actions, devices, and analytical/practical descriptions as "economic", turning things (be it objects, services, or relationships) into entities that can be subjected to economic calculation and trade, and this involves a series of social and technical processes. This approach, brought to its logical ends, refuses the neosubstantivism and the notion of "embeddedness" since it "underplays the participation of things and materialities in the setting up of gradients of resistance. The economy is reduced to nothing more than a human affair configured by social processes." (392). While markets are not seen as naturally occurring phenomena but constructed through human agency and various mediating instruments involving socio-technical *agencements*, the historical process creating them is not explored since "[t]he explanans being fuzzier than the explanandum"; society, in the end, is seen as a secondary problem: "What would an economy be without commodities and their physical properties and materialities?" (383-384). The economy is reduced to one of its peculiar manifestations, the capitalistic one, with commodities and markets in charge of administrating resources to solve needs; having STS removed the political aspects of it, materials and measurements became central.

Throughout a series of processes, the entities undergo a transformation. They are detached from their original context, rendered calculable, and then re-embedded into new configurations as commodities or calculable goods/services that can be transacted (Callon 2016).

The transformation relies on a vast production of legal and scientific documentation:

the utterances are written rather than shouted. Donald Mackenzie showed how modern finance can operate because actors disentangled the *physicality* of the trades from their monetary settlement, a crucial intellectual operation started at the beginning of the XX century (D. MacKenzie and Millo 2003) that made exchanging any sort of derivatives possible.

Interestingly, today's financial derivatives exchanges emerged from the Chicago Mercantile Exchange and Board of Trade, an agricultural futures market (D. MacKenzie 2008, 13): futures were developed to marketize natural assets further, answering capital's needs to increase profits and hedge risks. Indeed, the price of an agricultural product becomes relevant only if a market to exchange them already exists and constitutes the dominant way through which they can be exchanged. Or, once prices determine economic actions and a proper capitalist economy exists (Wood 2002). When other principles dictate production, prices do not exist or do not fluctuate despite bad harvests: conflicts around the notion of "fair price" characterized the transition from feudalism to capitalism (Thompson 1971).

Agricultural products' futures were the first ones to appear (Cronon 2009), and it seems to me that for two reasons: their peculiar tangible properties (once expired, they became worthless) and their dependency on uncontrollable meteorological phenomena can make these commodities particularly volatile. It should be reminded that profits can be made only if there is a difference in prices: until Bretton Woods Agreements remained in place, currencies futures - a market today having a notional value of decades of trillions of dollars - were an unattractive idea (D. MacKenzie 2008, 146), even if some economists were advocating for the removal of fixed rate exchange (Friedman 1953b). After Nixon closed the "gold window" on August 15, 1971, and the subsequent end of dollars' fixed convertibility in gold, the need for a market to hedge (or to speculate on) the risks of currency speculation appeared on May 16, 1972, Chicago Mercantile Exchange (CME) launched its first currency derivatives market (Tamarkin 1993, 200).

CME was founded in 1898 under the name of *Chicago Butter and Egg Board* (E. Harris 1970); up to 1919 and its subsequent reorganization and introduction of futures on grains and other commodities, the exchange mainly dealt with spot contracts, so that the underlying, material assets had to be delivered: in less than sixty years it moved from the concreteness of food to the abstraction of foreign currencies options. If economists played a crucial role in this shift, they were moved

by ideological purposes: as reported in MacKenzie (2008, 147), when Milton Friedman was asked to write a paper to support the launch of the currency future, he phrased his willingness to draft it in exchange for money with a succinct “I am a capitalist first”. We might infer that the ideology, more than the economists, *performed* and shaped economic activities. These types of considerations, however, do not emerge from MacKenzie: markets’ *superstructure* is given for granted, and the latter is seen as the only possible form of economic activity. The stress is put on the *infrastructures* that made possible the existence of the markets: for example, the legal and technological innovations needed to standardize grains bushels and “disentangling” them from their materiality, or the legal plan needed to avoid futures exchanges to be compared to gambling.

A similar framework is employed for carbon emissions markets by D. MacKenzie (2009a): according to this scheme, it constitutes a typical example of economization and problematization. In this paper, Mackenzie openly draws from *Actor-Network Theory* (Latour 2007) to describe what the economy is and what it does; we will now shortly introduce ANT’s perspective on carbon markets. Indeed, given the multifaceted nature of these financial assets, where human and non-human factors intertwine each other in a complex regulatory framework, many studies (Dalsgaard 2013) relied on the school of thought laid by Latour (2004) and similar approaches of actor-network theory (ANT) or science and technology studies (STS) (Callon 2009), (Blok 2011), (for a review of the STS literature addressing REDD+ projects see (Schumacher 2023)) so that social scientists analyzing these arguments have to confront themselves with this body of literature, something I found unsatisfactory. ANT scholars see capitalism as a set of human actors, practices, and “*dispositifs de calcul*” (Callon and Muniesa 2003) - calculative mechanisms – that make it possible for practitioners to experiment and create new economic realities (Muniesa and Callon 2007). Even if conflicts over resources’ distribution do not emerge, for ANT, radical changes are possible even without politics: greenhouse gases are indeed considered a way to “civilize” capitalism (Callon 2009), challenging one of its core metrics, profits, and losses, by forcing emitters to price their externalities and slowly decrease them through a “cap-and-trade” mechanism. Economists, along with legislators, not only created a new market but a new commodity as well that can be legally defined, economically valued and traded; as Donald MacKenzie (2009) rightfully noted, this process of *commensurability* and accounting relies on

technicalities and arbitrariness, especially for the uncertainties surrounding this commodity, constituting a typical example of “black-boxing” (Callon and Latour 1981), a process through which complex systems are simplified and made manageable by concealing their inner workings. Or, in other words, an example of fetishization (Graeber 2005). Nevertheless, it is the “social” and “public” factors that make climate finance possible: it is easier to provide liquidity once standards are set and implemented, even if assessing the danger of emissions is the result of internal negotiations, like IPCC’s (Intergovernmental Panel on Climate Change) assessments on HFC-23 (Fluoroform), as illustrated in Mackenzie (2009). These debates, however, are inherently *political* regarding allocating the resources needed to reproduce the social group. The already mentioned hefty debate (Keen 2021) caused by 2018 Nobel Prize winner William Nordhaus’s “social discount factor” (Nordhaus 2019) is a clear example of that: despite policies and programs designed upon that model can be said to be “scientific”, the enormous different economic interests at stake behind that model should prompt us to investigate the “politics” that shaped and enforced these *“dispositifs de calcul”*. Undoubtedly, environmental finance requires a lot of “cooling” to use Callon (1998a)’s words; however, more than sixty years passed since Coase’s theorization, and we still find it problematic to price and to reduce externalities. I first approached this strain of literature because of its stress on the technological aspect and, at the same time, performativity seemed to be an interesting topic; what I could not agree upon, however, was the general lack of interest towards how “black boxes” came into place or how different political (and anthropological) ideas imposed the *economization* and the *problematization*. More than two decades after their introduction, the reality of self-regulating and environmental-driven market actors envisioned by carbon market supporters and KlimaDAO investors has yet to appear. As prices are falling, the opposite is more likely to materialize. KlimaDAO’s development is exemplary of the importance of macro factors. While I was still thinking about how to frame Klima’s carbon retirement mechanism and the different environmental and financial returns at stake, a journalistic investigation found out that the carbon credits bridged on the blockchain and traded thanks to klimaDAO had no environmental value (Badgley and Cullenward 2022). This crucial event - which will be explored later - exposed how authority represents a key issue for the performativity paradigm. For example, uttering a sentence (“I buy X carbon offsets”) can produce an economic effect (I can

tell my clients, “I reduced my carbon emissions by X tons”) only because the credits I bought were certified internationally recognized organization: however, does a certificate translate as a tangible change? The recent scandals showed how the material reality often conflicts with policy statements and accounting techniques. Climate change is a real phenomenon influencing economic activities, whatever we define as the latter, so their impact on it constitutes a litmus test for any policy (or *problematization*). Adopting an STS framework to study VCMs will lead us to a paradox since final results oppose each other: on the one hand, KlimaDAO and other actors enabled vast metrological, regulative, and accounting technologies, without whose there would not be such a thing as “carbon credit”, mobilizing actors’ economic resources and constituting a successful economic process, but on the other hand, the impact on the environment was irrelevant, so that the economy - especially human activities like agriculture - was not affected, and it can be argued that their impact on it was close to zero. Even if the envisioned markets materialized, this did not equate to a physical, measurable change in the production of externalities (“overflowings”, per Callon (1998a)) in the *economy*, so such utterances did not shape the reality. If conflating interests influence problematization and economization processes, we should consider them when we observe and analyze their outputs.

The latter should be the focus, the *Hic Rodus, Hic Salta* of each theory. As suggested by anthropology (Godelier 1986), the economy should be framed more largely, encompassing both the “mental” and the “material” aspects of it: an overall framework should prevent giving power relationships and relations of production for granted. Indeed, the focus on documentation and accounting characterizing STS-inspired studies on the theme bears the risk of reducing to depoliticizing an inherently political matter, contributing to the mystification of a field already ridden with incongruences.

Consequentialists’ (Parfit 1984) argumentations are usually employed against this type of critique: according to this ethical stance, the rightness or wrongness of an action depends solely on the consequences of that action, even if displaced in a distant future; in this framework, markets’ present failures are winded down against potential future benefits. For example, to defend itself from Badgley’s article, KlimaDAO (2022b) remitted that their scope is to *improve* markets’ mechanisms so that present-day problems should be seen as temporary, necessary errors in the

bigger picture. These rhetorics stemmed from a peculiar individualistic and utilitarian epistemology embedding specific ideas on human nature and how societies work, utilitarianism: individuals are calculative, rational agents looking to maximize their overall well-being. Perhaps not surprisingly, also Callon (1998b) envisions humans as calculative agents, stating that “homo economicus really does exist” (51). Being this contested utilitarian philosophy shared, among others, by most Silicon Valley billionaires and crypto-enthusiasts, it will be analyzed in another chapter. For now, it is sufficient to say that the stress on the *performativity* understanding of realities characterizing these scholars perfectly aligns with *consequentialist* ethical thinking. Critiques and doubts about the kind of reality that these financial objects possess and depict are not new and, as recognized by Muniesa (2014), can be seen as part of the broader postmodern inquiries on meanings and symbols, exemplified by Baudrillard (1994)’s *Simulacra*: representations (e.g. Media, arts) have no longer any connection with the reality, instead are self-referential (hyperreal), and we just came out to similar conclusions while reasoning on carbon credits. These qualms are solved by Muniesa (2014) through the adoption of an “openly pragmatist” approach (22): Levi-Strauss’ *symbolic efficacy* (Claude Lévi-Strauss 1987) notion is used to show how a simulation - the imagined world sang by Cuna shamans, depicted as local psychiatrists, to help women during labor - can quickly turn into an actual situation, so that, in the end, the questions of authenticity and reality can be easily dismissed, because the intended results are reached. This theory of symbolic efficacy has survived structuralism; as we already saw, these healing practices give the patient a way to frame their issues in a shared setting of experiences. However, many studies have noticed how this notion can be problematic through the years. According to Taussig (2008), it underrepresents the role of the patient (the chants are played in an exoteric language known only to the shamans) in the production of new meanings; similarly, for Severi (2000) the patient creates the efficacy by their active participation. Anthropology has further questioned the relation between the subject and the social context, going beyond Levi-Strauss’ symbolism (Scheper-Hughes and Lock 1987). The risk is naturalizing the power relations behind the social order, creating both the diseases and the cultural order in which they are solved. Regarding carbon finance, this means legitimizing an economic system producing carbon dioxide and the accounting techniques used to solve them. This theme has already been discussed

in the previous section, so here it will be noticed how the “openly pragmatist” method neatly intersects with consequentialism and, more broadly, with the utilitarian ethos characterizing capitalism: consequentialism and pragmatism are outcome-oriented frameworks. They do not prescribe actions in advance but instead look for their outcome. It seems that such a paradigm cannot but reinforce a certain conformism: what change can be enacted if the root, political, and historical causes are not addressed or even recognized? Indeed, Callon ruled out “the existence of a spirit of capitalism or an overall logic of a mode of production”, instead supposing that “certain forms of economic activity to the more or less chaotic, regular and general upsurge of calculative agencies formatted and equipped to act based on a logic of accumulation and maximization” (Callon 2005, 5).

The core notion of “performativity” has already been heavily criticized by many scholars for similar reasons to those just mentioned.

Before proceeding further, I would like to underscore how Callon’s premises - that economists do not simply passively describe the economy - are nothing new. Unveiling the mystifications and the active role of economists to maintain the capitalistic order is nothing but the program of Marx’s *Capital* since they naturalized and legitimized a socio-political, economic system, recognizing that in the economy, there are conflating and unreconcilable interests since there are a class (the capitalists) taking the surplus produced by the labor, whose seen as the only one capable of creating additional value from given inputs. So, only neoclassic economists abiding by liberal concepts as the marginal productivity of a factor of production would uphold a view of their profession as mere witnesses of the economy; according to this theory, each factor (labor, capital) produces value and should be paid an amount equal to its *marginal product*¹²²: their fair compensation can be mathematically calculated, leaving no room for political discussion.

However, we found another discrepancy. Despite moving from apparently heterodox standpoints, “performativists” stress on pragmatism and the space and relevance devoted to artificial objects closely resemble Friedman (1953a)’s methodology. According to the American economist, economics should be concerned with positive analysis (the study of what is) rather than normative analysis (the study of what

¹²² The increase in total revenue that results from employing one more unit of that factor, while keeping all other factors constant

ought to be): deprived of political - and conflictual - analysis, performativity theory turns to reproduce some of the points it originally arose against.

Returning to our discourse, Daniel Miller and Michel Callon were the protagonists of a harsh debate in the first decade of the years' 00. The British anthropologist called upon "[turn] Callon the right way up" in a heated paper published in an issue of *Economy and Society* journal (Miller 2002) hosting another paper highlighting the differences between the two authors (Slater 2002): while Callon highlights the underrepresentation of calculative practices, such as accounting, in sociological literature, Miller's perspective suggests that economic transactions and market behaviors cannot be fully understood without considering their cultural and social dimensions. He contends that the performativity of economic models is not only about calculation and rationality but also involves a complex interplay of cultural, social, and moral factors, suggesting that these broader cultural and social contexts deeply influence how people engage with and perform economic models. Callon is criticized for following economists in mistaking a representation of economic life for its actual practice. Miller's concept of virtualism seeks to account for and address this powerful act of representation, suggesting that abstract models - used, for example, in audit and consultancy - are instrumental in aligning the world to these theories and models. In his answer, Callon (2005) acknowledges the importance of cultural and social factors that do not diminish economic theories' performative role. They are part of the assemblages that include both human and non-human actors, all contributing to the construction of market realities, contending the views of capitalism (nicknamed "Kapitalism") as a cold, alienating machine. Miller's following answer (Miller 2005), however, regrets his previous negative tones, acknowledging his shared interests with Callon but arguing for a more comprehensive approach through the use of ethnographies focusing on the materiality of economic practices; indeed, these studies can reveal the discrepancies between theoretical models and real-world practices.

A similar debate is central to the edited volume *Do Economists Make Markets?* (D.A. MacKenzie, Muniesa, and Siu 2007a). In the *Introduction*, Donald MacKenzie, Fabian Muniesa, and Lucia Siu (D. MacKenzie, Muniesa, and Siu 2007b) emphasize that economics is not just about being "right" or "wrong" in its theories and predictions but also can transform the world: to prove their point - and thus the validity of the concept of "performativity" - authors show how the economist Jeffrey

Sachs was capable of suggesting the Latin American country the right policies to bring down the inflation despite knowing almost nothing about Bolivia.

A few pages later, (Mirowski and Nik-Khah 2007) heavily criticizes ANT, the underlying intellectual tradition of many performativity analyses, described as a “Theory of everything” that moves “from that vast blank no-man's-land situated between [...] portentous dichotomies” like nature/society (194) and inadequately accounts for the role of social structures; indeed, in their subsequent analysis of U.S. communications spectrum auctions, they show how the game-theory based experimental markets envisioned by a vast array of economists simply failed, since outcomes were significantly shaped by primary socioeconomic and political interests, questioning thus the validity of neoclassical economics as applied science.

Interestingly, KlimaDAO’s market design went through a similar path since prices plummeted as soon as earlier backers sold their stake after a few days, so the result was influenced first and foremost by larger players’ will rather than by the envisioned market mechanisms.

To conclude, it seems that political power relationships determine the success or the failure of a peculiar economic model. Economists can shape reality if they are in the position to do so, only if they have received the authority to effectively exercise powers; performativity theory’s main problem, then, is the depoliticization that such approach embeds: by performing and shaping social reality, every economic theory can be considered *true* (Brisset 2016) and the status-quo envisioned by economists defended (Miller 2002) while hiding the set of social relations that make these utterances work. We are entering the realm of fetishism, the cultural mechanism through which an uneven allocation of resources is naturalized and made acceptable to all members of a group; when it comes to the carbon market, this means that despite environmental and economic aspects of carbon markets are opposing each other, they are portrayed mutually compatible.

Rather than digging into the concept of fetish, we will now outline the problems arising from the performativity approach, confronting an influential STS paper with the most recent development in VCM. In Ehrenstein and Muniesa (2013), many pages are devoted to analyzing the Project Design Document (PDD) of a reforestation offsetting project within CDM’s framework; the PDD constitutes a crucial rhetorical device to create the *counterfactual* display, a *what-if* future scenario

involving the project. This process involves creating spatial and temporal boundaries, as well as making an estimation of possible *leakages* or emissions produced elsewhere because of the project itself (for example, “moving” the deforestation in a nearby area); actors employ profit-driven “*dispositifs de calcul*” so that the entire project is designed to be financially viable. To be accepted under the CDM scheme, the envisioned *baseline* scenarios (“*What if* this project is not implemented?”) must be credible and realistic; guidelines do not explain what this entails. Perhaps not surprisingly, those documents were drafted to be read by executives: in the baseline scenario, the project also generates investment opportunities. Respondents liked that project because it embedded a “touching narrative” on war-torn Congo that could have moved potential clients.

Carbon reduction, the reason why this system was settled in the first place, remains in the background, and the sole aim of this bureaucratic process is receiving the CDM approval: “these credits have been certified already, which means that they, in fact, exist!” an investors’ representative stated (178). Carbon credits, then, embody different and opposing values, split between international regulations, economic profits, and environmental returns: to quote Marx (2004)’s well-known description of commodities, they are “very strange thing[s], abounding in metaphysical subtleties and theological niceties.”

Yet, these ambiguities are not explored at all. The paper focuses exclusively on the technical documentation and the interviews of those who wrote these documents; despite acknowledging controversies around forest-based carbon offsets, the emphasis is on legal and legislative requirements. This leads to two questions. First, can the economic and political aspects be reduced to a documental analysis? The risk is to naturalize (and reproduce) our societies’ relatively recent *bureaucratic* development (Power 1994), promoting accounting practices over material production. Carbon markets might work on the *symbolic* level of a market society, but they will not work on the *material* level; the two planes should not be confused. The second one stems directly from this: even if imagined worlds described by “counterfactual” arguments exist in discourses and mobilize resources, can they produce a material impact?

While blockchain-based companies and projects are increasingly recurring to such solutions to carbon credits to appease critics of their energetic consumption (Howson and de Vries 2022b), performance-based payments for carbon reduction have always been under heavy debate for twenty years (Angelsen 2017).

In the largest carbon market in the world, the European Union Emissions Trading System (EU ETS), companies primarily trade emissions allowances among themselves. In Phase 4 of the European Union Emissions Trading System (EU ETS), which covers the period from 2021 to 2030, the use of international credits, such as those from the Clean Development Mechanism (CDM), has been completely ruled out; during Phase 3 of the EU ETS (2013-2020), there were qualitative and quantitative restrictions on the use of international credits: for instance, credits were not accepted from nuclear energy projects, afforestation or reforestation activities, and projects involving the destruction of certain industrial gases like HFC-23¹²³. Broadly speaking, the concept of “carbon credit” has proved to be way more complicated and discussed than what appeared in the literature previously highlighted. Critics highlighted (Streck 2020) how the definition of carbon rights, a “highly esoteric legal concept,” and the legal nature of carbon credits vary significantly between countries, creating a complex landscape for REDD+ transactions; furthermore, carbon offsets represent a right to pollute for those who can afford them, advantaging richer countries and communities and creating ethical problem, especially since most credits are just certificates issued by private companies like Verra or Gold Standard. Indeed, studies (Pearse and Böhm 2014) have shown how carbon markets, with their utopian faith in pricing, overemphasize scientific measurement and quantification by exaggerating the importance of technical solutions and expert management. They neglect essential environmental factors that are not easily quantifiable and, at the same time, form a barrier to implementing other forms of climate action, thus resulting in a political tool overly benefitting richer countries despite the cost of climate change affecting disproportionately lower-income households. Even if the relationship between morality, politics, and technology will be analyzed further on, we should now highlight how these technocratic ideals embed and help reproduce a precise ideology;

¹²³ https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/use-international-credits_en

according to Lohmann (2008) neoliberal ideas shaped responses to climate change and global warming, turning poverty into an opportunity for capital, by leveraging the 'dead' assets of underdeveloped areas and addressing global warming by commodifying greenhouse gas emissions. Given the centrality of technology (term to be intended in two senses, as advanced material artifacts and as technical processes) in this thesis, we will now devote a few lines to how critics of carbon markets have addressed this concept.

Solutionism and anti-politics

Discourses on technology and technical expertise played a foremost role in the shift as mentioned earlier. Starting in the twentieth century, many societies adopted a belief system that posits technology as the key to resolving various social, political, and ethical problems, something that has been described as “solutionism”, a concept popularized by Eugeny Morozov¹²⁴. In his popular¹²⁵ *To Save Everything, Click Here* (Morozov 2013), the author criticized the belief, dominant in Silicon Valley, that turns multifaceted issues into manageable tasks that can be solved through technological means, ignoring more profound societal implications. Indeed, solutionism oversimplifies complex issues, reducing them to problems that can be solved with a simple technological fix and embraces an overly optimistic view of technology's role in society; more recently, Johnston (2020) investigated the origins and implications of this belief, showcasing among others how technological solutions (like cloud seeding or carbon sequestration) are increasingly evoked to solve climate change, leaving untouched the economic system that created environmental issues in the first place. It seems, indeed, that this “solutionist ethic” has become central to the self-image of modern tech companies (Nachtwey and Seidl 2020): “the new spirit of capitalism” (Boltanski and Chiapello 2005), the ideology that justifies engagement in capitalism, has incorporated artistic critiques of managerial capitalism, praising flat hierarchies, decentralization, flexibility, and self-reliance, elements that align well with the demands of a postindustrial economy; these ideas align with the cultural

¹²⁴ A broader literature review on the concept is available at <https://the-crypto-syllabus.com/solutionism/>

¹²⁵ At the time of writing, this book received more than 5'500 citations according to Google Scholar

values of the tech sector, which often prizes agility and entrepreneurial spirit. As the tech sector has become increasingly dominant in daily life, the principles of the new spirit of capitalism, as well as the solutionist ethos, have become more entrenched, further spreading the idea that market-driven technological solutions are inherently superior and can effectively address societal challenges; solutions that are, in any case, provided by the technological companies themselves. More relevant for our discourse is how blockchain narratives, in particular, tend to present blockchain-based solutions as a means to solve complex social and economic issues without acknowledging the deeper underlying problems, giving rise to what Scott (2016) refers to as "techno-colonial solutionism". This term indicates a technologically deterministic top-down perspective assuming that introducing cryptocurrencies is inherently beneficial¹²⁶ and the "optimistic entrepreneurial drive of American Stanford graduates" will inevitably lead to positive social changes in "poorer countries". A rhetoric, notes Scott, with neocolonial tinges: as the reader might recall, this enmeshment of colonialism and cryptographic technologies is at the center of many papers authored by Peter Howson. When it comes to their employment in REDD+ projects, despite the claims of decentralization and transparency, cryptocurrencies increase the distance between real forests and local populations by adding a layer of digital abstraction (Howson et al. 2019a). Moreover, the immutability of the blockchain and the stress on technological solutionism that characterize the crypto-philanthropy oversimplify the deep historical roots of the problems they should address, thus reinforcing the unequal North/South power relations (Howson 2021a).

Despite not appearing directly in almost all of the texts mentioned above, these works move from arguments already formulated in two works we already encountered, namely Barebrook and Cameroon's (1994) *Californian Ideology* and Ferguson's (1990) *Anti-Politics Machine* that somehow anticipated current developments and, more significantly, show us how approaches often branded as novel and "disruptive" are in line with what has been already done and said in the '80s. Furthermore, if some points keep reoccurring in a vast strain of authors, we can identify a constant pattern in the various forms of "for good" investments and

¹²⁶ As far as I saw, this narrative permeates almost all actors involved in non-financial blockchain-based projects, effectively creating a rhetorical tool employed to legitimize and justify the use of blockchains.

international aid programs: faith in numbers and the technical apparatus, quantification of qualitative problems resulting in a broader depoliticization. Solutionism, bureaucratization, technological fetishism, and commodification seem to be all interrelated in different ways to describe many economic phenomena characterized by the neoliberal turn of capitalism. We can then define neoliberalism as the phase of capitalism where politics (seem to have) disappeared from economic discussions. This anti-political stance is particularly evident in environmental protection in general (Büscher 2010) and carbon markets in particular: Sarah (Bracking 2015) showed how the expansion of global climate finance has led to the emergence of alternative governance models shared not only by owners of capitals but by all actors involved in environmental governance, thus fostering anti-political policies. The paper covers the dynamics and implications of the Green Climate Fund (GCF), a fund conceived during Copenhagen COP15 in 2009 to counter climate change and help the poorest countries. GCF's operations and policies favored technical, apolitical approaches; by preferring the private sector, investments, and technical expertise, social considerations remained in the background, and minor, politically oriented actors and groups were effectively marginalized. Even if it was conceived as a "paradigm shift," It should be noted that this fund started with the aim of collecting 100 billion dollars by 2020: in its last report, dated 21 July 2020, GCF reported that 8,31 billion were collected¹²⁷.

The history and development of this fund are paradigmatic and constitute an example of how the struggle against climate change became a way to reinforce the status quo; we will devote a few lines to it since our main thesis is that green finance is one of the ways societies reproduce themselves through their contradictions.

Disagreements about the scope of the fund began at its very inception. Two groups opposed each other. The first one was formed by climate NGOs, civil society observers, and delegations from developing countries pushing for terms like "urgency" and for a "pro-poor" agenda acknowledging the historical role played by the Global North. The second one was formed by growth-oriented lobbies pushing for a greener business-as-usual, with the funds delivered by the private sector mostly in the form of loans and financing mitigation projects. Sarah Bracking's paper

¹²⁷ <https://www.greenclimate.fund/document/status-pledges-and-contributions-initial-resource-mobilization>

illustrates how discussions on the operation modalities went on for years; at the same time, western countries refused the idea of accepting any historical responsibility, and, as meetings passed, initial concepts of paradigm shift and crisis were watered down to “good ideas” and “scalability”. Crucially, the latter term will be employed by different KlimaDAO stakeholders and market mechanisms to eschew responsibilities or discussions.

Moreover, the pro-business pressure group criticized and suppressed the other group by appealing to the knowledge and the authority of experts that resulted, however, in “anti-political” technicalities; what I noted in the KlimaDAO Discord server is how core members, when it came to face investors’ lamentation or when I confronted them on the carbon offsets, they recurred to over-technical answers that missed the core of the critique. However, an important difference must be noted: while the paradox of “succeeding while not working” and the underlying bureaucratic apparatus group the Green Climate Fund and KlimaDAO, the definition of “success” is not the same. While for the former, “working very well” meant the continuation of the “business as usual” scenario and the effective stalemate of the fund, “working very well” meant for KlimaDAO to be still running despite not providing returns for most of its investors and having a negligible environmental impact. Then, what seems to connect the various forms of green finance is the distance between claims and tangible impact, making it a sector where fetishistic movements - be them “firewalls” or *simulacra* - manifest more clearly. The techniques used by the pro-business group in GCF refused, in the end, any dialogue that did not champion market-oriented mechanisms or technological fixes, effectively setting up a “firewall” (Igoe 2014), a separation between observable reality and its representations, a constitutive theme of contemporary capitalism where commodities became *simulacra* (Baudrillard 1994). But these rhetorics were always backed up by the threat of the absence of dialogue and subsequent withdrawal of capital: parties were never balanced, even if market fetishism made them appear so. Power relations count.

And carbon markets play a crucial role in it. The failure of the CDM in terms of environmental protection, in fact, “protects business as usual from climate protection” according to Methmann (2013), which resorts to a Foucaultian framework to explain how carbon governmentality does not aim to reduce emissions, but rather reinforcing the status quo. This paper is highly relevant in the economy of the present work since we formulated a similar thesis but with a significant difference: we saw carbon

markets through a Polanyian (and Marxist) lens. Carbon markets exist because institutional actors made it: state and markets do not oppose each other but rather reinforce the current political and class division; especially in mainstream discourses around neoliberalism, both “in favor” and “against”, state and markets are seen as opposing each other, each one embodying negative or positive characteristics according to the speaker; in short, they are fetishized. The emergence of carbon emissions and the development of global carbon markets and as an answer to that instead show how markets and states are two faces of the same coin: “governing carbon [...] is also governing through carbon” (Methmann 2013, 78). At their core, two aspects are composing the mainstream approaches to climate politics: the re-territorialization and presence of nation-states, both in terms of actors’ negotiations and national emissions targets (Lövbrand and Stripple 2006), often leading to stalemates and active and successful presence of international carbon markets (Bernstein et al. 2010).

Climate protection is thus pursued through the creation of incentives for actors and not through prescriptions or obligations; the CDM or articles 6 and 9 of the Paris Agreement do not dictate investment decisions. Signatories of both the Kyoto Protocol and Paris Agreements are not legally required to lower their emissions, also because this would imply an international legal mechanism of sanctions for those that did not comply and, at the same time, a plan internationally agreed upon for carbon reduction, something we just saw is impossible. In a liberal fashion, carbon reduction is managed through market mechanisms and remains *voluntary*, “at a distance”, and institutions “fade in the background” (Methmann 2013, 78). As well as the historical responsibility for climate change, market mechanisms effectively act as bureaucratic and de-responsibilizing institutions while maintaining the fiction of neutrality. A socio-historic account of climate change would have instead focused on its relationship with economic inequalities, recognizing its colonial and imperialist roots (John Bellamy Foster and Holleman 2014) (Hornborg 1992 and 2011). On the other hand, the 1992 United Nations Framework Convention on Climate Change (UNFCCC), which originated the Clean Development Mechanism and international trading of carbon offsets, prioritized the management of existing carbon emissions, effectively removing the space for any historical discussion (Methmann, 2013: 79).

If neoliberalism might be a controversial or overused term (Ferguson 2010), it is the right one to frame carbon markets. Indeed, the focus on supervising existing

carbon cannot but remind Lazzarato (2012). According to the Italian philosopher, one of the peculiarities of the “neoliberal condition” is the shift from the government to the governance, the control of the existent. While the former refers to institutional mechanisms through which a state or a similar authority governs a society, the latter includes a broader array of actors like multinational corporations, international institutions, and non-governmental organizations. This shift dilutes the direct control of the state and spreads power across a network of actors, prioritizing market-based solutions and private sector involvement in areas traditionally managed by the state. The concept of governance moves from Foucault's biopolitics, which Lazzarato applies to neoliberalism: individuals' conduct and behavior are shaped through forms of soft power and governance strategies managing the social and biological aspects of human life. Consequentially, entrepreneurial spirits are fostered through a series of norms and regulations that champion market-based approaches. The development of the voluntary carbon markets, then, represents a clear example of that. On the one hand, there are no legal obligations, and on the other, the carbon cycle is subsumed under market mechanisms; the extraction of fossil fuels, the main reason behind the excess carbon in the atmosphere, is not addressed. Unlike the more traditional forms of government, governance exercises its control in more subtle and internalized ways, as we saw in the discussions leading up to the creation of the GFC and the CDM.

For the latter, a vast “dispositifs de calcul” made by satellites, international agreements, and - more recently - blockchains are needed to “make things the same” and compare different types of gases and projects into standardized, fungible, comparable and tradable units of carbons: carbon governance (*à la* Lazzarato) or carbon governmentality (*à la* Methmann) are inherently linked to markets, allowing the further commodification of different life forms. Indeed, prices make this comparison possible. Carbon offsets, then, are a neoliberal technology.

Technological Fetishes

But in this translations, something gets lost. While we will better explore the concept of fetishism and commodity fetishism in the next chapter, the de-historicization process behind carbon offsets and subsequent commodification of nature attribute these units an inner value that is detached by what created them, as well as excluding from calculation critical structural factors. If a project developer can

sell carbon credits coming from the war-torn Congo, as in the previous paragraph, it is because *something like* the war-torn exists and differs from the French headquarters of financial institutions. Carbon offsets are possible first and foremost thanks to the global unequal ecological exchange (Hornborg 2011), the process through which a net flow of Global South's resources fuel and reinforces Global North's development: the carbon market requires both a pollutant industry and a carbon-positive piece of land, reinforcing the path dependency of current socio-economic infrastructures (Lohmann 2009), excluding different forms of development and innovation. If investments face opposing trade-offs according to their temporality, the difference between short-term and long-term becomes paradoxical when it comes to green finance. To solve the climate crisis, economic resources should be devoted to abating the international division of labor that, in the first instance, created the financial surplus to be invested: long-term investments and perspectives in green finance should lead to dismembering the very concept of finance.

The ecological question occupies a foremost role in maintaining current economic inequalities, while technology helps it go unnoticed: the role of calculation devices - computers or markets - remains almost invisible because they are *embedded* in a broader cultural *milieu*. The Swedish author Alf Hornborg (1992, 2011) used *machine fetishism* to describe how the modern concept of "technology" is a cultural category. His insights are crucial for our discourse. Technically achievable goals are often a matter of shifting resources from one sector of the global society to another that, notwithstanding, remain concealed thanks to the use of machines.

Technological artifacts embed and depend on power relationships: they rely on an unequal exchange, not only the one central to classical Marxism between workers and owners, but also between areas effectively providing the resources (fossil fuels, raw materials, etc.) needed and/or processed by such types of machinery (Hornborg 2011). The notion of *technological fetishism* (Hornborg 2001) can thus be employed to describe this independence from an unequal form of exchanges attributed to material artifacts so that unequal ecological and political relations are concealed. Like Marxian commodities, technological artifacts are seen as capable of producing and expressing value autonomously without the intervention of human actors. In a famous passage of *The Capital*, Marx (2004: 164-5) resorted to religion to explain how capitalistic exchanges work:

“[T]he relationships between the producers . . . take on the form of a social relation between the products of labor. . . . It is nothing but the definite social relation between men themselves, which assumes here, for them, the fantastic form of a relation between things. Therefore, to find an analogy, we must take flight into the misty realm of religion. There, the products of the human brain appear as autonomous figures endowed with lives of their own, which enter into relations both with each other and with the human race. So it is in the world of commodities with the products of men’s hands.”

Daily experiences somehow confirm this mystical aura. Technology and technical objects are usually seen as a realm for engineers and hard sciences and considered neutral, value-free instruments; we can link this apparent paradox to the unprecedented spread of technological devices in our daily lives, where we constantly interact with them through our bodies (voice, touch), but no single individual could make them from scratch. At the same time, very few understand how they work and need to collaborate with other specialists, to make them work. We must rely on someone else and their capabilities and trust their powers; like magic, they work because we trust the division of labor that made them possible in the first instance. This process, however, is not usually problematized: since they became a “natural” component of everydayness, we do not feel we have to inquiry them; questions and doubts arise only when adversity and/or diversity are faced, for example, when they broke.

The concept of fetish becomes specifically relevant for our discourse not only because it means “treating our own creations as if they had power over us” (Graeber 2005, 410) but also because fetishes encompass an “irreducible materiality” that is capable of fixing around itself “desires and beliefs and narrative structures” and “repeat[ing] its originating act of forging an identity of articulated relations between certain otherwise heterogenous things” (Pietz 1985, 7).

Technological objects fit all the criteria employed by anthropologists for the category of fetish. What role do they play in a capitalistic society? Industrial capitalism led an unprecedented technological development (in the global north); if the very term “technology” comprises the word “technique”, which means immaterial knowledge, then the spread of such (material) technological objects could not but also lead to the proliferation of ethereal, ideal substances, which, however, provided tangible effects on how we interact with the surrounding world; as Andreas Malm

(2016) showed, XIX century British bourgeois shifted the production toward steam engines (among other reasons) to form and discipline a cheap workforce, and, at the same, they developed a rudimentary ideology (ideas, values and beliefs shared by a group) around coal-powered machines: a proper “steam fetishism”, as Malm noted.

We went back to the connection between economy and magic; Hornborg further stretches this link, stating that “globalized technologies that began to organize world society in the late eighteenth century can be reconceptualized as a form of magic [...] In both cases, artifacts are believed to have agency—that is, to be able to act so as to achieve a purpose of some kind”. For technological objects, this means “achiev[ing] given purposes [according to] their inherent physical properties”, effectively removing external (historical, natural) influences (2011:6). A key tenant of Enlightenment and Industrial Revolution is that objects work according to their inner physical properties rather than human perceptions, eventually leading to the contemporary *alienation* of individuals from the environment: *technofetishism*. However, anthropologists have shown (Taussig 2010; Godelier 1986; Graeber 2005; Parry and Bloch 1989) how social relations are continually mediated and concealed - and legitimized - through objects, to render morally acceptable what appears to be unacceptable; private property, for example, despite being a relationship between people, creating a boundary between those who can access and those who cannot access a piece of land, is portrayed as a relation between a person and an object.

Green fetishes

Green finance and carbon offsets are based on this removal mechanism, stemming from, hiding, and reinforcing the ideological milieu of neoliberal capital accumulation. Market transactions appear neutral or fair because they occupy a specific and coherent role in our cosmological order: *symbolic efficacy* and magic concepts remain crucial for understanding green finance, as we have thoroughly shown. In this way, turning nature into a financial asset and homogenizing different values into one is a process riddled with conflicting interests that go unnoticed since they are represented as prices. Natural capital accounting (NCA) is a typical example of this movement, as explored in Levidow (2020). This method, elaborated by a partnership between business organizations and NGOs, evaluates how a business depends on ecosystem services, identifying biophysical, financial, and reputational risks; within companies, sustainability and finance units find common

ground to elaborate strategies to calculate trade-offs and potential profits coming from a more “responsible” approach to natural resources. The downside is the homogenization of meanings, turning biodiversity into a “portfolio” (247) easily replaceable despite attached cultural meanings; the nature/society opposition view in a meeting board can substantially differ with local ontologies, leading to tensions. Applying financial concepts like capital, assets, or evaluation to the ecosystem then contributes to the reification of the environment, naturalizing specific forms of private propriety that, in the first instance, generated biodiversity degradation; as a result, the environmental question is depoliticized, and the power relations imbalance that generated it obscured.

Yet, it is precisely through this process of “depoliticization by economization” (Adaman and Madra 2014) that the fiction (or fetish) of neutrality and impersonality is maintained, further marginalizing the Global South. It has been observed by Cavanagh, Vedeld, and Trædal (2015), indeed, how REDD+ programs can lead to paradoxical outcomes: authors noted how these projects do not distinguish between illegal logging and informal trade practices crucial for the livelihoods of local communities, criminalizing traditional practices that, nonetheless, allowed these forests to exist. Furthermore, enforcing REDD+ policies implies the militarization of the territory, as well as the displacement of forest-dependent populations, having an overall negative impact on forest governance.

A critical stance that accounts for each actor’s historical and objective role is needed when it comes to green finance and carbon markets. How, otherwise, could the antipolitical (Ferguson 1990) nature of these instruments (Bracking 2015) be analyzed if it does not appear as a problem, as in the theoretical frameworks of many authors we mentioned?

Problems concerning carbon markets: an overview

Without significant results (Angelsen 2017) should bring a broader reflection on carbon markets and carbon offsets trade.

As outlined by Gifford (2020) in her literature review, there are three critical aspects of forest carbon initiatives when assessing their practical impact: baseline, additionality, and uncertainty. We already mentioned these concepts; since they played an essential role in the 2023 general downturn of carbon offsets and directly affected KlimaDAO, we will now devote a few lines to them:

- Baseline determinations: the International Standards Organization (ISO) defines a baseline as a hypothetical reference that best represents the conditions most likely to occur without a proposed greenhouse gas (GHG) project. It involves complex geographical and temporal decisions and determining what kind of forest management practices to consider.

- Calculation of additionality: additionality is the carbon reduction that occurs due to a specific initiative. Assessing additionality requires a counterfactual analysis, which means estimating what carbon emissions would have been without that intervention; it is a challenging practice because of the intrinsic speculative nature of such estimations and the objective difficulty in proving that emissions reductions are directly attributable to specific interventions.

- Role of uncertainty: there are inherent technical and technological uncertainties in measuring and monitoring carbon reduction coming from these projects

In 2023, critics of carbon markets seem to have reached a turning point. In January, a journalistic investigation led by British newspaper The Guardian revealed that “more than 90% of rainforest carbon offsets by biggest certifier are worthless”¹²⁸. The most prominent certifier is Verra, whose credits were initially tokenized by KlimaDAO. The turmoil ensued after the publication led Shell, one of the biggest purchasers of carbon offsets, to abandon its 100-million-dollar annual budget for them in September¹²⁹. Another critical consequence is the ongoing billion-dollar lawsuit against Delta Air Lines: findings from the investigation are cited among case documents¹³⁰; as highlighted in a third-party analysis of BCT commissioned by KlimaDAO, Delta retired the same type of low-quality credits constituting BCT¹³¹.

Indeed, when I was analyzing the Verra register, I read many times “Delta Airlines”, as well as other companies like Shell; these credits, however, are not CORSIA (the offsets quality standard required by the aviation industry) compatible¹³²

¹²⁸ <https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe>

¹²⁹ <https://www.reuters.com/sustainability/climate-energy/shell-has-given-up-specific-targets-carbon-offsets-ceo-2023-10-17/>

¹³⁰ <https://www.courthousenews.com/wp-content/uploads/2023/05/berrin-vs-delta.pdf>

¹³¹ <https://www.globenewswire.com/en/news-release/2022/09/06/2510318/0/en/KlimaDAO-Commissions-Third-Party-Analysis-of-Base-Carbon-Tonne-Token.html>

¹³² <https://carbonplan.org/blog/klimadao-bct-response>

In August, carbon offsets brokers noted that companies were writing off most of their carbon offsets, now deemed worthless¹³³. In another piece¹³⁴, The Guardian looked at “looked at the 50 carbon offset projects which have sold/retired the most credits”, finding out that “39 projects are likely junk”.

These newspaper articles were based, among others, on papers showing the overestimation of baseline scenarios in REDD+ projects and difficulties in finding the real additionality of a project (West et al., 2023; West et al. 2020). In particular, West et al. (2023) adopted “a pixel-based matching approach, which meant pixels were scattered over many sites, instead of a single area”¹³⁵, so that researchers could more accurately confront areas within the project sites to many control areas and allow for a more precise assessment of projects’ overall impact. Even though it was reported that most of the projects analyzed avoided deforestation, many sites presented increased degradation and deforestation. The mixed results showcased a general difficulty in assessing and measuring the effective carbon reduction, “highlight[ing] the need to standardize methodologies for establishing baselines with which to evaluate the effectiveness of forest-based interventions to reduce emissions [...] It is currently not possible to establish the aggregate impact of VCS REDD+ projects because the various methodologies used to forecast emissions reductions are incomparable”. Recognizing how, in the end, emissions reduction from REDD+ programs are a tiny fraction of global ones, the paper suggests that large-scale efforts could be better placed to address the structural causes of deforestation.

Verra’s answer to the journalistic investigation denounced its sensationalistic tones while denouncing the papers’ methodology and opposing different, more positive findings¹³⁶. At the same time, the CEO defended the REDD program and promised a review of its VCS standards¹³⁷.

Whether or not West et al. (2023) employed a flawed methodology, REDD+ programs generating credits certified by Verra are actively displacing indigenous

¹³³ <https://www.bloomberg.com/news/articles/2023-08-22/traders-in-co2-credits-saddled-with-vast-stranded-asset-pile>

¹³⁴ <https://www.theguardian.com/environment/2023/sep/19/do-carbon-credit-reduce-emissions-greenhouse-gases>

¹³⁵ <https://verra.org/patently-unreliable-verra-addresses-criticism-of-rainforest-offset-credits-with-detailed-technical-analysis/>

¹³⁶ <https://verra.org/patently-unreliable-verra-addresses-criticism-of-rainforest-offset-credits-with-detailed-technical-analysis/>

¹³⁷ <https://verra.org/why-verra-supports-redd/>

people in Peru¹³⁸, or are openly exaggerating claims to make stakeholders richer while delivering almost nothing to the Zimbabwean communities that actually made that possible¹³⁹. In May 2023, Verra's CEO David Antonioli resigned after 15 years¹⁴⁰.

The year 2023 seems to have constituted a turning point for voluntary carbon markets. Offset prices have sunk, analysts see a cloudy future for them¹⁴¹, and a growing number of businesses seek to disassociate from instruments perceived as controversial¹⁴².

Whether the year just passed was the beginning of the end for carbon markets remains, however, an open question.

As we thoroughly showed in this chapter, carbon markets are complex and opaque mechanisms, that cannot be adequately explored through many of the most cited authors in economic sociology, providing an alternative framework.

Developing a critical discussion around the concept of “performativity” provided a new, original contribution on the vast literature engaging with carbon markets that we shortly reviewed. A key question critical scholars should start to answer is why, despite decades of confutations, markets for pollutions still work. Carbon emissions keep growing despite economists' policies and predictions: they did not *perform* the economy.

This latter notion is central for our broader discourse, too. Both KlimaDAO's structure and incentives mechanism can be seen as a textbook application of “problematization” and “economization”: as we will shortly read, in the conceptual white paper, rising carbon emissions are defined as needing an economic solution and a market failure is detected, then identifying agents, stakes, and establishing connections among them. Accordingly, market mechanisms, instruments, and

¹³⁸ <https://www.theguardian.com/environment/2023/jan/18/forest-communities-alto-mayo-peru-carbon-offsetting-aoe>

¹³⁹ <https://www.bloomberg.com/news/features/2023-03-24/carbon-offset-seller-s-forest-protection-projects-questioned>

¹⁴⁰ <https://verra.org/verra-ceo-to-step-down/>

¹⁴¹ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/010524-price-slump-in-2023-clouds-outlook-for-voluntary-carbon-market>

¹⁴² <https://www.theguardian.com/environment/2023/aug/24/carbon-credit-speculators-could-lose-billions-as-offsets-deemed-worthless-aoe>

devices are discussed and developed, and a whole techno-social apparatus was then brought in place (*assemblage*).

Along with the blockchain and Discord server, other social accounts were created, a podcast was released, and founders began to send press releases. The peculiar derivative design of \$Klima – the cryptocurrency issued by KlimaDAO – detached carbon credits from their over-the-counter analogical form. Founders designed a *tokenomic* hinging on a prisoner-dilemma framework, hoping that users would have behaved accordingly (*interessement* and *enrollment*, see (Callon 1984)): regular investors were convinced that it was in their interest to adopt the strategies proposed for them (holding and not selling), with few of them effectively making huge profits. In ANT fashion, doubts are reassured by attributing agency to non-human actors: blockchain's immutability and transparency are central for project's legitimization and justifying its own existence, as well as the intrinsic "powers" of the market, something many people I interviewed told me. Similar beliefs can be found in the discourses employed by international institutions regarding strategies and solutions deployed in the fight against climate change.

Since KlimaDAO moved billions of dollars and effectively stored thousands of carbon credits in its treasure, it might be considered a successful example of performativity and marketization. However, it failed to bring financial profits for the vast majority of the stakeholders and, at the same time, its impact on the environment was non-existent or even harmful. The symbolic and the real efficacy negate each other. KlimaDAO, then, embedded the same *flaws* characterizing present-day green finance, reproducing the ambiguities and the antithetical values of market-based instruments to mitigate the climate crisis, while at the same time succeeding in mobilizing a vast strain of actors in endless consultations and meetings. Through critical scholars and through the paradigm of the "anti-politics", we then analyzed green finance and its position in the neoliberal paradigm.

However, as the reader will see, despite carbon markets and environmental questions being the *raison d'être* of KlimaDAO, these questions will play a secondary role in everyday life of the community, more interested in discussing investment strategies, blockchain technicalities and *memes*, leaving almost no space to talk about the political and social impact of offsets trading or the historical roots of climate change. Or to say better, only carbon markets are discussed and commented. But does this approach radically differ from those employed by international institutional

bodies? The lack of non-technical discussions also resonates with *machine fetishism*: KlimaDAO is a microcosm of orthodox climate policies that blockchain technologies made accessible to retail investors, lowering entry barriers. For this reason, KlimaDAO constitutes an example of “neoliberalism from below”.

After this lengthy but necessary excursus, we will now analyze in-depth KlimaDAO

Confessions

Given its inner complexity, the number of resources it mobilized and the dark jargon it used, it took me a long time to understand what KlimaDAO *really* was and what people were *really* talking about, something the reader might have already perceived given the very long theoretical and introductory parts.

Another difficulty I encountered was the vast amount of data: the Discord server, the main object of my ethnographic investigation has almost a million messages, without taking into account the other social networks (Twitter, Reddit) the forum where KIPs (*Klima Improvement Proposals*) were discussed and voted or the vast media coverage it received. A selection had to be made, and I explored the developments that received a major media coverage.

But probably, the most difficult part was noticing how my research was different from the most of other ethnographies, and probably can explain why so little anthropologists have written about crypto communities. This section is indeed devoted to the difficulties I faced during my research.

I once received an advice by a person I really care about; I was told that all great anthropological works start - more or less - in this way “I met Pedro in a remote bar and he told me that”. Many papers or books I read have a similar structure, starting *in media res* and immediately pointing out the role and the physicality of the researcher. Clearly an echo of the “reflexive turn” of the 80s and the problematization of the figure of the ethnographer, this approach could hardly being applied to an online enquire, especially if the subject is something so distant from “typical” ethnographies like green fintech. Or is something I did not want to do, rather focusing on the “macro” aspects of the question: after many pages devoted to theoretical reasoning, many others will be devoted to analyze and understanding transactions and prices. However, I met “Pedro(s) in a bar”, too (fig. 1). A fancy one, since I was a guest.



Fig. 1 The Author enjoying a liquor-tasting. The market price of this event would probably be a tenth of his monthly salary.

As in “more traditional” ethnographies, the objects of my study were distant from my daily life. Also, most of the people that I met online or in offline events were distant. As in most of ethnographic encounters, the distance was both cultural and economical, so that there is plenty of space for the more introvert reflections, typical of contemporary works. I will spend few lines here since, to pursue objectivity, the position of the researcher should not be given for granted. It will also help the reader understanding why I embraced an “unusual” highly theoretical approach.

I shared very little with the object of my study. Unlike similar research on the financial world (Ho 2009), the space between me and the population of my study was sidereal, and probably the methods I used in this work were a way I found to circumvent this personal difficulty.

An example: during an event in Copenhagen, while I was checking for how long my train ticket was still valid, hoping to not have to pay 135 SEK (around 12€) to cross the Öresundbron again, one of the participants, few years older than me, same educational level, said that he had to leave momentaneous since a charging spot for his car became available. It was during the empty time preceding the event itself, and he was back after few minutes; for a short period I worked in a car dealership,

my curiosity grew, and after the event I found out that he just bought a brand new Tesla Model Y, with custom painting and rims, a car ranging from 50'000 € to 65'000€ according to the version and optional. During my PhD I visited many northern European institutions and events, and the economic inequalities between me and the others have always been the elephant in the room. I could not but think about how little Italians workers are paid, especially in academia, and how little this is problematized by institutions that label themselves as “inclusive” or “radical”; I was excluded, *by law*¹⁴³, from having an independent, quiet petite-bourgeoise life (“Villa, Volvo, Vovse”) my Scandinavians colleagues were having, and that my parents similarly had three decades ago. This research gave me the opportunity to further reason about the inequalities my generation experienced, and maybe understood why nothing get done to fix them; the statements drawn in the introduction can be easily applied to the Italian socio-political situation.

The income differences – I have to admit it - also had almost comical outcomes.

On another occasion, a couple of hours before that picture was taken, I got stuck in a caricatured Bourdieusque situation. I had the chance of being the guest of an important multinational company; the day before attending the meeting I was invited, along with others, to visit their guesthouse. The manager that made this visit happens reveled their excitement about it in the emails sent us, highlighting many times the magnificent wine cellar (Fig. 2).

¹⁴³ It should be reminded how Italian universities usually forbid PhD *students* to have another income, despite not being workers (and thus benefitting from labors laws and rights).



Fig. 2

I thought it was just a rhetorical technique to convince a bunch of younger people to travel at their own expense for many hours, since the headquarters are located in a very small town in the north of Denmark. I was wrong. The excitement was real. It turned out that the manager was an avid wine collector and while there, after a couple of fancy Italian and French wines, he began talking about his hobby, applauding some organoleptic characteristics of the bottles, how he befriended some small wine producers in France and how wines became extremely expensive, since nowadays it is seen as an investment. Despite his collection was now worth many thousands of euros, he was not happy about that, nor he had intentions to sell it; wine consumption was a social activity for him, meant to be shared with other refined palates and on special occasions, a realm that should not be tainted by economic reasoning, a thought shared by many other collectors and producers, according to him. I then asked which wine I should taste, went to the bar and ordered it. I did not like it, and I “justified” myself saying that I usually don’t drink alcohol, which is true. But most probably, it was my net worth’s fault.

I clearly assisted a situation dense of meanings, it was a sort of economic anthropology compendium: conspicuous consumption, spheres of exchanges, commodification and distinction are among the concepts that scene could have been

read through. I want to focus here on the latter one. In *Distinction*, Pierre Bourdieu (2013) mentioned wine tasting among the activities characterizing cultural aristocracy consumption (53) and, indeed, it appears later on in the volume (278), mentioned by a Parisian *grande bourgeoisie* during the interviews collected for the book. The validity of Bourdieu's thesis is confirmed by their use in recent literature, that confirmed this link between economic and cultural capital and wines (Beckert, Rössel, and Schenk 2014; Bacon 2014): I did not enjoy wine not only because I am almost a teetotaler, but also because I lack the cultural and economic capital necessary to appreciate it. When the manager was lamenting about the speculative practices behind wines, so that his collection value ten folded in less than fifteen years, I jokingly said that I was born in the wrong decade and the market priced me out, unfortunately.

The reality is, however, that I did not inherit from my families the *habitus* required to take part to these activities and, at the same time, the place occupied by Italy in the international division of labor and the value assigned to entry level researchers by Italian ruling class barred me from taking part to any of these middle or high class activities or hobbies. Having a background in Humanities and pursuing a PhD in anthropology did not help neither climbing the social ladder, according to national statistics¹⁴⁴.

I attended few other meetings with people working with cryptos or finance, usually held in bar or restaurants. Despite the income disparity, we talked as peers, they shared with me the snacks and the drink they ordered, and they added me on LinkedIn, even though we never talked after the events. Going back home, I had the feeling that I was a living fossil, a remnant of the twenty-century social mobility or, at least, of the idea of it. I have been treated as one of them thank to my cultural capital, real or perceived by the audience I was talking with: saying that I was a *researcher* or a *doctoral student* qualified me in their eyes, along with a confident smile and a clean shirt. But I am a *researcher* because public university's fee in Italy are still not that high, public institutions are well perceived also by *grande bourgeoisie*; when I first enrolled at the university, nowadays too long ago, I shared the sensation that despite the growing rhetoric on the irrelevance of humanities and the importance of technical or practical sectors, I could have improved my status,

¹⁴⁴ <https://www.ilsole24ore.com/art/quanto-guadagnano-laureati-italia-AEDORVS>

sitting above the rest of my family, that did not attend university or, in some case, did not even get an high school diploma. It was not only for the prestige of the title itself, but also because I thought the Italian society felt the need to train professionals to analyze its own problems and open questions, hoping to improve them. I was moved by the last drops of the optimism that followed the post-world war two economic expansion and its redistributive policies. While reading Bourdieu (2013) during my bachelor, I realized that probably I enrolled at the university to seek distinction through the acquisition of *academic capital*, “the guaranteed product of the combined effects of cultural transmission by the family and cultural transmission by the school (the efficiency of which depends on the amount of cultural capital directly inherited from the family)” (23). Lacking other forms of capital, I unconsciously wanted to find my place in the society through education, something still possible on paper. And clearly, it is possible to engage in more abstract career choices only if a certain distance from immediate necessities is in place.

Italy, however, was rapidly changing, plumbing in a decade long economic stagnation, matched with rising inequalities and unhappiness. Universities were changing too: in a climate of research spending cut, last data show how private and online universities are attracting an ever increasing number of students¹⁴⁵, while public ones keep losing them; at the same time, humanistic disciplines are constantly bashed by media and politics, seen as unproductive and nefarious for the economy¹⁴⁶.

I am a living fossil because it would be highly unlike for me to have similar experiences if I graduated from high school now, in an embittered socio-economic environment: despite everything, the humanities background in a public university gave me the academic capital to be recognized as a peer by people with many more resources than me. The peculiarity of my situation further isolated me.

There is another element. If the fact that I studied an online phenomenon undoubtedly implied a material gap between me and my object, on the other hand it shortened it. Growing up with the idea that culture and academic titles were rewarded, it was easier for me to relate with people who had millions of dollars

¹⁴⁵ <https://www.roars.it/perche-gli-atenei-del-sud-rischiano-di-scomparire/>

¹⁴⁶ <https://www.lagazzettadelmezzogiorno.it/news/cultura/1452759/materie-umanistiche-in-declino-cosi-un-paese-piu-barbaro-il-punto-di-galli-della-loggia.html>

because they invested in Ethereum in 2015, for example.

A last personal anecdote. I started high school on September 13, 2007. The day after, a medium-sized British bank failed¹⁴⁷, the first in that crucial autumn. During September 2008, right after the beginning of my second year, the Federal Reserve stepped in to avoid a complete economic meltdown after Fannie Mae, Freddy Mac and Lehman Brothers' crash¹⁴⁸. The word "crisis" never left my daily vocabulary since then. In my research I try to understand why is that.

This chapter will be structured as following. First it will be provided the theoretical standpoint that can better describe what KlimaDAO and the crypto-world represent, then a definition of the term DAO will be given, providing the reader a general introduction and problematization of the term. Then KlimaDAO itself will be introduced, analyzing its white paper and explaining its *tokenomic*; its history will be reconstructed, showing how the founders met and how a shadowy design mechanism enabled few people to benefit at the expense of the others. It will be analyzed how the community reacted to these shocks, and how the founders and the core members defended their projects; at the same time, we will try to assess how much profits were made by few individuals at the very beginning. We will do so by analyzing public messages, press releases and interviews conducted during my virtual ethnography between 2022 and 2023. KlimaDAO itself changed a lot during its existence; only few selected events will be analyzed.

¹⁴⁷ <https://www.bbc.com/news/business-41229513>

¹⁴⁸ <https://www.nytimes.com/2008/10/02/business/02crisis.html>

What is a *simulacrum*?

A point already stressed is how blockchain and these new forms of finance represent the new “highest stage” of capitalism: its expansion exceeded the physical boundaries of the material world and “colonized” the mental one. The constant blending of economic and non-economic factors through the utilitarian lens produced new meanings and ontologies among policymakers and scholars, making more challenging to distinguish (or to care about the distinction) between fields considered crucial (nature vs. culture, artificial vs. human, ethical vs. unethical, objectivity vs. subjectivity) for every modern theory of actions¹⁴⁹.

This shift has already been noticed by Jean Baudrillard (Baudrillard 1976, 1994); in capitalistic postmodernity (what we might also call neoliberalism), the extraordinary rise of mass production and mass media enabled the production, the consumption and the marketing of commodities on an unprecedented scale. As a result, the presence and influence of products in everyday life have dramatically increased, saturating all spaces available. In this scenario, physical (*use value*) differences between them cannot but be minimal: the real differentiation then occurs in the realm of the symbolic, in which, however, the *exchange value* (the value a commodity acquires not because of its intrinsic qualities but *in relation to* other commodities, like in a market scenario¹⁵⁰) has been replaced by their *sign* and *symbolic value*.

In this “sign economy”, commodities are thus valued for what they signify rather than for their practical use, and bear no relation to their essence, to what they should

¹⁴⁹ A short digression on the methodology is necessary here. I am well aware of the inherent ideological risks in adopting a simplistic scientific rationalism, and I share Feyerabend (1993)’s idea that science does not progress through a consistent method but rather through an eclectic mix of approaches; scientific advancements can come from unexpected and unconventional, *unscientific* methods. However, it’s exactly because scientific research is influenced by cultural and historical contexts, and cannot be separated from them that my approach is *against the method* currently used in most of social sciences. The recognition of dialectical and hegemonic forces in sciences doesn’t change my previous statements on the pursuit of objectivity: acknowledging what are ongoing academic trends and in which direction they are going is the first, necessary step to challenge them

¹⁵⁰ According to Marx (2004), different commodities can be compared if they share a common characteristic that determines their value. This common substance is not their physical properties (like the material or utility), but the amount of *socially necessary labor time* required to produce them, and its expressed through prices. In the exchange process, the specific use values of the commodities are irrelevant; Baudrillard takes this idea further into the realm of postmodernism and to its logical consequences

stand for. They became *simulacra*, a term used by Baudrillard to fundamental shift in the relationship between reality, symbols, and society: “Today, abstraction is no longer the abstraction of the map, of the double, of the mirror or the concept. Simulation is no longer about a territory, about a referential being, about a substance. It is a model-generated real with no origin and no reality: hyperreal. The territory does not precede the map —precession of simulacra — it is the map that engenders the territory” (Baudrillard 1994:1). Symbols no longer take the place of an original; they just represent themselves. In this scenario, what Baudrillard calls *hyperreality*, the symbolical world of commodities, becomes more real and influential than the physical world of tangible objects, representing a qualitative shift in the nature of society under capitalism. Media and technology continually reproduce and reinterpret reality until the original context is lost. In *Simulacra and simulation* (Baudrillard 1994), Disneyland is presented by the French philosopher as an example of (hyper)reality generated by *simulacra*; the amusement park represents a sanitized, idealized version of America, complete with its myths and legends that is more convincing and more comforting than the complex and chaotic world outside its gates, but also an America that never really existed, a utopian vision of the past, and embodies the logic of a society that replaces reality with signs and images.

The necessary corollary of this world is the concept of *simulation*, the process of creating models or systems that replace or precede reality, determining and constructing it. In a provocative essay, the French philosopher (Baudrillard 1995) affirmed that the (first) *Gulf War did not take place*: the war was a simulation since what was presented to the public was a carefully constructed narrative, a hyperreal version of the war. Images and narratives shown by the media were sanitized and managed, broadcasting a version of the war that was distant from the actual, brutal reality of the conflict. The distance between images and reality was magnified by military technology, which allowed long-distance strikes, further “sanitizing” the war’s reality and violence.

I introduced the reader to the philosophy of Baudrillard because, in my opinion, he gave us invaluable tools to understand contemporary cultural and economic phenomena. Carbon offsets, indeed, can be read through this lens since they acquire a meaning - a *value* - only in relation to a society dominated by the market and its logic, not because they represent carbon reduction. Similarly to simulacra,

they do not just imitate reality; they replace or precede it. International bodies and legislators provide the simulation: without the *Kyoto Protocol*, the *Paris Agreement*, or the EU emissions trading *system*, such broad consensus around climate finance would not exist, so it would not even work at the symbolic level. They *perform* the carbon markets, and the latter work in this hyperreal environment; like Disneyland, they represent an idealized version of capitalism, in which markets realize Smith's and Mandeville's public and private prosperity utopias. It should not surprise them that Muniesa (2014: 20-22) dismissed Baudrillard's "discouraging" notion of simulacrum since it implies a negative judgment on these simulated realities.

However, even if we adopted an "openly pragmatist" (Muniesa 2014) approach or even a consequentialist, utilitarian one, our overall evaluation would not be enthusiastic about these simulations. This holds true especially for KlimaDAO. If I had to summarize what KlimaDAO is, I would say that it is a clear example of *simulacrum*, bearing no relation to its premises; yet it work because it resonates with the *dream* of a society made by perfectly rational individuals that only need markets as institutions.

What is a DAO?

“carbon is like crypto in the sense that if you don't understand the math, you are most likely being ripped off.” Karl-Heinz Häsliprinz — 03/10/2021 09:50¹⁵¹

We should start our journey from the name itself. If Klima is the native token they issued, what DAO stands for? There is no legal or, at least, unanimously shared definition of what a DAO (Decentralized Autonomous Organization) is or does. At a conference I attended, one of the speakers - a professor in economics with a computer science background - asked the audience for a definition. I raised my hands and stated that, as far as I saw, a DAO is a Discord server linked to a crypto project or, at least, to a white paper. The speaker strongly disagreed and exposed a long digression on the forms of governance and redistribution made possible by the blockchain and how it differentiates substantially from traditional institutions, where users can interact horizontally, with no predetermined centers and a consensus reached through voting. The speaker took the acronym at face value, repeating the definition mostly seen on forums and blog posts.

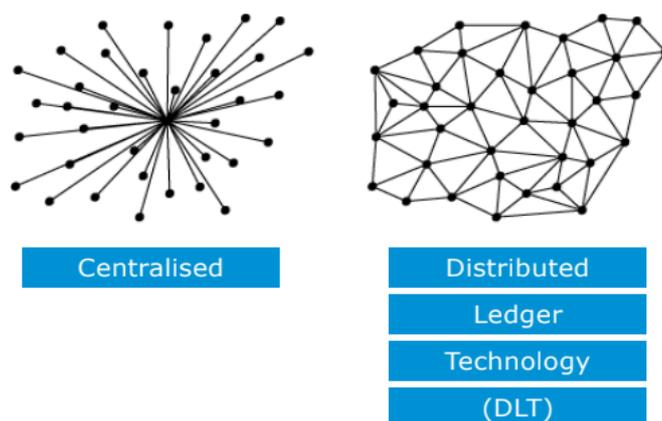


Fig. 1 The slide used to show how blockchain shapes new networks.

¹⁵¹ Messages posted on KlimaDAO's public Discord server will be reported displaying username and timestamp.

Given the harsh reaction I received, was my answer out of touch? What I said was the result of almost three years spent in online communities calling themselves DAOs as an outsider; I will now provide a short academic and non-academic account of the theme, that will be integrated with my ethnographic findings.

Hassan and De Filippi (2021) provide an extensive summary of DAOs. The term DAO is older than the blockchain, emerging in the '90s to describe multi-agent systems in an internet-of-things; its contemporary meaning, however, can be linked to the concept of *Decentralized Autonomous Corporation* (DAC), used by crypto enthusiasts to describe a new form of “incorruptible” corporate governance made possible thanks to the tokenization of shares. In this new framework, anyone could become a stakeholder without complying with state regulations.

So, at its very beginning, the term was intended for “real-world” economic entities, a connotation it will retain also in successive definitions.

As explored by DuPont (2017), the first “DAO” that retained vast attention was TheDAO. It was launched in 2016 by - among others - Ethereum founder Vitalik Buterin, who argued in a blog post (Buterin 2014a) how bitcoin itself constituted the first DAO. In the Ethereum white paper (Buterin 2014b), a DAO is defined as a “virtual entity that has a certain set of members or shareholders which [...] have the right to spend the entity's funds and modify its code [...] [replicating] the legal trappings of a traditional company or nonprofit but using only cryptographic blockchain technology for enforcement”. Most of the current (little) academic literature on the theme, Hassan and De Filippi (2021) note, attributes such characteristics to DAOs: they enable coordination and self-govern online, their source code is deployed on a public blockchain with smart contracts capabilities, which independently enforces the rule of conduct among parties. Furthermore, governance should remain independent while the underlying blockchain technology guarantees transparency and security. Indeed, in their literature review, Hassan and De Filippi (2021) notice how there are current open discussions on the possible employments of blockchain to coordinate individuals, both economically and politically: DAO is an ambiguous umbrella term, with each letter of the acronym representing a vague definition.

It is unclear what “decentralization” should refer to, whether at the technical, infrastructural, or governance levels. As stated in the first part, this confusion also

emerged while discussing with my interlocutors; the more they were embedded in the crypto space, the more they saw these two different aspects overlapping.

Then, what should be autonomous or automated? How should decisions be taken? The very process of discussion implies the creation of different groups, with individuals aggregating and losing their autonomy. Here, we encounter the a-social sociality paradox that characterizes all blockchain-based groups.

Finally, can a community where actors interact with each other only through smart contracts, so without revealing their own identity, be regarded as an organization besides its legal aspects? How can responsibilities be attributed in a decentralized environment? As we saw in the introduction, this point is crucial yet ignored by part of these groups. Modern law recognizes non-human entities like corporations as legal persons to facilitate the various legal and economic intercourses of modern, complex societies: it is, first and foremost, a practical tool, even if riddled with ethical aspects. This means that roles and responsibilities can be easily assigned to an entity of any kind within the framework of the legal system. Clearly, the notion of personhood we are discussing here is the legal one, not the philosophical one. It is a concept used daily to facilitate trades and ensure trust among people who do not know each other: I do not have to trust - a feeling that requires time - the other to interact with them, it is sufficient to trust the legal apparatus.

So, how to hold accountable an organization - thus recognizing its status as an organization - if no one can be held accountable? We already encountered this paradox in the introduction. I articulated to a founder my theory on decentralization, saying that “it acts like a myth, something that -since it works in an ideal level- compels people to action”; then, asked them about the delays during the launch (discussed in the chapter “An algorithmic riddle”) and the over redemption of pKlima (discussed in the chapter “The pKlima controversy”). I will report the answers:

— 05/12/2023 11:12

I mean it's a DAO - people come and go. It's pretty fluid

[...]

cardo — 06/12/2023 11:26

so someone modified the code, this modification clearly benefitted few people

(otherwise they wouldnt have redeemed twice their pklimas) and the answer i got is "it's not relevant who did it"

The DAO has received a lot of damage from the pKLIMA debacle.

Thus, the DAO is ultimately accountable for it - irrespective of the intentions, execution or whatever.

cardo — 06/12/2023 11:44

sorry, how can you enforce decentralization and horizontality if no one can be held accountable? won't this create a disequilibrium?

I'm not sure what you are suggesting?

That the person who deployed the OlympusDAO contracts was acting nefariously, and should be held accountable?

And that KlimaDAO's approach to iteratively decentralizing is invalid?

You can see who deployed the contract, and it is also known if / when the person liquidated the pKLIMA they had.

[....]

DAOs and KlimaDAO are fluid.

KlimaDAO has iterated a lot. Many of the founders have left.

[...]

We can dig up past mistakes. Or use them to increase resilience.

Not sure what you mean by accountability? Dox them and blame them for whatever has happened, whether it's their fault through a decision they took or an unintended consequence of a fast paced, chaotic environment? Sue them? Kick them out?

Archimedes was doxxed, called a scammer and is no longer at the DAO. Is that accountability?

Or more is required?

What emerged from this conversation is how DAOs lack mechanisms to attribute accountability, with my interlocutor, in the last message, almost saying I was mean for asking to hold accountable people whose actions created a financial loss for many others. Here, we face a crucial point that we will explore in the last section of

this thesis: the backwardness of a system that cannot legally enforce contracts and the resurgence of personal trust. I am aware that my interlocutor “forgot” that blockchains run in a material world where individuals and their “mistakes” are subjected to laws, so rather than through individual blame, the order is brought back through impersonal courts.

As the previous exchange shows, there is no way to enforce justice without a third, external part declaring that some individuals were wrong, according to a shared notion of “right” and “wrong”: morality. At the same time, perceiving that something is wrong implies the existence of a social group, an entity larger than the sum of the individuals composing it.

The presence of a group is recognized in a pervert, conflicting way. It exists when it favors founders and disappears when it could hurt them. When I pointed out the economic damage created by individuals they knew about, I was answered that the DAO had already paid for this mistake: the group existed but not the individuals. It made no sense to hold anyone accountable since the group acted as a monolithic entity, “irrespective of the intentions, execution or whatever”. Showing my dissatisfaction towards the answer, since it was clear that members of the group (those who held Klima tokens) benefited from these activities, creating an internal division (and the presence of at least another group), the discussion highlighted the non-existence of the group, symbolized by the inability to get anyone accountable.

The rhetoric used by this person are the manifestation of the *ideology* of this group, the systems of beliefs, values, and ideas that arise in society and serve to justify or naturalize the existing social order. This *decentralized* ideology, however, does not differ substantially from the already explored market and bureaucratic mechanisms, where, in the end, no one can be held accountable.

The proposed solution, as we will see in the last section, cannot but blame the individual participant to save the internal coherence of this contemporary mythical apparatus.

The concept of a DAO is usually perceived as positive by those who participate in it, and its shortfalls are not perceived as such.

During my research, I asked many participants to give me their opinion on what a DAO is; the most significant ones are reproduced here. They were all collected through Discord, first interacting in various through public posts and then moving the

conversation to direct messages. The following one was from KlimaDAO:

cardo — 17/08/2022 12:56

Then, what should be autonomous or automated? How should decisions be made? The very process of discussion implies the creation of different groups, with individuals aggregating and losing their autonomy. [...] what do you think about voting mechanisms on the DAOs?

Hmm, I think that at the moment no DAO should use only one voting mechanism.

I think that CV¹⁵² and others are cool, but it would be cool to be able to vote with other tokens, not only governance tokens that the founders own a lot of. Maybe have a "social" layer in DAOs and vote with that power, or one token per person. Different voting mechanisms for different voting outcomes and transformations.

These are just of the top of my head...if you need more "refined" answers please tell me

cardo — 17/08/2022 14:48

Because in my opinion decentralization means that there's no a central power, a central decision-making authority. So, if the power has to be divided among a community, some sort of voting mechanism is necessary

otherwise, how can you decentralized?

but at the same time, governance tokens aren't equally distributed

so you end up creating centers again

Exactly, that's why a DAO would need different voting mechanisms with different tokens(governance, non gov, maybe soulbound NFTs)

cardo — 17/08/2022 15:01

do you think this matter is discussed or perceive like a problem on the gitcoin community?

Yes, it is a known issue, just not the most important atm

¹⁵² My interlocutor made a typo, they're referencing to *Quadratic Voting* (QV), a peculiar voting mechanism adopted by GitCoin and amply vowed by Vitalik Buterin

I asked similar question to the community manager at SolidWorldDAO¹⁵³, a blockchain-based project that wanted to digitalize and trade carbon credits¹⁵⁴

cardo — 25/03/2022 10:54

well, for sure you have a peculiar background. It's unusual (at least for what I saw on cryptotwitter) to meet someone interested in humanities and crypto. There's some philosopher in particular that inspired you? And do you think klimaDAO's structure can be linked to a peculiar philosopher?

Hmm... that's an interesting question.

I've personally always felt cryptocurrencies deeply aligned with the philosophical pursuit, intellectual exploration, pushing boundaries and questioning everything. The act of experimenting in a sandbox and stripping away what does not matter, and building something based on fundamental principles required for its success. IMO we live in a place for bulldozers (<https://vitalik.eth.limo/general/2021/12/19/bullveto.html>) to pave ways towards decentralized and permissionless hyperstructures (<https://jacob.energy/hyperstructures.html>)

cardo — 11/04/2022 10:51

[...]

thank you for your answer. So do you think that DAOs' governance model could be a new form of politics?

Yeah, totally. It's really a system for representative democracy - but bounded by

¹⁵³ <https://www.solid.world>

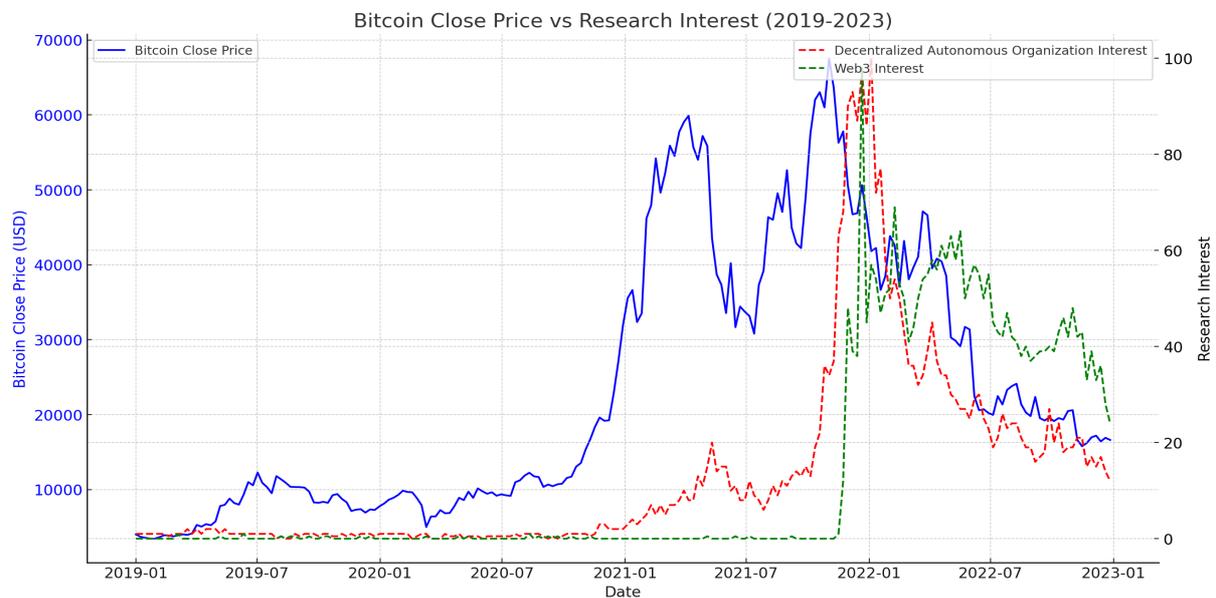
¹⁵⁴ This project clearly echoes KlimaDAO, as it was described in this way:

JohnVibes — 22/03/2022 16:32 “First it can provide much needed transparency to the industry. One of the main problems and criticisms with carbon markets is the fact that prices are unclear, which allows brokers to take advantage of arbitrage opportunities and rip off the people who generate credits. This lack of clarity also allows corporations to greenwash through purchasing low quality credits. Blockchain fixes this because all of the trades are fully transparent and open.

There is also a problem with liquidity in the markets, which is solved by the incentives that crypto economics create. Furthermore, most of the fees generated on our platform will be owned by the protocol, and that treasury will be specifically used to fund carbon sequestration projects.” SolidWorldDAO Discord Server

the capabilities/purpose of the DAO. Like MakerDAO exists to create the product DAI, which is important because not everyone has access to financial infrastructure. So MakerDAO maintains a public good, for profit - hence its staying power. Another great example is Gitcoin DAO, pioneering quadratic voting and building out mechanisms to empower communities to build and fund open source public goods. So representative voting, via blockchain-verified tokens, that are fungible shares of your governance weight surrounding a special purpose - it's not just a new form of politics, it's a better form of politics.

A quickly look on Google Trends show how the interest towards DAOs spiked in 2021, during the last crypto-run (Fig. 2,3; Bitcoin price is showed for comparison), during which hundreds of new, often shortly lived, cryptos and project were launched, just to fade during the following bear market. OlympusDAO and its *hardfork* KlimaDAO were probably among the most relevant projects then.



OHM Price vs "Decentralized Autonomous Organization" Research Interest (1st April 2021 - 1st January 2023)

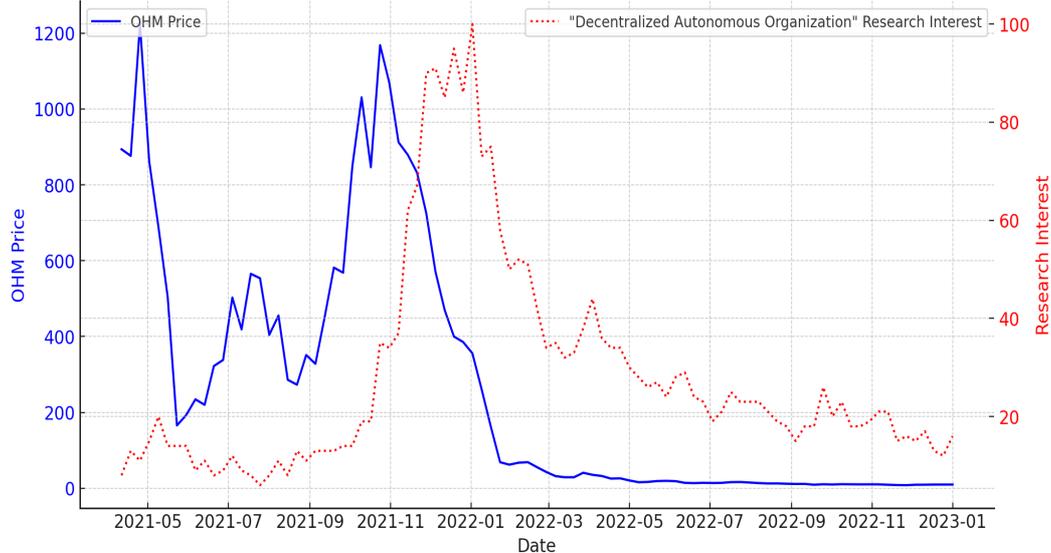


Fig 2. & 3 Data from Yahoo! finance and Google Trends (USA)

The interest in these terms faded as soon as OHM price fell. DAOs, if anything, were one of the buzzwords that characterized the 2021 market rally, fueling narratives of horizontality that grasped the attention of many in a world constituted by ever growing inequalities. Indeed, users did not like the involvement of Marc Cuban:

zoidbergz — 12/09/2021 13:42

I thought this DAO was about empowering the individual not billionaires

rinser I — 13/09/2021 03:05

i was gonna do a whole write up about why it fucking sucks to have Mark Cuban as a pre-sale investor, especially in this project, but i think it's kind of obvious. like, a billionaire flying private everywhere...also known flaky crypto investor. fuck, lol, why did y'all do that

Somehow, they recognized how the “us” of the following Cuban’s tweet did not embrace them, and inside the community, there were people who weighed more than others, driving it in a direction that could hurt their own interests.

[...] KLIMA has been operational for less than 1 month. And it’s a DAO. Which

means it's direction is controlled by those who are in the community. So the opportunity is there for all of us to set the direction ¹⁵⁵

Indeed, despite this supposed horizontality, KlimaDAO presents two levels of governance: the “Klima Core” and the others. Only the first group had access to critical decisions and dynamics, as we will see in the chapter on the core members.

After almost a decade from the first conceptualizations, the launch of hundreds of projects, the active participation of hundreds of thousands of enthusiasts, and billions of dollars invested do DAOs keep up to their political premises of decentralization?

My findings point to a negative answer and can be linked back not only to the original, business-centric definition but also to the ambiguity and the limits of the concept of decentralization when it comes to distributing responsibilities, as we explored before.

KlimaDAO appeared to me as a *simulacrum*, like all the DAOs I encountered: its external sign (or exchange) value bears no resemblance to what it is, to its inner use value. Yet, Disneyland is way more fascinating than reality.

For this, I stand behind my simple definition of a DAO as a Discord server where users interact and a whitepaper stating its mission. One of the recurring topics among web3 enthusiasts, like *cipheractivists* in the 90s, is resisting censorship because the data you create belongs to you, not the company or the government, and decentralization because a central authority does not make decisions.

Decentralization, however, does not mean democracy: Gitcoin’s discord server, a “community of builders who value developing meaningful connections with each other and the broader Web3 ecosystem”, which aims to “build and fund digital public goods”, lists 754 results for the query “decentralization” and 52 for “democracy”.

While the transparency of the voting operations is continuously stressed, their kleptocratic nature is hardly mentioned. It is not a coincidence that such platforms with their rhetoric arose in 2021, after social media platforms decided to ban former US’ president Donald Trump and discussions around free speech and the role played by web 2.0 tech giants began to spread among conservative voters.

¹⁵⁵ <https://x.com/mcuban/status/1459189177858379778?s=20>

Among others, this can be explained by the faith placed by web3 users in the software: “The code is law” is, in fact, a famous mantra among crypto-enthusiasts communities. The trust in the claimed full transparency surreptitiously reintroduces and helps to the “old”, centralized institutions web3 claimed to fight. Nevertheless, centralized and decentralized institutions both put faith in market-based solutions. Web3 communities seem to be aware of these dilemmas surrounding governance; instead of being discussed from historical or political points of view, such impasses are analyzed, recurring to both the Samuelsonian notion of “public goods” and the game theory.

“Crypto-altruism”?

Generosity on chain

I first heard about Klima DAO in 2021 while researching market-based instruments for carbon offsets. Indeed, while reading the agenda of COP26 - the 26th United Nations Climate Change conference, held in Glasgow (31 October – 13 November 2021) – I saw the launch of Blockchain4climate¹⁵⁶ platform and its goal of “putting the Paris Agreement on the blockchain”. It claimed to “finally operationalize Article 6 of the Paris Agreement [...] by enabling corresponding adjustments and immediate settlement of trades for national carbon inventories”¹⁵⁷. This intersection appeared curious to me. Indeed, I still perceived blockchains and cryptocurrencies as obscure ways of speculating, what Swartz (2018) called “digital metallism”. At the same time, most of their enthusiasts on the web lauded this technology as the best mode to pursue (financial) freedom. I never saw them in a social or environmental application nor imagined how they could fit them. It should be noted that, after over a decade, most of its uses and implementation are confined to trading and speculation since the capital moved by KlimaDAO is a tiny fraction compared to the total market: “infrastructure mutualism” is still a secondary imaginary.

However, the scenario was changing. After the appearance in 2016 (DuPont 2017) of complex cryptocurrencies-based financial instruments (*DeFi*), starting from the 2020-2021 “bull-run” (Sipthorpe et al. 2022), environmental-oriented, market-based solutions (*ReFi*) emerged as well (tab. 1).

DAO	Year of Launch	Description
KlimaDAO	2021	KlimaDAO focuses on driving climate action using blockchain and decentralized finance.
Kenza DAO	2020	Kenza aims at providing a universal tool to compute and certify carbon emissions performance of buildings in such a way that excess emissions and savings can be

¹⁵⁶ <https://www.blockchainforclimate.org>

¹⁵⁷ <https://www.blockchainforclimate.org/the-bitmo-platform>

		reliably traded in the form of tokens (KNZ)
ToucanDAO	2021	ToucanDAO is dedicated to carbon market improvements through decentralized finance solutions.
Regen Network	2019	Regen Network specializes in ecological data, aligning economics with regenerative agriculture practices.
Moonjelly	2021	Moonjelly focuses on using blockchain and DeFi for ocean conservation
Dream DAO	2021	web3-based social impact focused on Gen. Z

Tab. 1 Various blockchain platforms providing also non-economic returns

In (a seeming) contradiction with their original design, blockchain and cryptocurrencies are also increasingly implemented in international aid and philanthropy. The 2021 financial rally witnessed the blossoming of philanthropic DAOs (Decentralized Autonomous Organizations), web3 platforms devoted to channelling funds denominated in cryptocurrency towards no-profit projects. KlimaDAO probably represented the most successful example of them during that crypto rally.

It's not hard to see in this movement a replica of the "moral turn" (Dal Maso, Tripathy, and Brightman 2022) that characterizes current financial markets, especially in the years following the 2008 crisis. KlimaDAO's history is then the history of how this new economic trend manifested during a period of cryptocurrency euphoria. Indeed, even if cryptocurrencies were conceived with the idea of breaking up with traditional finance and the bitcoin whitepaper explicitly quoted and embodied cypherpunks' ideals, a movement based upon an individualistic vision of society (De Filippi and Loveluck 2016), we can now envisage an overlap between some fringes of the crypto-enthusiasts and the altruism characterizing many "traditional" billionaires (Cohen 2020).

Charity-giving is not a new behaviour among ultra-wealthy people, and the ultra-rich regularly employ it to preserve their wealth and exercise political power (Harrington 2017); this phenomenon is well-known in philosophy (Simmel 2004; Veblen 1973), while economic anthropology has studied it since Mauss (1923). We have already introduced such concepts and will delve into them in the final section.

Instead, we will show how this philanthropic pattern has become popular among the emergent class of crypto-millionaires and crypto enthusiasts, and how many actors in this industry are proposing the blockchain as a sound answer to many social problems. For example, Vitalik Buterin, the funder of Ethereum, donated a billion dollars to a COVID relief fund and became one of the main sponsors of Gitcoin. Kevin Owocki, the Gitcoin funder (Owocki 2023), wrote even a book/manifesto on new forms of green finance made possible by blockchain. Through the narrative of “public goods, ” this platform shifted its core from listing open-source job ads to providing grants to develop impact-DAOs, online communities whose investments provide positive externalities. Blockchain-based philanthropic/ESG-like tokens developed in a historical period where market-based solutions like carbon markets and impact investing received official recognition and endorsement by international institutions, even though blockchain was initially conceived to eliminate such institutions. It is against this background that KlimaDAO emerged, found legitimation among crypto-enthusiasts, and reached a 4-billion-dollar market cap during the 2021 rally.

Any discourse on cryptocurrencies and philanthropy could not but mention Sam Bankman Fried (SBF), the Effective Altruist (EA) founder of FTX and now in jail for multibillion-dollar financial fraud, and indeed few paragraphs will be devoted to him in the last section; even though the 2020-2021 bull market and the actors just mentioned (SBF, Buterin, KlimaDAO) represents the most famous case of the crypto-altruism, cryptocurrencies have been long associated with charities, nonprofits, or environmental causes, way before the 2020 bull market, and not only by venture capitalists or high-tech entrepreneurs.

I chose the umbrella term “crypto-altruism” because of the relevance of the Effective Altruism movement among tech and crypto billionaires, perfectly embodied by people like Elon Musk or Jack Dorsey (Twitter’s founder). The COVID outbreak and the subsequent crypto rally can be seen as a breaking point in crypto-altruism compared to earlier usage of blockchain and cryptocurrencies for international aid (Howson et al. 2019) or even development funds (Crandall 2019).

If earlier efforts were made by NGOs and local governments and collected a few million, 2020 and 2021 donations and investments were made by prominent figures

and the semi-anonymous crypto community, and the sums conveyed were of another order of magnitude compared to earlier experiments. At the same time, blockchain technology has found many applications in social and environmental initiatives proposed by institutional and non-tech economic actors; the following lines aim to provide a brief analysis of them since they were already introduced in the literature review while focusing on Peter Howson's works.

The World Food Program launched 2017 the "Building Blocks" program, which used blockchain technology to streamline the distribution of aid to refugees in Jordan, Bangladesh, and Lebanon. It stored the Ethereum blockchain personal information, rights, and transaction records, giving each immigrant a digital bank account and ID, enabling refugees to pay for food with a scan of their retinas. Similarly, Oxfam in Vanuatu implemented a pilot program 2018 that used blockchain to provide cash transfers for disaster relief. Moreover, blockchain is currently employed to monitor REDD+ reforestation projects (Howson et al. 2019), create NFTs of Amazonian rainforests, or trade carbon offsets.

We can then recognize three different types of crypto-altruism. The first type is embodied by ultra-wealthy people, contributing to non-crypto issues, like Vitalik Buterin, Ethereum blockchain founder, having donated almost one billion dollars' worth of cryptocurrencies to India to fight Covid; the second type focuses exclusively on the blockchain, like Jack Dorsey - former Twitter CEO and founder - that donated millions to bitcoin educational programs. DAOs constitute the third type, so individual and anonymous users contribute (or invest) in different projects. It should be stressed that tech entrepreneur's political activism is not something new, and their ideological posture between liberalism, progressivism and free market absolutism is something already noticed by Barbrook and Cameron (1996) at the beginning of the IT era and recently confirmed by Broockman, Ferenstein, and Malhotra (2019).

However, it's hard not to see how this "crypto-giving", as noted by Howson and de Vries (2022), embeds a donor/investor-centric approach, thus shifting benefits and power relations in favour of donors and companies, potentially disadvantaging the recipients, and reproducing existing anti-political approaches to social and environmental problems (Ferguson 1990). For example, despite Oxfam and the World Food Program's financial success, they raised concerns over recipients' privacy and dignity: beneficiaries had to trade off sensitive data for food and life-

saving interventions. Information still heavily depends on the local context and embeds peculiar forms of knowledge; their transmission, even on a peer-to-peer, permissionless technological infrastructure like the blockchain, depends upon a socio-economic infrastructure and legislation located in the Global North (Howson and de Vries 2022). Crypto-philanthropy, then, betrays its supposed neutrality and contributes to the alienation of the Global South.

Through an apparent contradiction, the same libertarian, individualistic ideology that initially characterized the cryptocurrency space —shifting trust from humans to a computer— led this technology towards philanthropic goals. Indeed, the adoption of the blockchain in this space was moved by fears of misappropriation and misspending prompted (Howson 2021a). But these anarcho-libertarian concerns of any type of societal ties and responsibilities are only one aspect of contemporary "audit cultures" (Strathern 2000), characterized by a constant fear of trickery, cheating and mistrust towards others. They extend to all institutions, casting, on the other hand, an invaluable aura of neutrality upon machines and numbers.

Digital distributed ledgers appeared as the right solution to those anxieties for pundits and lawmakers, as described in an article in *The Economist* dating back to 2015¹⁵⁸, when crypto markets were a fraction of their current size; they were already seen as better candidates than human institutions to handle data storing and transmission. Implementing blockchain in fields like traditional nonprofit organizations, plagued by transparency and accountability problems, was the next consequential step¹⁵⁹.

¹⁵⁸ <https://www.economist.com/weeklyedition/2015-10-31>

¹⁵⁹ <https://www.blockchain-council.org/blockchain/crypto-philanthropy-blockchain-changing-the-face-of-charity>

Does Bitcoin Fix This?

It seems, then, that blockchain and cryptocurrencies became a sort of rhetorical “toolbox”, providing solutions to socio-economic problems. We already explored how enthusiasts extensively resort to quasi-mystical narratives (Faustino, Faria, and Marques 2022), to cast magical powers upon the blockchain¹⁶⁰ and utopistic scenarios shape and drive such communities (Arjaliès 2021). The rise of “crypto-altruism” signals an expansion of this “magical toolbox”, resting on the re-proposal of already circulating themes: like in a circular movement, old and new reinforce each other.

Indeed, the expansion of the cryptocurrency user base and the subsequent creation of communities also implied a wider circulation of the rhetorics embedded in its white paper, thus transporting old techno-solutionists (Johnston 2020) tropes and hopes into groups, giving them a societal meaning. For example, the motto “Bitcoin fixes this”¹⁶¹ is used by pundits and experts nowadays to employ the thaumaturgic properties of the cryptocurrency to solve every significant issue, from the ever-green inflation to the Israeli-Palestinian¹⁶² conflict. At the time of writing, the most famous macro-economic bitcoin implementation was probably constituted by El Salvador, where it became legal tender in 2021 (Hanke, Hanlon, and Chakravarthi 2021). The line of reasoning usually goes this way: conflicts and poverty are generated by financial constrictions, like high remittance fees, lack of banking services or political corruption and overspending. In short, by inefficient third parties. By providing a way to circumvent them, bitcoin would free Global South inhabitants, bringing prosperity and peace. In a classic fetishistic movement, the envisioned temporalities hide the inequalities characterizing the present status quo¹⁶³ so that the historical roots behind global imbalances are reinforced. Indeed, the core social and political causes of poverty (e.g. neo-colonialism, international sanctions, wars and so on) are not challenged by these technical innovations, not only because they present substantial entry barriers (electricity, internet connection, technical knowledge), but also because these discourses envision actors as individuals freely pursuing their self-

¹⁶⁰ Bitcoin is, in fact, often called “internet magic money”

¹⁶¹ <https://bitcoinfoxesthis.com>

¹⁶² <https://bitcoinmagazine.com/culture/can-bitcoin-bring-palestine-freedom>

¹⁶³ <https://the-crypto-syllabus.com/bram-buscher-on-nature3/>

interest, while socio-historical aspects are removed from the discourse.

Notes from a conference, part one

I would like to prove these points by sharing some points from a conference I attended. The untold, shared discourse was, of course, that new technologies are inherently good, so human advancements cannot but depend on them; a sagittal, teleological view of history and progress that dates back to the XIX century and that legitimized colonialism (and - indeed - David Golumbia defined blockchain as a modern “White Man Burden”¹⁶⁴). The data will be anonymous since I did not explicitly collect their consent.

According to the first speaker and organizer, a full professor at a prestigious university in Northern Europe, IT is “the wind of change” that is “changing institutions all the time”. Innovation is the function of IT departments so that technologies can fix contemporary problems resulting from market failures: in a Schumpeterian fashion, economy and technology merge, and a pivotal role in the economy is bestowed on those who can disrupt the equilibrium. The presentation ended by explaining how the blockchain “provides a market mechanism for club goods and public goods” and “allows for new economic models, not just new business models”, so Samuelsonian concepts in the neoliberal economy. The last speaker explained the challenges posed by the Markets in Crypto-Assets Regulation (MiCA)¹⁶⁵, a new EU regulation to harmonize the laws surrounding cryptocurrencies across the Union. According to them, many exchanges and developers now feared committing financial crimes by developing new products, impeding thus innovation only because “regulators lack digital mindset”; the first speaker then doubled down, saying that politics have “cultural issues”, while a student from the public lamented their “(lack of) scientific mind”. Without exploring this debate or taking a side, it is interesting to note how new crypto-financial products were seen as something inherently good and to be pursued under penalty of the exclusion from the innovators’ elite.

An overlap between morality and technology characterized the conference, even if participants did not realise that, probably. Any discussions on the blockchain

¹⁶⁴ <https://davidgolumbia.medium.com/blockchain-the-white-mans-burden-e3ef75c97830>

¹⁶⁵ <https://www.esma.europa.eu/esmas-activities/digital-finance-and-innovation/markets-crypto-assets-regulation-mica>

technology itself started by posing questions about *trust* and methods to self-enforce it, a “paranoid behaviour”, as a computer science professor admitted on the stage. Trust is a feeling arising from daily interactions among social agents, and a person is perceived as trustworthy if they acts properly and morally. In the blockchain, however, this term means assuring the integrity of the data stored. Consensus, according to the general public, means agreement, generally found after rounds of discussions in the blockchain spaces, and indicates the method by which the network of participants in the blockchain agrees on the validity of transactions and the current state of the distributed ledger.

Concepts from the “real” world become metaphors in the realm of computer sciences and are then proposed as solutions for social and organizational issues (Rozas et al. 2021b; Buterin, Hitzig, and Weyl 2019); we can now go back to Baudrillard (1994), and describe this linguistic movement as a sort of *simulacra procession*:

- In the first stage, the *signified* and *signifier* coincide. They are *iconic*: trust is a human feeling arising from social relations
- In the second stage, the *signifier* became a *metaphor* so that it assumes another *signified*: trust is a mathematical condition (Eyal 2015)
- In the third stage, the new *signified* is used in the same settings as the first stage, so the same *signifier* now *crystallizes* around the new *signified*: blockchain can improve social relations¹⁶⁶ and, in the end, create new socio-economic modes (Owocki 2023)

However, such discourses on the disruptiveness of the blockchain for public institutions and the brighter futures that the markets enabled by blockchains will bring, as depicted in the slide here from one of the speakers here reproduced, could not be heard by an attendant from the Global South whose visa was not processed.

This person could not attend because their passport had a lower “power” than a European one and was subjected to scrutiny. My passport was not. This is exclusively a political decision, not a technical one: my credentials were not checked because the hosting country lacked the technology to do that, but rather because international agreements between nations exist. Blockchain was constantly proposed

¹⁶⁶ <https://80000hours.org/podcast/episodes/vitalik-buterin-new-ways-to-fund-public-goods/>

as a solution to verification problems, while digital identities and anonymous authorizations were seen as a way to protect individuals' privacy; yet, why a verification protocol existed was never questioned. Neither was problematized why some individuals needed to prove their identity, while others were exempted: in discourse around the blockchain, privileges are never mentioned.

This is the contradiction that characterizes all rhetoric around blockchain implementations, which created a few communication problems with my interlocutors: How can a solution be groundbreaking or innovative if it does not even question why the problem exists in the first place? Or if it repeats current talking points? For example, the first speaker outlined how computer science teaches that there are “no free lunches” and the need to “make sacrifices”, showing an overlap between orthodox, neoliberal economics and technology that will be explored further on.

A couple of sessions were devoted to green solutions unlocked by the blockchain, providing a clear example of this convergence. Within a certain degree of irony, the first one was titled “A Booster for Decarbonisation: Digital Product *Passports* for Hydrogen”. The critical question of the presentation was how to prove hydrogen is carbon-free. According to the first law of thermodynamics, energy can neither be created nor destroyed, only converted from one form to another: the process of electrolysis - used to produce hydrogen - cannot but consumes more energy than the energy contained in the hydrogen produced. However, hydrogen can replace fossil fuels in energy-intensive sectors like steel factories and can be labelled as “green” when produced through renewable energies or carbon sequestration mechanisms. Labelling is, indeed, the problem the digital product passports (DPPs) were addressing. Blockchain was described as the “technical solution of the future”; the future looks very similar to present-age bureaucratic capitalism. DPP for hydrogen is a concept proposed by the International Energy Agency (IEA) regarding using a unique ID for each hydrogen product to embed data on its emissions intensity and certifications so that buyers can meet regulations¹⁶⁷. DPPs are a component of the European Union's Circular Economy Action Plan¹⁶⁸; this legislative measure aims to create a framework to facilitate the transition towards

¹⁶⁷ <https://hydrogenindustryleaders.com/hydrogen-product-passport-concept-suggested-by-iea/>

¹⁶⁸ https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en

more sustainable, circular products. As typical for EU-based initiatives, it presents a bureaucratic, neoliberal approach that does not “force” actors to change the production but proposes incentives, monitoring and labelling systems so consumers can choose the more “responsible” product. Environmental degradation is still fought, recurring to markets: the status quo is left untouched, while new labels appear. The problem, again, is how to reduce the transaction costs and, at the same time, do not disclose any details on the industrial production and design. This is where the blockchain neatly fits the new legislative scenarios.

Today’s typical certification process

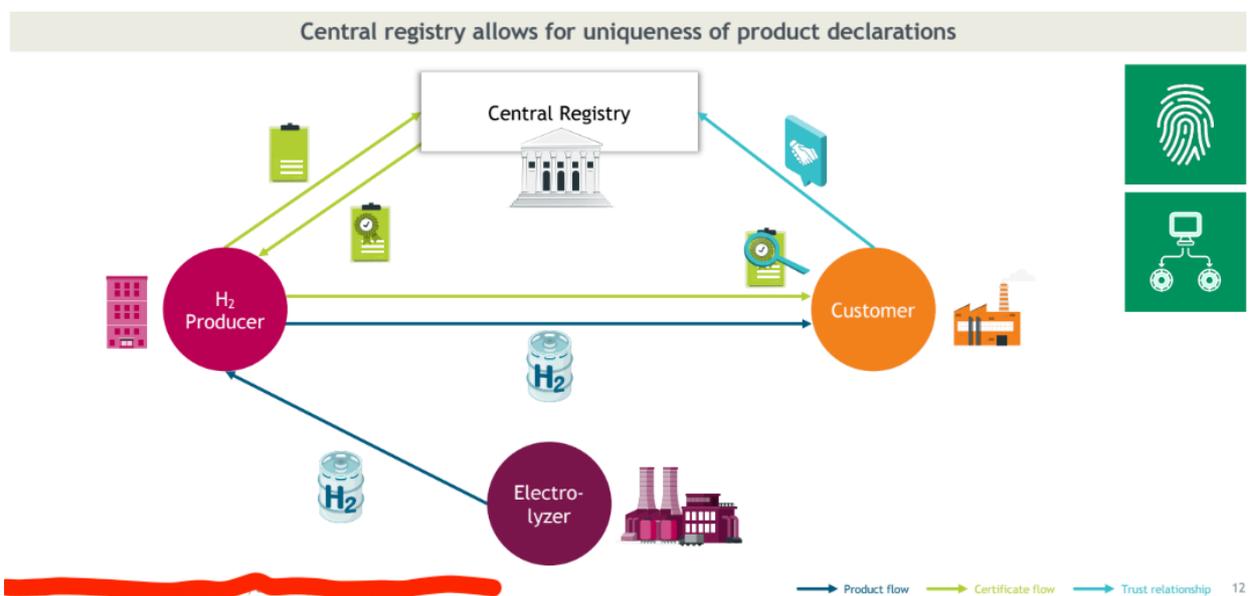


Fig. 1 Current, centralized certification system (slide from the presentation)

Alternative 1: Token-based system

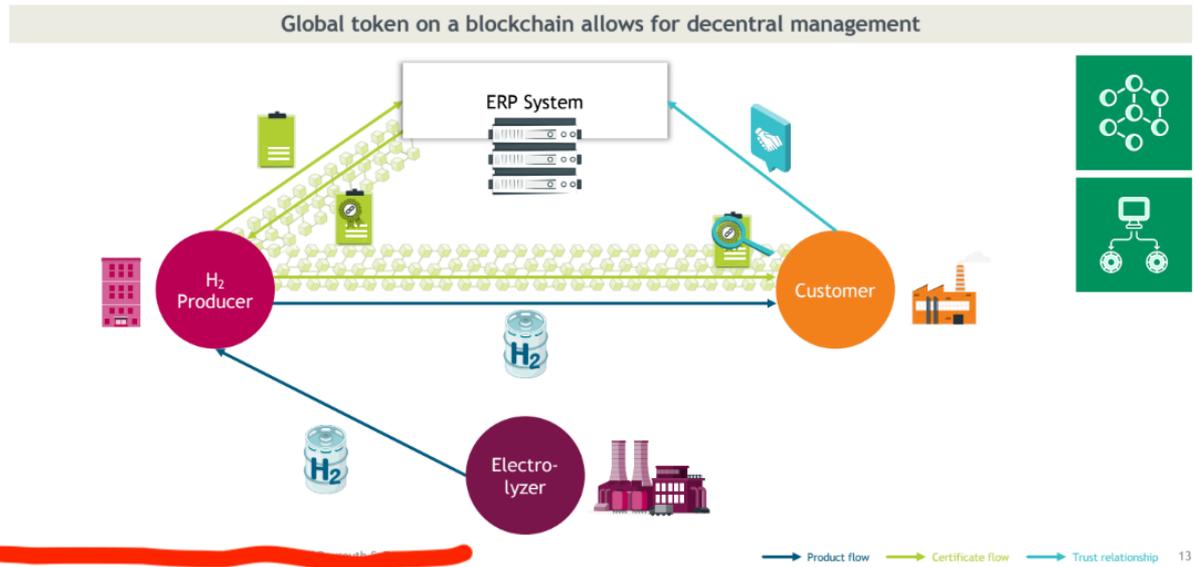


Fig. 2 Proposed, decentralized certification system (slide from the presentation)

If the current *audit culture* (Strathern 2000) requires economic actors to overproduce reports and accounts, tokenising such data opens new business opportunities, as the presenter noted (Fig.1). Blockchain, once thought to get rid of third parties, is now used by these types of entities (Figs. 2 and 3).

Corporate sustainability activities

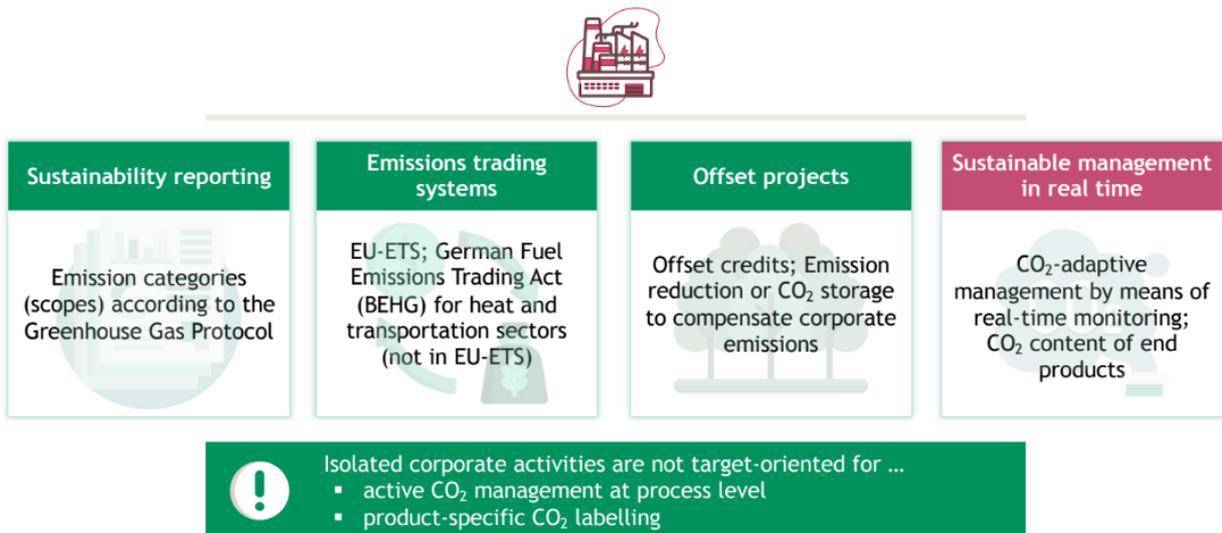


Fig. 3 Possible usages of DPPs for hydrogen (slide from the presentation)

Tokenization rhymes with commodification

Before moving to the other example provided during that conference, I would like to recollect another episode; after such a conference, I participated in a hackathon. We were divided into teams, and I had as colleagues PhDs and master's students in computer sciences, computer design and economics. We worked on the implementation of the blockchain in water pumps (Figs. 4,5 and 6). Our project had two legs: monitoring of water and electricity consumption so that the producer could easily comply with the Scope 3 emissions target¹⁶⁹, which was among its proponents, and proposing a new business model, “pump-as-a-service” so that pumps could be eventually sold at a loss in exchange for a monthly, variable fee according to their usage. The more they use, the more they pay; this solution not only followed the general trend toward subscription-based services but also made customers bear the responsibility for emissions. We won the competition, and after a couple of months, we were invited to spend a weekend at our sponsor's headquarters.

¹⁶⁹ Scope 3 emissions are a category of indirect emissions that occur in the value chain of a company. These emissions are not produced directly by the company itself but are a consequence of the company's activities: they take into account the use and the life cycle of the product. They were proposed and defined by the Greenhouse Gas Protocol (GHG Protocol), a partnership between the World Resources Institute (WRI), a global research organization, and the World Business Council for Sustainable Development (WBCSD), an organization of over 200 leading businesses. Despite CO2 emissions are one of the biggest problems of our time, as we saw for the the CDM, VCMs and the Paris Agreements, initiatives to curb them are proposed by private entities: the GHG Protocol is a widely used international accounting tool that provides standards, guidance, tools, and training for businesses and governments to measure and manage greenhouse gas emissions <https://ghgprotocol.org/corporate-value-chain-scope-3-standard>

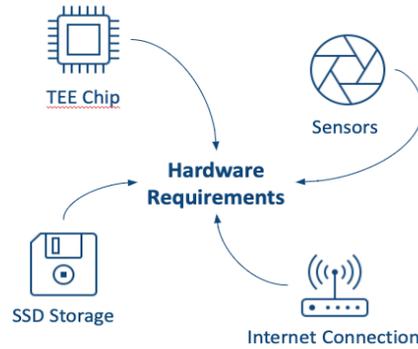
State of Affairs

How can [redacted] facilitate a reliable, verifiable, scalable and privacy conserving exchange of data and currency?

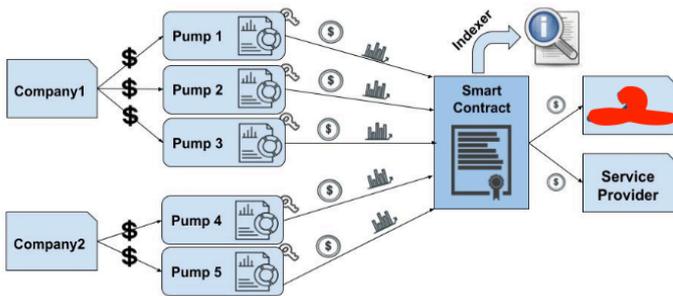
Current business model: sales only



Future business model: subscription based



Technological Solutions



\$ Companies/users charge the Pump-wallets with usage credits via an on-ramp solution in their dashboard or directly via a private wallet.

The Pump holds a registry of signed metadata on its secured storage. The individual Pump owner can prove to have sent all his statements to the smart contract and to have paid for all his usage without revealing any information about its specifics.

🔑 Every Pump generates a new public key for every on-chain activity.

📊 The Smart Contract compares overall usage and payments up to a verifiable point in time and allows [redacted] and Service Providers to extract the allocated amount (but not more)

📄 The overall performance and energy consumption within a specific time frame can be publicly validated via the data sent to the Smart Contract.

Where we are:	Where we are going:	Where we might go:
<ul style="list-style-type: none"> • High level of emissions throughout full the value chain • Lack of usage data • Demanding reporting and paperwork • High (f.e. consultancy) fees • No incentives for <u>costomers</u> to act responsibly 	<ul style="list-style-type: none"> • Automated reporting and monitoring • No need for third party assessments • Automatized Trust • Security and privacy by design 	<ul style="list-style-type: none"> • New business model incentivizing responsibility • Continuous <u>cashflow</u> • Design for a circular economy • Cradle-to-cradle certified smart pumps • Interactions with electricity providers ensuring renewable energy

Fig. 4,5,6 Slides from our pitch.

Once we were there, we discovered that an entire team was working on the possible implementation of blockchain in pumps. They proposed an identical solution to senior management. Scope 3 emissions monitoring meant implementing measurement hardware that, at the same time, allowed for a subscription-based business model that they were experimenting with for a huge hotel chain. Of course, monitoring and billing were still made through human actors: blockchain was seen as a way to cut these costs and enhance companies' privacy. Indeed, managers told me that customers were reluctant to embrace a product that shared information (water and electricity usage) perceived as industrial secrets to another company, something that a *zero-knowledge-proof*¹⁷⁰ transaction would circumvent.

Furthermore, it would allow the pump producer to become a utility provider, which would make regulators raise eyebrows. These technological innovations still run in a physical space where actors' interactions are subjected to the rule of law. The senior management was divided on whether or not to pursue automatic billings and reports because it would have shifted the company's core business and required dedicated legal teams and consultants to make them compliant with all current legislation on transactions and banking. We interacted with those who were in favour; they were confident that regulations should not be a concern since they have "friends in Bruxelles", a clear reminder of Foucault's multifaceted definitions of technology.

¹⁷⁰ Zero-knowledge proof is a method by which one party (the prover) can prove to another party (the verifier) that they know a value (like a private key), without revealing any information about the value itself

power, which we will explore in the last section.

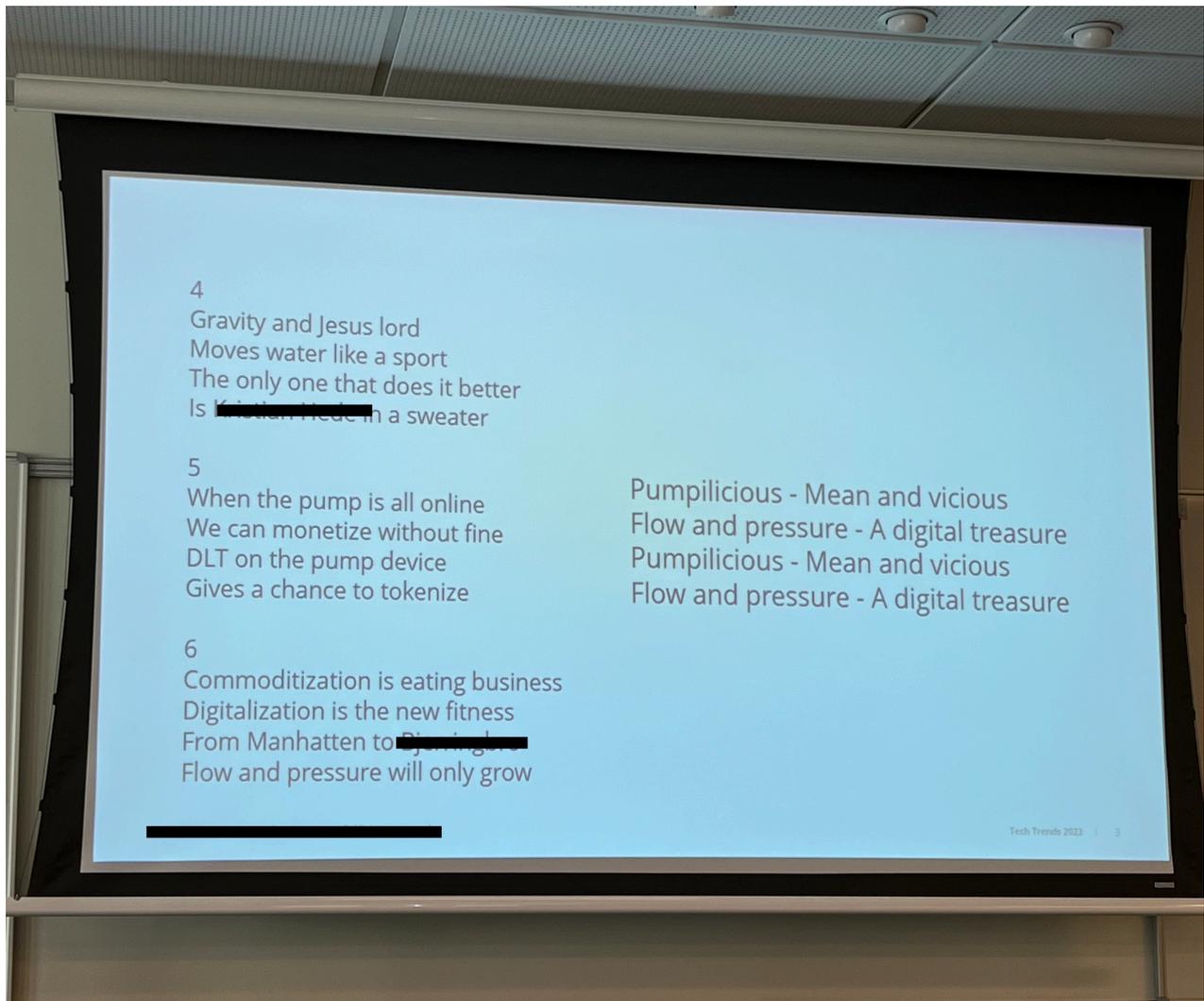


Fig. 7 Lyrics of the song written and sung by external consultants

At the meeting, senior consultants hired by the company were also present. They have been longly collaborating and are now working on this blockchain implementation. *Big Four* are actively working on blockchain, even though this technology was developed to get rid of intermediaries, as we later commented while riding a taxi (paid by the company) to the nearest train station. Parkinson's Law (Parkinson 1957) and induced demand remain heuristic valid concepts.

During the meeting, the atmosphere was jovial; everybody already knew each other, and we had a fabulous dinner the day before; managers who were "against" the *smart* pump did not attend it, although they were invited. At the end of the meeting, the consultants picked up a guitar and started singing a song in honour of

the *smart* pumps (Fig. 7). On the notes of *Give Peace a Chance*, the chorus brilliantly summarized how the tokenization of measurement data - the latter required by Scope 3 emissions targets - unlocked new business opportunities: monetization rhymes with tokenization.

Notes from a conference, part two

The reader might ask why I'm writing on these terms and how they relate to the environmental question. Besides the fact that induced demand is a concept used since the XIX century to show the fallacy of technical solutions to manage scarce natural resources (Alcott et al. 2012), the answer lies in our definition of *environmental questions*. Indeed, British economist William Stanley Jevons his 1865 book "The Coal Question" noticed that technological advancements that increase the efficiency with which a resource is used tend to lead to an overall increase in the consumption of that resource, rather than a decrease. This occurs because the improvement in efficiency tends to decrease the cost of using the resource, leading to an increase in demand. The so-called "Jevons' Paradox" is still relevant today since improvements must be part of a larger strategy that addresses the systemic drivers of resource consumption, that are historical and political.

At these events, as well in the KlimaDAO Discord server, actors were addressing global warming through the adherence to regulations; these regulations - as we showed - are the result not of a scientific debate, nor the offspring of parliamentary discussions, rather the outcome of business' groups desiderata. The answer to the environmental question is a circular one, at least in the spaces I explored: it is sustainable what stakeholders say it is, and their actions cannot but be right. I saw very little or no problematization of the environmental matter despite being central.

However, I do not want to mark this behavior as a pristine example of greenwashing. This term indicates fraud, an act of deviancy; as we have already seen and explored further, the reasoning behind these solutions is entirely coherent with the cosmological order of modern capitalism. It does not deviate from that, so it is difficult to challenge the orthodox approach to the ecological question.

Let's take, for example, the other project mentioned at the conference. In a session devoted to innovative solutions enabled by the blockchain, another speaker

showcased Plastic Bank¹⁷¹. As the name might suggest, Plastic Bank is an organization focused on reducing ocean plastic pollution, employing people from the Global South. When individuals collect plastic and bring it to a Plastic Bank collection center, the amount of plastic they submit is recorded on the blockchain and paid in cryptocurrencies. Companies can buy digitalized records of plastic removal to meet their CSR (corporate social responsibility) objectives. A chemical giant like Henkel appears to be among the partners.

Many questions could be raised, like the north-south divide, how technology enforces current inequalities, and the subtle racism that emerges from the stock photos, where Global South workers are portrayed among plastic garbage, with dirty hands and clothes, in stark contrast with people from the Global North, well dressed and in comfortable situations.

However, it is now worth focusing on the website itself. Areas devoted to plastic pollution and the initiative itself constitute around a third of the whole webpage. The rest of it engages with technicalities and explains how companies and individuals can easily monitor and offset their plastic footprint.

¹⁷¹ <https://plasticbank.com/>

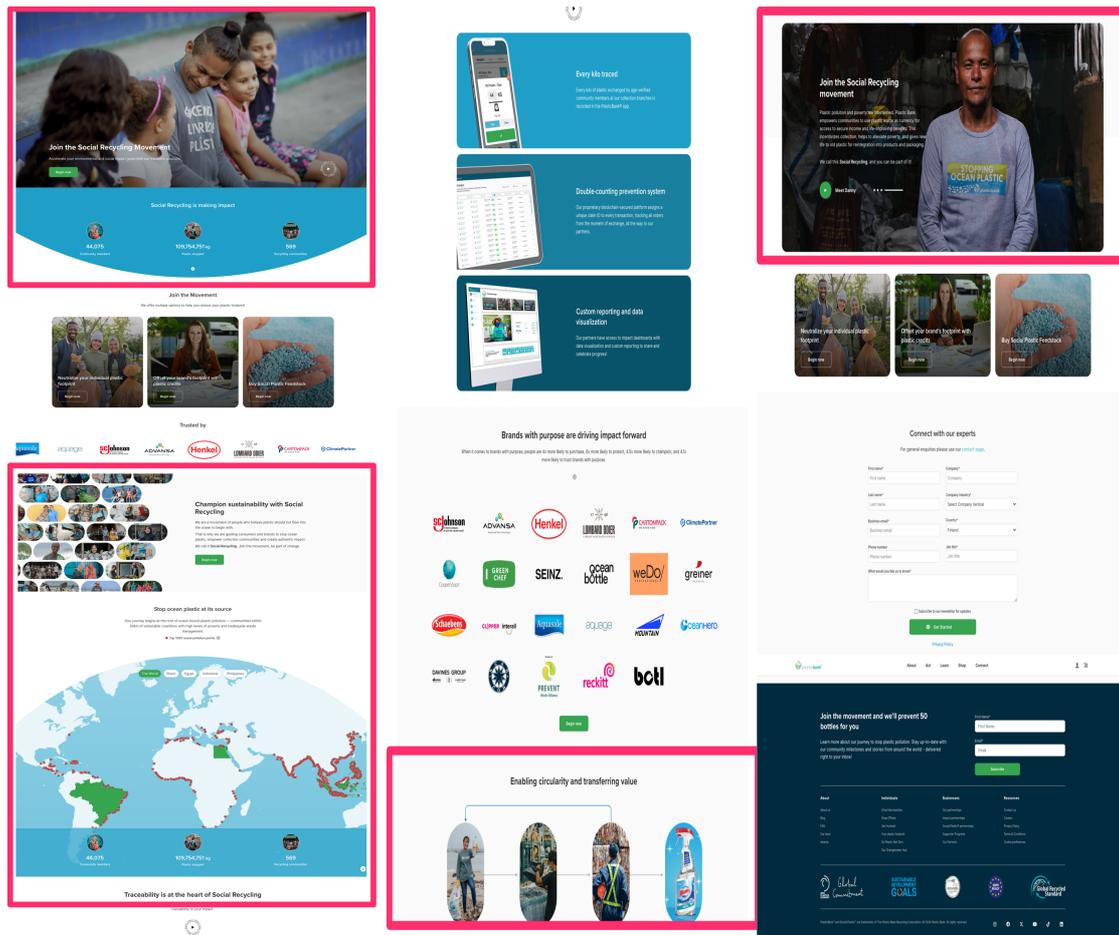


Fig. 8 Plastic Bank website, in red areas devoted to social and environmental initiatives.

The content on the website addresses potential investors and wants to convince them to do something good for the planet, to be altruistic. Altruism, however, means being compliant with regulations or directives from marketing departments or consultancy agencies. A whole website section is devoted to possible communication campaigns since “customers are looking for brands making a difference”¹⁷².

There are no contradictions between pursuing economic interests and generosity; if Adam Smith’s hidden hand can be seen as a metaphor for God (Painter-Morland and Slegers 2017), so in the capitalistic “civic religion” moralities manifest through markets (Nelson 2021, 47), in these contemporary form capitalism there is a perfect overlap between actions and beliefs, there is no need to conceptualize a theology or an eschatological theory. Salvation is pursued through business as usual. There is

¹⁷² <https://plasticbank.com/impact-programs>

no need for festivities or rituals for changes in daily activities: each action is “sacred”, as already conceptualized by Walter Benjamin (Löwy 2009). This circular reasoning was made clear by the speaker, who introduced Plastic Bank to us as a blockchain implementation to fix a market failure, that is, the externalities caused by plastic pollution. Again, new markets to solve current markets’ inefficiencies. It was presented as a pristine example of the *values* unlocked by the blockchain, probably employing this term in its moral sense but ending up showing the economic one. Despite the stress on transparency, ambiguities are still present.

Technical innovations did not bring new ideas, so their deployment does not challenge current mainstream discourses on sustainability but instead reinforces them since they drag away resources from what should be actually done, as we saw for the discussions around the Green Climate Fund. Technology and bureaucracy resemble each other when it comes to sustaining the status quo; people I meet in this field genuinely believe they are working on something that will improve the world, so that an enormous amount of intellectual and economic resources are devoted to not changing it. The question hinges on what “better” means. When I asked blockchain developers and pundits this question, I got replies resembling each other, as the financial transparency and self-ownership of assets made possible by cryptography were seen as necessary conditions for improving living conditions.

Notes from a bar

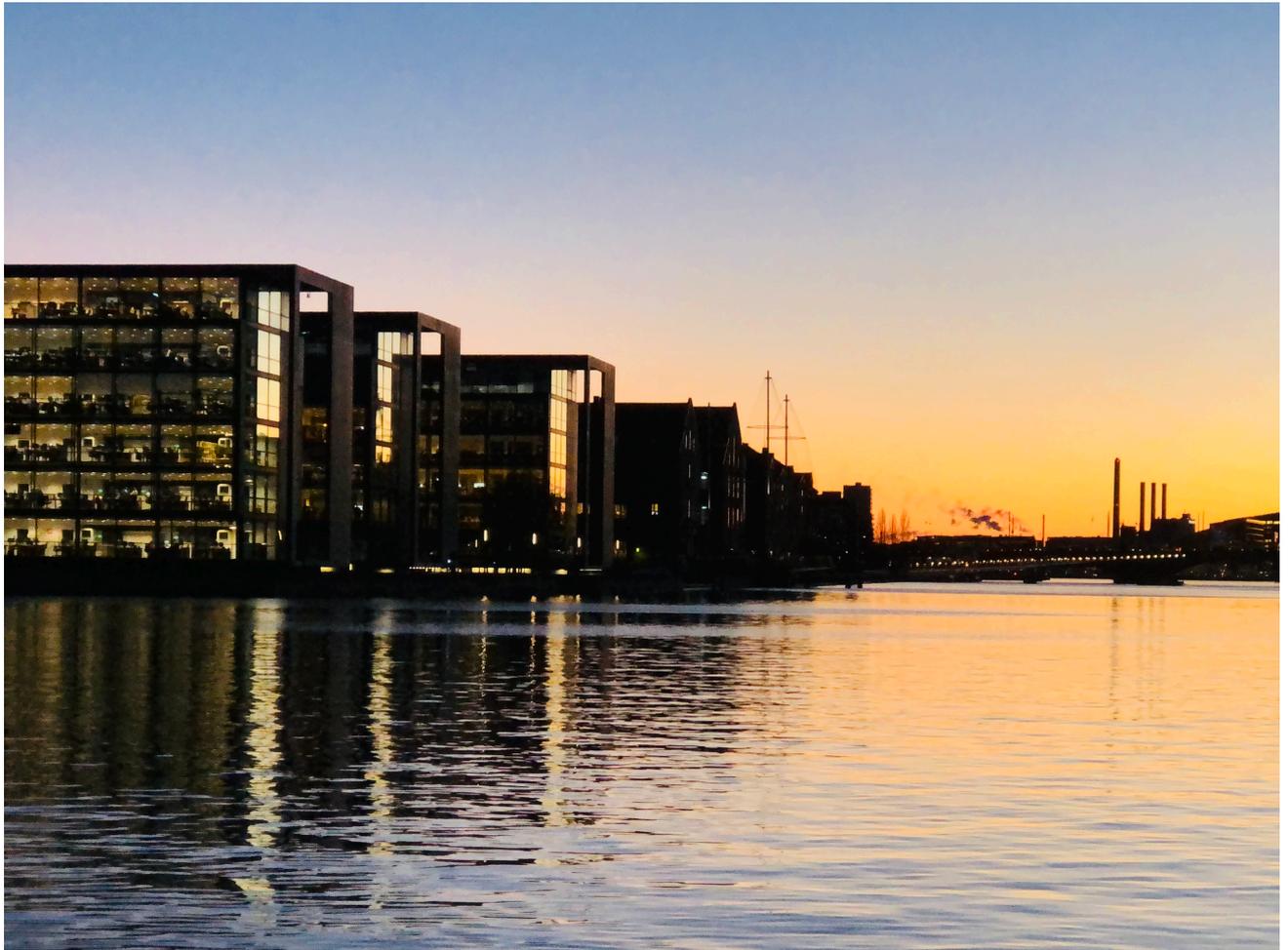


Fig. 9 Offices in Copenhagen at sunset. The Danish capital is rapidly becoming a fintech hub. Photo of the author

While discussing the (lack of) substantial changes in Bitcoin's code, a speaker at the conference mentioned above commented that "Bitcoin's community is very conservative".

Their conservatism is also political: blockchains are tools to defend the present. It seems that digitally distributed ledgers check all marks to be called "antipolitical machines" (Ferguson 1990). This became very clear after attending many blockchain-related meetings. The people I spoke with were very conscious of modern finance inequalities and the double standards when it comes to making the powerful accountable: Satoshi designed bitcoin while the governments were saving big financial institutions, and small businesses were shutting down. Yet, they never questioned the apparatus that created these injustices in the first instance; in a sense, their merging with the antipolitical carbon offsets (Bracking 2015) was just a

matter of time. If they are increasingly seen as an answer to environmental problems (Sipthorpe et al. 2022), it might not be just because cryptos are the new thing everybody is talking about but rather because of an *ontological* overlapping with already existing methodologies, rhetorics and morals.

During an event in Copenhagen on Decentralized Finance, a (white) Venezuelan lauded *DeFi* since it provided Venezuelans a “hedge against inflation” and allowed sending money abroad despite the sanctions. There were no mentions of the US embargo. Among the many on the stage, he seemed to be the most confident while talking. Another point he made was about the housing crisis: “The tokenization of houses might be beneficial for those who don’t have houses; when you tokenize, you democratize the access to houses”. This was said after speakers were asked about the new frontiers enabled by the tokenization. He applied the same logic behind carbon offsets: solving a conflict on an abstract level equates to solving it on a material one. Having a certificate that says “I own part of this house” equates to having a place where to live, not so far from being “carbon neutral” by holding a carbon certificate.

At the same time, proposing new forms of commodification of a “real asset” as the answer to the problems caused by commodification itself is precisely what carbon markets are.

I did not expect, of course, to assist in a master class on imperialism or a critique of neoliberal capitalism. I want to make it clear before delving more into KlimaDAO. At the same time, I did not expect crypto people to care about social and political issues besides mere individualism. Not all of them cared, of course. Sometimes, my interlocutors simply did not understand what I was talking about, the implications of many terms and so on; these people were usually software engineers older than me, and they faced difficulties sustaining a non-technical interview.

While at that event in the bar, I was sitting next to a guy who was following the debate with interest, mumbling to himself after each answer. He grabbed my attention, and after the conference, we began talking, giving me his consent as long as I quoted him as the “crypto-anarchist”. Unemployed and without a higher education background, the crypto-anarchist nonetheless revealed a considerable interest in my “philosophical” questions, well aware of the socio-political implications of the blockchain. He attended the event because he was a friend of the Venezuelan

speaker; both of them were around my age. While we will go back to him in the final section, it is worth noting here that according to him, despite being a “neutral technology”, bitcoin is positive for humanity because it “gives people freedom”, a contradictory statement (how can be *neutral* if it is perceived as *positive*?) that could be explained both by the couple of pints he already had and by the general narratives surrounding the topic.

The White Paper and its Consequences

A good starting point to understand what KlimaDAO is and how it portrays itself is to look at its white paper. It employs rhetoric that confirms many points made in interviews and discussions posted on its Discord server.

A white paper is a device used to justify the existence of a particular project, and it is structured following a problem-solution scheme. On the KlimaDAO websites, the word “white paper” never appears; yet the webpage docs.klimadao.finance is referred to as such by the members of the Discord server, and we will consider it the white paper. This document changed many times during the two years of operation, and it can be noted that the latest version is more concise, lacking many non-technical, “philosophical” sections.

In the now disappeared *Manifesto* section, for example, the website presented this paragraph¹⁷³:

KlimaDAO is a collective of environmentalists, developers, and entrepreneurs who aim to pool their knowledge and expertise to drive change in the carbon markets today.

KlimaDAO is building an open-source, transparent community that will leverage the power of Web3 to deliver immediate and measurable climate-positive impact.

KlimaDAO is an evolving network coordinating the delivery of climate finance toward high-impact and validated sustainability projects that produce tangible environmental benefits.

This description of KlimaDAO as a sort of Silicon Valley-hippie commune collides with the reality of the founding rounds and narratives employed to justify various drawbacks.

What emerges, however, is the will to present the project as grass-rooted and community-oriented. There are no mentions of the 7 million dollars received by

¹⁷³ An archived copy is available on archive.org
https://web.archive.org/web/20220401000000*/https://docs.klimadao.finance/

various VCs. Even if huge names could reassure the validity of the project, their presence would go against the egalitarian ethos behind blockchain's origin and, more broadly, "the new spirit of capitalism" embodied by Californian start-ups.

In a section that was once the *Manifesto* and now misses a specific title, KlimaDAO is elegant but straightforward, announcing that

What we truly value, is not being valued by the market [...]
Climate change is the number one issue of our generation. (KlimaDAO 2023)

This document somehow embeds the multifaceted and conflictual values proper of crypto communities. Indeed, the *pain point* is followed by programmatic sentences reproducing the rhetoric of mainstream economics like this one:

"In our market economy, the invisible hand works to create prosperity, and individual self-interest prevails." (KlimaDAO 2023)

The white paper proclaims the market presents inefficiencies, as unpriced goods are over-utilized. Interestingly, while echoing liberalism, implicit references to Marx are unearthed in this document:

"In the past, the market price of a good was determined by the socially necessary labour inputs required to create it. In recent times we have moved to a system where subjectivity and speculation are key driving forces behind prices [...]" (KlimaDAO 2023)

Socially necessary labor time is a concept developed by Marx in his critique of the political economy and used to underpin his arguments about labor value being derived from the value produced in society as a whole. This reference to Marx might also explain, for example, why one of the core contributors of KlimaDAO appears to be a huge fan of a scholar like Andreas Malm (Discord 2021). Almost drawing from Baudrillard (1994), KlimaDAO programmatically states that:

"Value has become totally detached from the 'market'. So much so that when a

good or service destroys value, sometimes immeasurably, there is no penalty imposed by the market. [...] There's no punishment by the market for emitting carbon dioxide" (KlimaDAO 2023)

The proposed solution contains the typical techno-utopian narrative we explored in the previous section:

"Markets are dynamic and more than a place of exchange, they are a manifestation of our culture and our time. So through organisation and co-ordination we have the power to modify them to reflect what we need and want. If we want the market price to be a fair price of what we value, then we need to move the goalposts and force it to work to the parameters we define. A perfect market should price in carbon.

[...]

Web3 is the perfect place to integrate these markets, it is a place where there is sufficient liquidity to have impact at scale, where smart contracts can securely and transparently govern transactions, and where contributions can be fairly incentivised."

What we found more interesting, though, is that KlimaDAO initially marketed itself as a novel form of central banking for the new "crypto-carbon economy" and Klima as a "carbon-backed currency":

"the DAO serves the role of "de-central" bank, governing the monetary policy of this new carbon-backed currency, just as a central bank governs the monetary policy of a fiat currency. Over time, we will build an economy around KLIMA by driving adoption and unlocking growth of the crypto-carbon economy."

This wording was borrowed from OlympusDAO, the controversial project whose KlimaDAO is a hard fork. I used a past form because, while reviewing this chapter, I noticed that this part disappeared, and similar sentences now appear in the section programmatically named "Purpose of the KLIMA token":

"KlimaDAO uses the KLIMA token as an algorithmic reserve currency and key

liquidity pair. On a high level, the token has 4 axioms:

Every KLIMA token has an Intrinsic Value (IV) backing the token. While there can be more assets backing the token, there is a minimum value associated with the token. Hence, there is a price floor, but no price ceiling of the protocol. As of today, the Intrinsic value is 1 carbon tonne. In other words, every KLIMA token is backed by at least 1 Carbon Tonne.

The KLIMA token can only be minted or burned by the protocol. The protocol serves as the "decentralized, central bank" of the token, with the ability to expand and contract supply.

When KLIMA is trading above the IV, the protocol expands supply, and sells KLIMA to the market. Because the protocol can create more supply, as long there is the IV backing the token, it generates excess reserves from the spread between IV and market price.

When KLIMA is trading below IV, the protocol buys and burns KLIMA, contracting supply. Because it buys the token under the intrinsic value, the protocol bolsters reserves per KLIMA from the spread.”

It was entirely reported because it explains the mechanisms behind each token. What immediately comes to the attention is its intricacy and how different forms of values are mentioned. It took me a while to understand what Klima was and what it represented. In short, each Klima represents one or more BCT¹⁷⁴ or other digitalized carbon credits. Why should one buy this derivative token instead of the underlying asset? This is where the “Strategies for Defending Backing Value” come into play. Investors are assured that each derivative could not drop its price below the underlying one: in that case, the protocol would burn its own funds to reduce the total amount in circulation, driving up the price. As long as the price is above the

¹⁷⁴ “A Base Carbon Tonne is a fungible carbon token backed by a 1:1 verifiable link to carbon credits in a supported registry; the Carbon Bridge allows anybody to bring their carbon credits on-chain in a tokenized form [...] This gives users the ability to securely “bridge” carbon credits on-chain — a transfer of value that unlocks increased utility. To ensure that carbon credits aren’t double-spent, they are permanently retired on the traditional registry with the on-chain beneficiary (an Ethereum wallet address) publicly declared in the retirement message.

After bridging, users may then obtain project-specific TCO2 (Toucan CO2) tokens. These are semi-fungible ERC-20 tokens that retain metadata (project origin, type, vintage, etc.) from the original carbon credit” <https://medium.com/toucan-nest/base-carbon-tonne-bct-a-new-web3-building-block-cae76bca25fd>

underlying asset, the protocol can mint new tokens, pay out interests to holders, or discount bonds, diluting the price but never under the underlying asset. Theoretically, this would mean risk-free, arbitrageurs-proof money: I buy an asset, get rewards, and I am assured its price would not go below its intrinsic value.



Fig. 1 Klima Price in USD, from Yahoo! Finance

In finance, if something is too good to be true, usually it is not that good, and the price crash (fig.1) of KlimaDAO is a stark reminder of this rule of thumb. What does not emerge from the technical documentation is how much is the delta between the spot price and the backing value; we will go back to this point in a few pages.

What emerges from the following conversation with a moderator is how very few people understood how the mechanism worked; I will report it entirely since it helps to reconstruct and explain KlimaDAO’s rise and fall:

blankslate.klima — 22/10/2022 18:51

A lot of early investors, understandably, were focused on what the spot price was, but at the protocol/policy level, the more salient metric for trying to maintain the health of the protocol is the backing value (how many carbon tonnes was 1 klima backed by--the higher the backing, the more premium the protocol can get from bonding). The policy team early on recognized this and tried to capture as much of that premium as it could for the treasury.

cardo — 22/10/2022 18:54

So in the long run the spot price and the backing value should become similar ?

blankslate.klima — 22/10/2022 18:56

Yeah over time, that's the idea. Klima will be closer to backing value and price can be guided into a range via bonding and inverse bonds. When the supply is higher, there will be less price volatility, generally.

Part of the issue early last year, too, is that there was an expectation that there would be more bridges coming online, that, because of macro conditions, didn't happen

cardo — 22/10/2022 18:58

did early investors know that such spot price was unsustainable?

blankslate.klima — 22/10/2022 19:00

I don't know who knew what, when. It was at the end of a bull market and it seemed like a lot of people thought things were up only, forever.

blankslate.klima — 22/10/2022 19:09

I don't believe that there was an attempt to do anything relative to spot price--I just mentioned why the spot price spiked in the beginning (ie, low supply, high demand). The way that new Klima is minted is via bonding or as staking rewards. So most new Klima at the very beginning was from bonding, which is semi-time gated because of BCV. The policy team was mostly looking at it from a backing value point-of-view. After Klima came online, and BCT (the first tokenized offset that Klima accepted for bonding in coordination with Toucan) was made available, the spot price of BCT jumped because of bonding demand from Klima. This incentivized off chain arbitrageurs to use the Toucan bridge to bring offsets on chain to sell them to people wanting Klima.

cardo — 22/10/2022 19:49

so there's a feeble link between the price of existing VCM "institutional" projects and bridged/on chain price?

plus, am I wrong or many of the people who complain about the fall of \$klima and use terms as "scam" and "rug pull" probably didn't understand the tokeneconomy behind and the difference between IV and spot price?

blankslate.klima — 22/10/2022 20:08

There is a link while bridging on chain was active because people with verified credits were able to choose between selling for a price on the off chain or market vs. what they'd be able get on chain. When it's more profitable off chain, people will sell them there and the rate of growth on chain will slow. If there were more active retirements, then the availability of on chain assets would go down and price would go up, again creating an arbitrage opportunity. Since the spring, a lot of demand off chain has disappeared and since May, bridging credits on chain has been paused by the Verra registry (which had been the main source of bridged credits up to that point).

[...]

I agree that some people who don't understand the tokenomics and only monitor spot price have been quite vocal about their disappointment. We try to engage with these people and help them understand what is going on and why. I understand why they are frustrated, but just because something didn't perform the way you hoped, doesn't mean that there is something nefarious going on. The entire market is down and crypto is particularly prone to wild swings. I think that highlighting the issues that Klima is trying to fix via being on chain, namely; price discovery, transparency, deep liquidity, ease of use, and the utility and flexibility afforded by smart contracts, underscore the advantages of an on chain vs an off chain market for this commodity type.

I interviewed an investor that made a huge loss out of it (answers in italic) and preferred to stay anonymous. What emerges is the luring aspect of high interests (APY), which turned to be not so convenient.

cardo — 25/10/2022 19:12

How much, if I can ask, have you invested ?

20k more or less

With dca and took some money back , but still loss around 13k and its worth 500\$ with 136 klimas but I invested today 1k so have now 550 klimas or something

Because of the rebases i got its less bad , if i didn't stake it was way worse

cardo — 25/10/2022 19:14

So you staked your klima?

So my total today 562 klimas worth around 1300\$

Yes

cardo — 25/10/2022 19:15

Which apy you currently have?

Plan was same as OlympusDAO, attract people with high apy

0,01 rebase

3 times a day

So 0,03% rebase right now

Not sure how much apy that is

Started with 77k apy

cardo — 25/10/2022 19:16

Ok. Have you ever invested before in carbon markets?

No

cardo — 25/10/2022 19:18

Can I speculate that you were more attracted by a potential profit rather from offsetting emissions ?

Right now have like 100-120% apy

[...]

Was trying to earn some money didnt care about offsetting emissions

[...]

But the goal of klima is good i think

According to the on-chain data, when Klima was trading above 3000\$, it was

backed by around 5\$ in BCTs¹⁷⁵. To make it sustainable for investors, it should have paid a 69'900% simple interest rate; it should be noted that at its peak, Klima was offering a 50'000% APY¹⁷⁶: even if impressive, this interest rate still exposed investors to risks. This mechanism could have worked only if nobody sold, and indeed it broke once earlier investors wanted to make their profits.

I designate those who invested in Klima before its public lunch as earlier investors.

They can be divided in two groups, and receive two different, redeemable 1:1 tokens. The first one is constituted by a restricted number of wealthy investors who mobilized 7 million dollars and received 70 million “pKlima” (preKlima); their involvement will be highly contested by the community and will be explored in the next chapters.

The other group is constituted by those who participated in public events: the Initial Discord Offer (IDO)¹⁷⁷, 17-20 August 2021, where participants paid 10\$ for each “aKlima” (alphaKlima); in total, 120'000 aKlima were issued. These funds were then “used to bootstrap the LBP, which will then bootstrap the Sushi pools on Polygon, post LBP”. LBP stands for “Liquidity Bootstrapping Pool”, and is a way to provide liquidity for a cryptocurrency project during its initial phase. During this phase, a smart contract automatically adjusts the token's price based on trading activity: as traders buy and sell the token within the LBP, the price fluctuates, and once the LBP period ends, the final price of the token is considered its market-discovered price. The KlimaDAO LBP event started on September 14, 2021, and ended three days later. To disincentivize bots and speculators, LBPs usually have a higher price, and indeed, Klima was launched at 116\$ on the platform CopperLaunch¹⁷⁸; at the end of the event, the crypto was valued 323\$ per token, and participants were given “aKlima” (alchemistKlima).

Having provided a general introduction to the platform, we can now analyze the people that were behind it.

¹⁷⁵ <https://dune.com/Cujowolf/Klima-DAO>

¹⁷⁶ <https://medium.com/coinmonks/tokenomics-101-klima-dao-e8fac497454f>

¹⁷⁷ <https://web.archive.org/web/20220902200521/https://klimadao.medium.com/what-is-klima-dao-initial-discord-offering-5735c996c2ac>

¹⁷⁸ <https://web.archive.org/web/20220808200258/https://klimadao.medium.com/klima-dao-fair-launch-liquidity-bootstrapping-pool-announcement-a1832b59d7ad>

The Team

The central aspect of KlimaDAO is the asymmetry between the vast amount of capital mobilized and the very little due diligence done by all the actors; this is why I never employed concepts like “greenwashing” or “Ponzi scheme” in this text. I’m very confident of that, especially after interviewing the anonymous source I quoted at the beginning of this work. They received death threats, so depicting KlimaDAO as an illegal entity would be in their interest; instead, after taking a deep breath, s/he told me that:

most of the regenerative finance movements saw an opportunity to make money while doing good for the planet. And unfortunately [...] a lot of these people um got in bed together early on with this pursuit and accidentally launched a Ponzi scheme and made a lot of money from it. And I don't think they actually intended it to be a Ponzi scheme. I'm pretty sure of that now. Um I thought it was, it was not intentional. I don't, I really don't think so.

This sentiment is shared by other investors I interviewed. According to a couple of them I met during an Ethereum Meetup in Copenhagen, “*people in klimaDAO didn't have bad intentions but founders were incompetent*”.

They knew what they were talking about. One of them had a background in fintech and loved the idea of tokenized carbon credits (he told me he did not sell despite buying Klima tokens near to their peak), while the other - who sold at a loss - had a startup and was employed by the Ethereum foundation.

If critical scholars showed how *homo economicus* doesn't exist, and individuals are not only moved by the research of self-interest, it is reasonable to think that the KlimaDAO core team was neither. Peculiar market conditions let the situation spin out of control; as a result

60,000 retail investors lost \$950 million and about 20 people walked away with it all.

If we now have information on the team behind KlimaDAO, it is because the source I interviewed was forced to do so; in the days and weeks preceding their public “Self Doxing”, they were put under a lot of pressure, and they knew their name would be shortly made public. The (now deleted) Twitter thread was posted to my source just a day after they revealed their names on a podcast, and this is how I found them; there were serious accusations of securities fraud, describing KlimaDAO as a billion dollar Ponzi scheme, accusations later retracted even if they’re sure a halo of murkiness and immorality still permeate the project.

KlimaDAO's three original founders went under the pseudonyms Archimedes, Dyonisus, and Oxylos. Personal pieces of information come from the March 2023 KlimaDAO “Doxxparty” podcast¹⁷⁹ or publicly available sources on the web.

Archimedes, the pseudonym used by Joshua Bijak, had a previous experience with carbon markets; on his LinkedIn profile¹⁸⁰ we can read that he founded Creole “which pioneered real-time carbon offsetting for buildings” and got a bachelor’s degree from University of Calgary in Electrical Engineering with Energy and Environment Specialization.

Since the beginning of KlimaDAO, an aura of mystery and deception surrounded the various founders' identity and roles. For example, pre-launch investors' names were never disclosed, and their names do not appear¹⁸¹ among the hundreds of thousands of messages on the board. Or, even though Joshua Bijak created Creole on the Discord server, he acted as if it was an external company:

J.ust L.ucky — 14/07/2021 14:37

Will there be a possibility for improving the creation of carbon credits? Like could we use this platform to help a farm transition to no till and get them carbon credits which we can then tokenize?

Archimedes (10,10) | (3,3) — 14/07/2021 18:11

Absolutely! I believe Creol/Offsetra are already working on this and are close to

¹⁷⁹ <https://www.youtube.com/watch?v=-JyE0TpiSVQ>

¹⁸⁰ <https://www.linkedin.com/in/ghsdsdafasdfgh/>

¹⁸¹ Marc Cuban constitutes an exception and, given the bittersweet response from the users, it can be understood why the founders did want KlimaDAO to appear as a grass-root initiative

completion. They are building a direct ramp to IoT connected cookstoves to create on-chain carbon directly from the source

He had already tokenized Verra carbon credits in 2019. According to him, Creole had 8000 tokenized Verra carbon credits, a fraction of the billion issued by the non-profit during its existence¹⁸²: they “were all working on some piece of the puzzle”, developing projects, launching a platform to calculate the carbon footprint of Ethereum addresses¹⁸³. Creole had a partnership with Carbondrop¹⁸⁴, a project by the Open Earth Foundation to offset NTFs' carbon emissions; after that, they got a partnership with F2Pool¹⁸⁵, one of the biggest Bitcoin mining pools. Creole was reached out by Daniel Hwang, a blockchain expert who focused on blockchain and offsetting, according to his LinkedIn¹⁸⁶, and then by Shimia Capital because - according to my source - the CEO of the found, Yida Gao,¹⁸⁷ already knew Bijak. Shimia Capital, which is not mentioned on the Discord server or on any of KlimaDAO webpages, effectively lists KlimaDAO as one of the companies they invested in¹⁸⁸, but I could not find any information on personal connections.

All these previous experiences and connections clearly show how the interest in tokenizing and trading carbon offset was an idea that existed long before the official launch.

Yet, what was missing was the liquidity to scale up the system. And this is where OlympusDAO came in.

According to my source, that worked back-to-back with them:

Olympus model provided an incredible framework to take the carbon market into the new era, so to speak. And they could bootstrap liquidity through the protocol and liquidity that Olympus provided and they could raise the price, the floor price of carbon under the assumption that there was a finite supply of low quality carbon in

¹⁸² <https://www.climatechangenews.com/2023/05/23/verra-boss-steps-down-after-criticism-of-its-carbon-credits>

¹⁸³ <https://www.carbon.fyi>

¹⁸⁴ <https://www.carbondrop.art/>

¹⁸⁵ <https://medium.com/f2pool/f2pools-commitment-to-sustainability-16d4f6881d55>

¹⁸⁶ <https://www.linkedin.com/in/danhwang88/details/experience/>

¹⁸⁷ <https://www.linkedin.com/in/yidagao/>

¹⁸⁸ <https://shima.capital/investments/>

the market. And now this was the core thing of change. They all sort of bought into it and ran with it. And from May to, you know, October, they raised quite a lot of money on this promise and the way that they raised money was either reckless or nefarious. And I don't have all of the information to determine whether it was nefarious or reckless. But I've heard both sides, I've heard the people closest to Josh, um some of the other founders that it was definitely not nefarious.

They ended up partnering with OlympusDAO, thus creating the enormous hype that tenfold the price in a few weeks:

there was a lot of hype and energy and they had this backing of the, you know, one of the biggest DAO names in the time, this whole metaphor of DeFi protocol and liquidity, Zeus Olympus style, you know, algorithmic reserve currencies, Mark Cuban was hyping it up and they then raised their fair launch auction by a copper liquidity bootstrapping protocol which is effectively a Dutch auction mechanism

Another core member is Marcus Aurelius, pseudonym of Marcus Levine; despite not appearing among the founders, he is a Key figure in the Discord server, answering most of the criticisms; yet his full name was never mentioned on the Discord server. According to his LinkedIn profile,¹⁸⁹ he is an “[e]xperienced data scientist turned DevOps leader, [his] skills cover the full data science stack: initial data gathering and exploration, preprocessing and ETL pipelines, developing analysis and algorithms, as well as maintaining data-driven applications in production with DevOps best practices”. It does not mention any education or work experience on sustainable-related topics, and his messages on carbon markets are ambiguous and imprecise.

Andrew Bonneau, Dionysus’ pseudonym, worked for Offsetra¹⁹⁰, a company that already 2020 offered carbon offsetting services, and met the Creole team while collaborating with Carbondrop. Instead of competing, the teams decided to

¹⁸⁹ <https://www.linkedin.com/in/marcuslevine>

¹⁹⁰ https://www.linkedin.com/search/results/people/?currentCompany=%5B%2214029011%22%5D&origin=COMPANY_PAGE_CANNED_SEARCH&sid=2jn

collaborate: a “true web3 story”, in his words. According to his LinkedIn profile, he worked as a Sales Manager for First Climate¹⁹¹, a German carbon trading company, and in the podcast as mentioned above, he described himself as a consultant. Probably, he was the only one who knew how bad the credits in the KlimaDAO treasury were.

Alex Taylor, also known as Oxyoron on the Discord server, is another cofounder and worked with Dionysus at Offsetra. As reported on his LinkedIn profile¹⁹², he has a technical background, receiving a Master's in Renewable Energy Engineering.

According to the interview, the merging of carbon credits and blockchain already began in 2018, when members of the Ethereum community started talking about the footprint of and how to compensate for it: in a proof-of-work environment, machines cannot stop or slow down. Creole and Offsetra offered carbon footprint calculations and retirements, solutions that met the needs of these crypto-communities, and got in touch with Toucan: many people (and investors) saw an opportunity while sharing the same values on the web3 and privacy. The tokenization of carbon credits was any idea that made sense to many, and they had to put differences aside to reach the common goal.

I could not find any information on Oxylos.

Despite the almost festive atmosphere of the hour-long podcast, where old friends were recollecting past adventures, they knew that the “whirlwind” caused by my informer changed things. Even if they appeared at some conferences around the world, none of them had the visibility of these tweets and discord messages because a nickname was now unequivocally linked to a real name and surname. Anonymity is a “TradFi” problem, is said during the interview.

¹⁹¹ <https://www.firstclimate.com/>

¹⁹² <https://www.linkedin.com/in/alex-taylor-rem/>

The Italian Connection

Among the co-founders, there's also Giorgio Alessandro Donà Danioni, also known as the “crypto lawyer”, and is effectively a lawyer ¹⁹³. He started a consultancy firm with Joshua Bijak in 2017 called “Smarties”¹⁹⁴, providing “smart contract development for all sorts of projects [...] [and] aim[ing] to push businesses to look at organizing themselves with blockchain as the core of their technology. Ranging from DAOs to tokenization of assets”.

During the “doxxparty” episode, he mentioned his nationality, pointing out how my source recognized his name.

As I said, they revealed their real names only after my source forced me to do so in a video podcast titled “SelfDoxxing”.

At the very beginning, many users on Discord lamented this anonymity, as well as other points that will be crucial for KlimaDAO, confirming the thesis that most of its success derived from the *fear of missing out* (FOMO) that characterized crypto markets during late 2021:

Joe B — 12/09/2021 20:19

Ok 1. Who is the team, why is that info being delayed? 2. Why is mark Cuban involved? 3. How much did he pay for his 5 million tokens?

I think those are fairly straightforward questions that I haven't seen a clear answer to from looking through this discord

Criticisms, however, were often harshly rebutted from other members, recurring to moral arguments.

Caennedy (🌴, 🌴) — 12/09/2021 20:23

I don't know how you got in here but you seem as a newbie. Team is anonymous (like 99% in DeF), investor data and numbers won't be public in 99% of the time as well

¹⁹³ At the time of the “doxxing”, March 2023, he claimed to be a lawyer in two countries; his name, however, as of November 2023, does not appear on the Italian national lawyers register, but do appear on the spanish one. According to his LinkedIn profile, he currently lives in Dubai <https://www.linkedin.com/in/giorgiodona>

¹⁹⁴ <https://smarties.solutions>

Or to wordplays:

Marcus Aurelius (10,10) | UTC+3 — 10/10/2021 22:19

The founding team is mostly pseudonymous [...]

Despite cryptocurrencies being designed to avoid putting trust in people, many small retail investors still feel the need to know who to get personally accountable, even in an unregulated (and mostly outside the law) space. In a paradoxical move, in these stateless, decentralized, and anonymous communities, rules are enforced, capitals are invested, and, in short, the society reproduces itself thanks to the personal reputation:

GainZbarre (🌳,🌳) — 20/10/2021 07:27

ITs a great project i am already in it but why do the founders choose to be anonymous I mean that a little thing that can make people hesitate to participate to this project @Archimedes (10,10) | (3,3) @ChazSchmidt @SpaghettiCO2nara (🌳,🌳)

Deleted User — 01/11/2021 09:25

is there a professional team behind klima dao, where to find

bOHMbastie (3 🌳, 3 🌳) — 01/11/2021 09:25

Yes, anon but strongly connected with OHM Dao. Lots of reputation at stake too

DomRody — 05/11/2021 12:24

I don't trust Cuban 😂

For me.. He is the Paris Hilton of investing 😏

GreenTrickster (🌳, 🌳) — 05/11/2021 12:26

fair point, but consider that a lot of non-anonymous people have put their credibility on the line by recommending KLIMA

Before the “self-doxing,” core members and moderators answered this kind of

question by linking an episode of a very popular Blockchain Podcast, *Bankless*,¹⁹⁵ where the three founders appeared and spoke with their voices, it seems that hearing three different human voices reassured some people more than cutting-edge cryptographic puzzles since it was a recurring theme in the earlier days. These messages were sent when the daily volume was worth tens of millions of dollars and crypto traded at around 2000\$ per token.

mm116 — 03/11/2021 21:28

Is there any info on who is behind this project? Like IRL names?

tapioka.klima — 03/11/2021 21:29

Main devs are anonymous... But you can listen to them in voice calls or in interviews.

Flaneur 🍷 — 05/11/2021 08:38

hey all [...] where can I find out about the team behind this venture?

TangoAndCash — 05/11/2021 08:51

The team is mostly anonymous, but there are some interviews you can find, and they host office days where they talk and take questions.

In the KlimaDAO community - like in other crypto-communities - both *gemeinschaft* and *gesellschaft* are present, with some members trusting human actors and personal ties while others preferring impersonal institutions, as exemplified by this exchange:

Jeffrey — 01/11/2021 14:09

Do you think the anonymous team hinders institution's recognition of the project?

Revolutionary_Mang0 — 01/11/2021 14:10

Not if audits have been done

However, the anonymity didn't bother most members, and the real names of the three founders seldom appeared on the Discord server.

¹⁹⁵ <https://www.youtube.com/watch?v=uM5XX4AwEul&t=1413s>

The *tweetstorm* mentioned at the very beginning of this work originated from the lack of transparency surrounding the whole project. VCs' names were never mentioned in any official documentation, and my source perceived it as a betrayal of DAO's spirit and mission. Along with Marc Cuba, Adam Neumann, WeWork founder and controversial billionaire, appeared among the investors¹⁹⁶. This created a certain concern in many Discord members, asking for clarification and getting a link to blog posts as an answer, a lack of dialogue experienced by all those who complained.

My source denounced also how founders were pitching C3¹⁹⁷ (Fig. 2), a platform to bridge and trade carbon credits, claiming compatibility with Verra's API to bridge carbon credits into this new platform¹⁹⁸; they feared KlimaDAO was plotting behind Toucan, as might have appeared from the pitch deck, especially after an investor said that C3 was "a Toucan clone with very toxic energy". The answer received from Joshua was that "they were just advisors". In a lukewarm blogpost reconstructing its history after the ensuing earthquake that hit *ReFi* Twitter during March 2023, Toucan said, "We owe a lot to the initial hype that KlimaDAO was adept at capturing. The sheer volume of credits moving on-chain in the first weeks and months after launch was enough to draw the world's attention. That said, the infrastructure we created also helped some middlemen capture money that was meant to support climate action."¹⁹⁹. The fact that a few weeks later, we were sharing pictures where my source appeared points me to believe that something was true in the fears mentioned above. Toucan founders, it should be noted, joined Offsetra and Creole initially, just to split up shortly after and develop their own products.

AitherGlobal²⁰⁰, a Milan-based carbon trading company and an active member of KlimaDAO forum²⁰¹, was listed among C3 partners. It might be just a coincidence, but the Italian lawyer has a strong Milanese accent. Shima Capital also lists C3 in its

¹⁹⁶ <https://twitter.com/tier10k/status/1458113918388391953?s=21>

¹⁹⁷ <https://bit.ly/3JwiRjd>

¹⁹⁸ A week after the critics moved by publication of Badgley and Cullenward (2022), Verra "prohibit[ed] the practice of creating instruments or tokens based on retired credits, on the basis that the act of retirement is widely understood to refer to the consumption of the credit's environmental benefit" <https://verra.org/verra-addresses-crypto-instruments-and-tokens/>

¹⁹⁹ <https://blog.toucan.earth/toucan-history/>

²⁰⁰ <https://twitter.com/AitherGlobal>

²⁰¹ https://forum.klimadao.finance/u/Aither_Carbon

portfolio. During the “dox party”, Levine admitted how they were approached by a “group of traditional carbon Market experts who were interested in exploring what tokenization could do” and how they might be “able to bring value to the digital carbon ecosystem”; in the end, the group how the ensuing competition could not but be positive for this nascent carbon bridging industry.

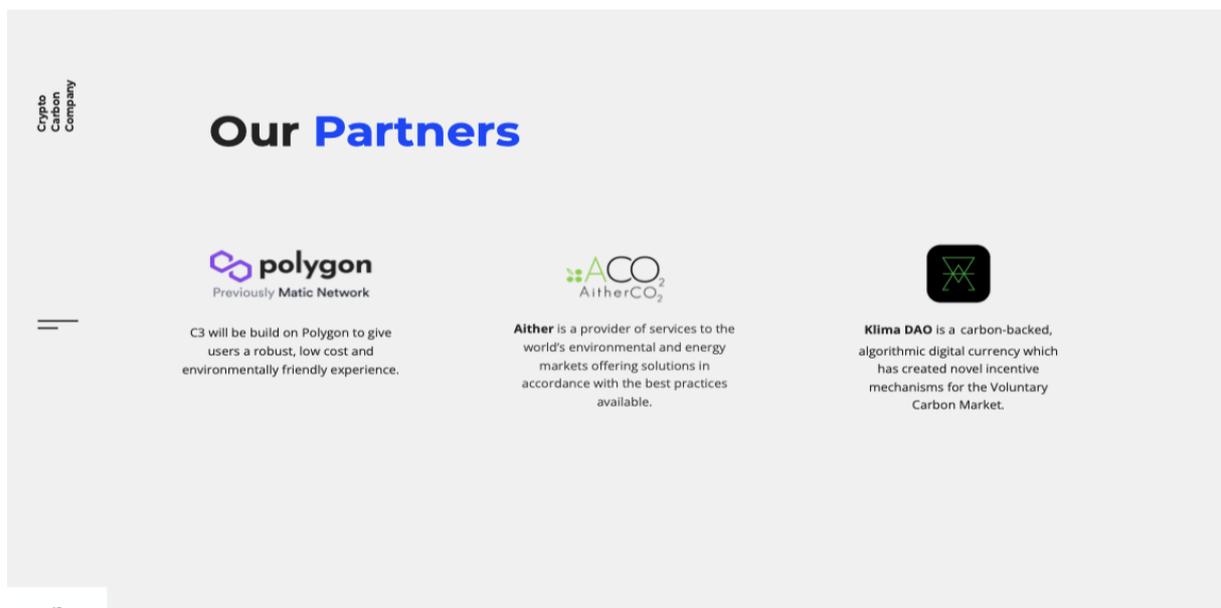


Fig. 2 C3’s pitch deck

In a tweet, KlimaDAO admitted that C3 was developed to overcome delays experienced by Toucan in the development of NCT (Nature Carbon Tonne), a pool of carbon offsets qualitatively better than BCT²⁰². One of the alleged founders of C3 proposed the project on the KlimaDAO forum²⁰³, promising that 10% of C3 governance token total supply “will be given to KlimaDAO, as our thanks for igniting the new wave of ReFi”; the whole incentive and vesting mechanism closely resembled those of KlimaDAO, so that my source feared another crypto bubble in the name of sustainability. This decision, as revealed in the podcast, was made by the so-called “Klima Core”, that are those that were in KlimaDAO before its public launch; the founders made clear what many had already understood, revealing a clear hierarchical division inside of the DAO, despite the returning rhetorics of

²⁰² <https://x.com/KlimaDAO/status/1634724919467560970?s=20>

²⁰³ <https://forum.klimadao.finance/d/23-request-for-comment-c3-klimadao-support-c3-as-a-branch-of-klimadao>

decentralization.

As last question in the interview, I asked my source what should have been done to prevent this chaotic unfolding of events. They told me that “radical transparency” was the solution. Radical transparency implies revealing personal information to be held accountable, a position clashing with “Klima Core” beliefs. According to the “crypto-lawyer”, for example, anonymity is important not “because you want to do something sketchy or because you're not comfortable enough with you know with what you're doing”: it's a matter of privacy, since “Italy [...] for instance is a very judgmental place”.

I will go back to the concept of anonymity, not because I am a *gossip-lover* Italian, but because it will be central while describing the lack of accountability characterizing KlimaDAO.

From OlympusDAO to KlimaDAO

In March 2021, OlympusDAO was launched. OlympusDAO is a discussed DAO that promised to revolutionize the DeFi. Olympus introduced the concept known as a "decentralized reserve currency," with its native token, OHM, designed to function as a currency backed by a basket of assets. Since KlimaDAO is an Olympus' hard fork, sharing many of its characteristics and Olympus had Klima tokens in its treasury, we should now devote a few lines to it. A fundamental difference exists between them, as explained by Archimedes:

Archimedes (10,10) | (3,3) — 07/07/2021 18:07

Built on the same TaaS system built by OHM, we do the same thing, but we swapped out DAI for something we know really well which is Carbon

The whole @Core Team @deleted-role team comes from leading web3 climate projects.

So the hard part is the carbon because the ohm contracts and system is rock solid

so we've been working on creating the underlying

Instead of cryptocurrencies, Klima has digitalized carbon credits in its treasury.

Even if the term "reserve currency" disappeared from Olympus' website as of today (October 2023), this term has been a key definition in 2021 and 2022. Similarly, game-theory-centered KlimaDAO's "tokenomic" (how the protocol is supposed to work) is OlympusDAO 2021/2022 carbon copy: on the website, every reference to the game theory has been removed as well. Using a previous version of the website stored on archive.org²⁰⁴, however, we can see how the same image appears on KlimaDAO official documentation²⁰⁵.

²⁰⁴<https://web.archive.org/web/20211219190847/https://docs.olympusdao.finance/main/basic/s/basics>

²⁰⁵ <https://docs.klimadao.finance/tokenomics-and-mechanisms/game-theory-olympus-inspired>

	Stake	Bond	Sell
Stake	(3, 3)	(1, 3)	(-1, 1)
Bond	(3, 1)	(1, 1)	(-1, 1)
Sell	(1, -1)	(1, -1)	(-3, -3)

Fig. 1 OlympusDAO/KlimaDAO game-theory inspired tokenomics. The same figure appeared in both official websites

During November 2021, OlympusDAO reached a four-billion-dollar market cap, and each token (OHM) traded for around a thousand dollars. The quantity of capital it managed to mobilize starkly contrasts with the dearth of documentation: the *tokenomic* hinged on a textbook application of the prisoner dilemma (Fig.1). Just a couple of lines describe the different scenarios according to three fixed behaviors; Olympus differentiates from the schematic, two-player prisoners' dilemma game because it introduces another outcome, the bonding (1,1). "Staking" is the best outcome for the protocol and the user; in DeFi, "staking" means depositing coins and locking them in exchange for interest. "Bonding" is the novel mechanism introduced by Olympus; like "TradFi"'s bonds, this mechanism allows the protocol to finance itself by issuing debt. Instead of directly buying the token, users can deposit assets in the protocol's treasury, receiving back a coupon that can be redeemed after a vesting period for a premium; the outcome is (1,1) since staking guarantees a higher APY. Even if the article explaining bonds employs the expression "risk-free value"²⁰⁶ many times, these strategies did not account for the mass selling that erased Olympus' OHM token value.

Indeed, different values are at stake here, a clear conflict between present and

²⁰⁶<https://olympusdao.medium.com/a-primer-on-oly-bonds-9763f125c124>

future rewards is present and a narrative (a mythology) is needed to avoid mass selling: this is the role of game theory. When the price began to decline, users blamed other investors for not following it²⁰⁷, or joked about it²⁰⁸ after the it crashed. The huge impact game theory had on these communities can be explained by the fact that – as we will see in the last section – it constitutes one of the pillars of contemporary orthodox economics, and blockchain technology was modeled upon it. It simply made sense and appeared rational to users already sharing those sets of beliefs.

The scheme depicted in fig. 1 now has disappeared from Olympus' website, as long with all references to the game theory. When I asked on OlympusDAO Discord server why they were removed, users on the server answered in a melancholic and satirical tone:

kevlar 3,3 — 17/10/2023 18:47

The game is already won fren

Knotted (🧠, 🤖) — 17/10/2023 18:49

Because people didn't understand it.

What emerged was a sense of betrayal, of a ruined and lost dream:

Knotted (🧠, 🤖) — 17/10/2023 18:54

Because if everyone works together, things are great. If everyone is adversarial, things fall apart. People only wanted to pretend the working together part applied to the protocol. Why would there be an official statement?

Many among the first users and investors in Klima were OlympusDAO members. As a very active KlimaDAO discord user told me through private messages:

²⁰⁷<https://discord.com/channels/798328113087119371/871044563890995211/924539260915286047>

<https://discord.com/channels/798328113087119371/871044563890995211/921387414147194940>

²⁰⁸<https://discord.com/channels/798328113087119371/871044563890995211/948593020905873428>

cardo — 27/06/2023 14:59

can you tell me how did you find klimadao and why you joined it?

[...] So I found out about KlimaDAO in the Offtopic section of OlympusDAO's Discord, probably in August 2021. I then joined Klima's Discord and tried to find out what they were doing... I probably did not fully understand it at the time. Carbon markets are very complicated, and I had no prior knowledge of them.

Then after the initial hype, I started to get involved more deeply and offered to do some minor work for the DAO (I think it was translation of their website first). The blend of high-tech and doing something against climate change at the same time is really what drew me in... I've always been a technology geek, and I've always loved nature. So this is a great mix for me :D

This person really believed in the project. Cryptocurrencies are a divisive argument in everyday discourses and also among crypto-communities. Many people invested emotions and hope in a project, not only money. The interview with this person, in the crypto space since 2017, clearly shows that:

cardo — 27/06/2023 15:14

and now you are full time in crypto?

Not full time. About 2 work days per week is for Klima. I would like full time though

[...] Do you hold \$klima?

Yup. Since the beginning!

from the Initial discord offer?

No, a bit later.. The Copperlaunch presale thing. I don't remember the exact name

and are u still holding them?

Yes. Never sold any of them

interesting

can i ask u why?

Not really interested in short term financial gain. I buy tokens from projects which I think are important in the long term and then lock them away. Not really a trader or anything like that

[...]

*only from DAOs or you hold also more "traditional" cryptos like Bitcoin?
or eth...*

BTC and ETH too, yea

Not just DAOs

Not much of anything though.. I'm more interested in the work than the tokens really

what's your opinion on Mark Cuban's involvement and the controversy with Verra?

Well Mark is really not involved at all in normal operations (and never was, to my knowledge). Have never made him see any contribution to the work itself. He's a fan, but nothing more, as far as I know. And Verra... Well, Verra is going through tough times :D They're getting left behind by the rapid development happening in Web3. They can turn it around, of course, but right now, they seem slow to react.

Game theory had the same role in KlimaDAO. While navigating the Discord platform, I quickly noticed how many KlimaDAO users had “(🌱,🌱)” in their

nickname. These symbols refer, of course, to the already mentioned prisoner dilemma, particularly the (3,3) outcome. The best outcome is when users cooperate when everyone “stakes”: the incentives for holding were staggering APY rates, up to 35000%(Strauf 2021). If this strategy attracted many investors, on the other hand provoked a massive inflation: interests were eventually lowered, and as of late 2023 down to 0%. Yet, in 2022, game theory still had a grasp on many investors; when I asked a user on the KlimaDAO server why they invested in such a platform, I got this answer:

“KlimaDAO aligned with me on all fronts: Elegant game theory; bleeding edge cryptoeconomics; disrupting tradCarbon trading and bringing an inefficient OTC carbon market on-chain; and the ability to profit while internalizing externalities that the markets traditionally have priced out. All of these things made it self-evident to me Klima is an asymmetrical opportunity for my portfolio, but above and beyond that I needed to find out how to help make this innovative mission a reality.”

The pKlima Controversy

“pKLIMA is a KLIMA derivative token given to stakeholders, advisors, core team, and the DAO. It gives the holder the option to mint KLIMA by burning pKLIMA and providing the intrinsic value of KLIMA. For example, an investor would provide 1 BCT and 1 pKLIMA to mint 1 KLIMA.” (KlimaDAO 2023)

After two years from its launch, the Discord platform presents hundreds of thousands of messages, as seen in Figure 1. As the platform evolved and discussions deepened, VCM changed. In 2023, almost thirty thousand wallets held \$Klima tokens.

The price went from 3600\$ to less than 1\$. In this section, I will try to explain why.

Among others, an error in the code allowed early investors to redeem way more tokens than they were allowed, possibly cashing out around 80 million dollars after a few months, putting enormous pressure on the price, if not for direct volume involved, at least for the message sent to the community. Indeed, soon after the launch, many early investors and stakeholders sold their positions, so that price sank (Fig. 1)

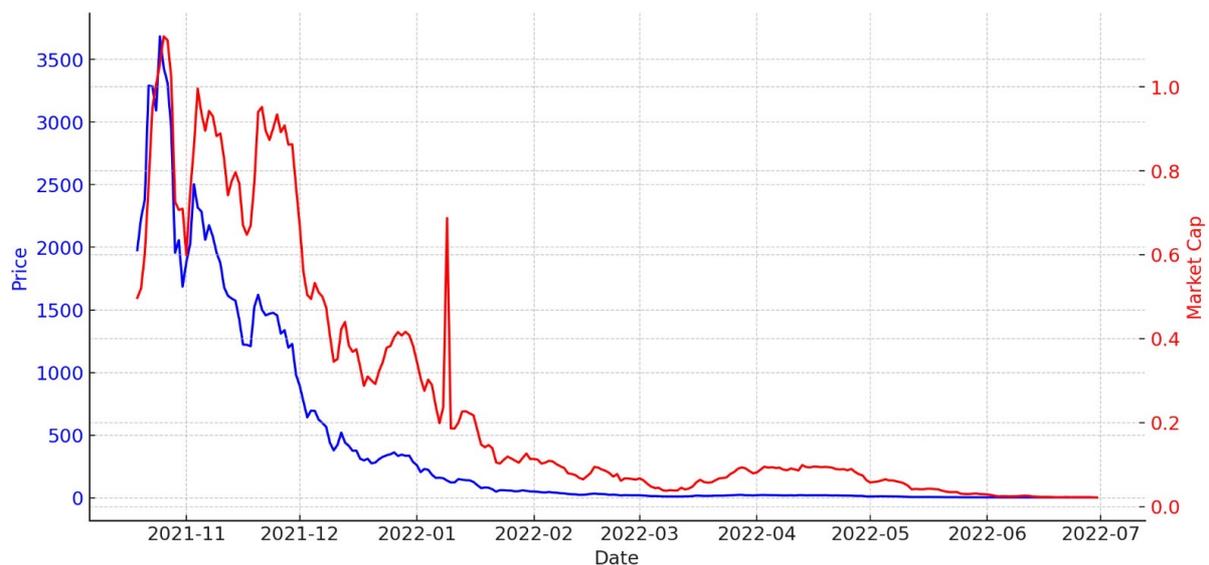


Fig. 1 KlimaDAO price (USD) and market cap (billions of USD), non logarithmic scale. Data from Yahoo! Finance and Dune.com

According to one of our sources, who prefers to stay anonymous, before the DAO

went public, the founders raised 7 million dollars from various venture capitalists; in exchange, they received 70 million pKlima, each one costing them 0.10\$. Our informant told us that this was in the pitch book they had access to. This story seems to be plausible, as the same price was reported by a user in September 2021 (before any listings), which appears in a document called “Klima_Pitch_Deck_V1.1”²⁰⁹ and by official documentation (KlimaDAO 2022a), according to which 70m pKlima were allocated to “Project stakeholders” (3.5% supply share), 330m to the core team (7.8% supply share), 50 millions to “Advisors” (1% supply share), 70m to OlympusDAO (3.5%) and 480m to KlimaDAO itself (no limits).

Distribution of these derivative tokens began on 13 October 2021²¹⁰, while the token would have started trading on October 19. Even if pKlimas were at the center of a controversy that could have potentially led most of the users to completely lose trust in the project, they did not really shock all the users in the community, as the 2022 interviews showed.

As shown by Figure 2, the term “pKlima” appeared 1348 times in the “klima chat” channel on Discord, with spikes surrounding early discussions or price crashes between May 2021 and September 2023, showing how part of the community knew about the intrinsic danger of this instrument. Or, for May 2022, when a highly critical blog post was published on Protos by the scholar Mark Camilleri (Camilleri 2022). I also explored the on-chain activity of one of the initial promoters, Marc Cuban, showing how he “offset” many crypto-losses by selling pKlima right after the launch and while actively promoting KlimaDAO itself.

²⁰⁹ <https://drive.google.com/file/d/17NuCqAgokDvxqHqYJ5BKzI4RP6wFnSQP/view>

²¹⁰ <https://polygonscan.com/token/0x0af5dee6678869201924930d924a435f6e4839c9>

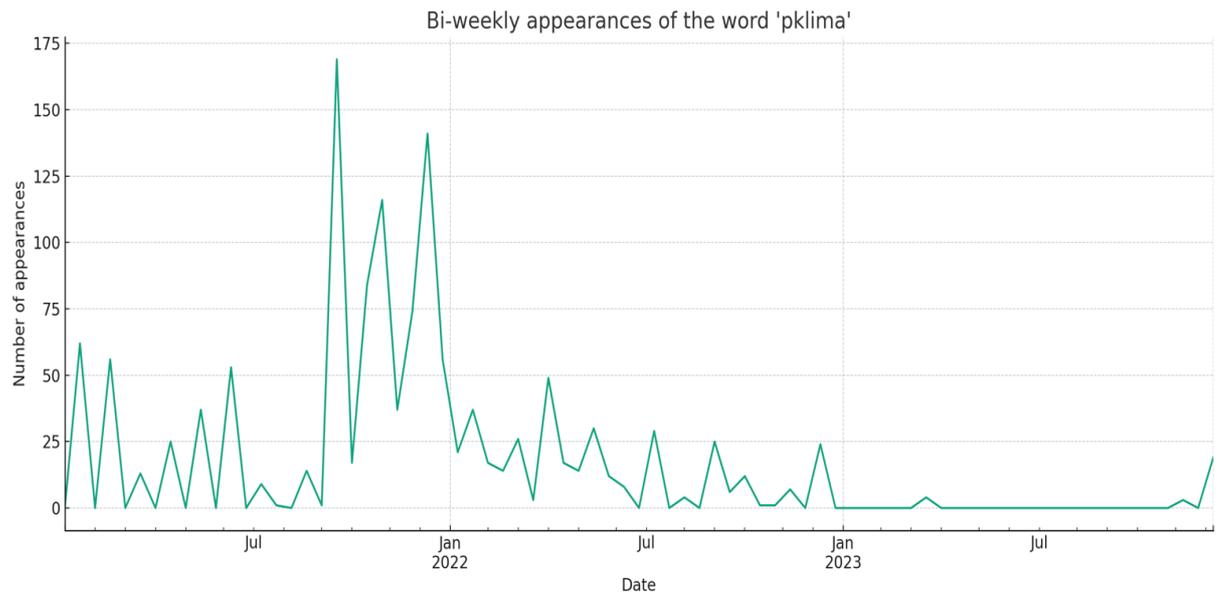


Fig. 2 Appearances of the word “pklima” in the “chat” channel

As I mentioned, the American billionaire openly disclosed his stakes in Klima but never mentioned how much he invested nor how much he profited. According to the above-mentioned piece, he invested 5 million dollars in KlimaDAO, generating “\$4.73 million worth of various cryptocurrencies by selling KLIMA” while still retaining most of his pKlima, preserving the capacity to tank the whole project.

According to KlimaDAO (2022a), pKLIMAs were distributed “to individuals and organizations committed to helping KlimaDAO become a long-term success”. The names of these people were never made public; however, in a telling message, the founder of Creole defined *advisors* as people working at Creol, Offsetra, and Toucan

Archimedes (10,10) | (3,3) — 07/07/2021 18:16

I know how to tokenize carbon into NFTs (721s) thanks to Creol/Offsetra0/Co2ken (the advisors to Klima), they are letting us use their tech So from that you end up with a bunch of NFTs of Carbon Tonnage. From there, you convert these NFTs into a single ERC20 Index representation of it in a smart contract vault

For now I call this VCU20 (Verified Carbon Unit 20)

They are, according to the C3 pitch deck, Andrew Bonneau, Alex Taylor, Brendan

McGill, Damien Schuster, Kristian Krogh, Joshua Bijak, Kalin Stoyanchev, Giorgio Alessandro Dona-Danioni. I already encountered a few names, so I can infer that they received pKlimas.

A BCT (Base Carbon Tonne, a tokenized carbon offset developed by Toucan Protocol) must be deposited in the DAO treasury to redeem this token. Crucially, “pKLIMA is vested based on supply. pKLIMA can only be redeemed incrementally as the total supply of KLIMA grows. Different stakeholder groups will be vested against different supply constraints”: they were not meant to be immediately redeemed. Through the Initial Discord Offer (IDO), 180'000 aKLIMA – coupon to be redeemed after the launch without the need to deposit a Base Carbon Tonne - were allocated at 10\$; then on September 14, through a Copper Fair Launch event the coin reached 323\$, the price it will be initially sold on October 19, a price that ten folded in a matter of days, or three thousand times in a matter weeks.

So, early investors could have redeemed their 0.10\$ pKlima for a 3500\$ Klima by buying a \$6 Base Carbon Tonne token. The vesting mechanism should have prevented this, especially for the enormous pressure it would have on the price. Yet, on-chain data say the opposite. As a small note on the official website states,

“there was a minor implementation issue in the pKLIMA contract that allowed for pKLIMA holders to redeem pKLIMA even though they had a greater % supply share than should be allowed. [...] The fix was deployed on November 24, 2021 and will gradually automatically correct the issue by preventing further pKLIMA redemption until supply grows sufficiently to bring all pKLIMA allocations in line with vesting limits.” (KlimaDAO 2022a)

Interestingly, no messages mention the crucial event on November 24, even though massive pKlima redemption and the selling pressure it generated were noted. According to a core member, the initial 250'000 klima supply would have implied a potential 8750 pKlima redemption or the 3,5%. I can safely assume that “project stakeholders” were those selling for the initial period. When I asked a founder about it, I was simply told that

its a policy issue from previous contributors tbf. Not sure any other DAO

contributors will have anything "official" to day on it. It's been documented and communicated

cardo — 05/12/2023 10:40

Previous contributors? Could you please elaborate more?

I mean it's a DAO - people come and go. It's pretty fluid

I analyzed pKlima data on chain through Polygonscan, looked for “exercised” contracts, and found out that between 19 October 2021 and 26 November 2021, approximately 40,283.26 pKlima were exercised. The total supply on November 26 was around 650000, so the amount of pKlima redeemed was almost twice the one that was supposed to be redeemed.

I fetched price data from Yahoo! Finance. However, this service provides a daily granularity, while on-chain transactions had an hourly one; I used the daily closing price for both BCT and Klima. To calculate profits, I used this formula:

Profit = (Quantity× Close (Klima price))–(Quantity× Close (BCT price) + Initial Cost)

The total value of unlocked Klima corresponded to 83421372,11 \$, almost 12 times the capital initially invested. It should be noted that prices for Base Carbon Tonne (BCT) are available only from the 21 October 2021. Without knowing the price of BCT during these two days, I can estimate that in these two days alone, 29880277,15\$ might have grossed. I am using the conditional form since sellers might have encountered high fees or slippage. Or investors might not have sold all of them. Either way, many core contributors depicted pKlima as a sort of option²¹¹. I showcased these findings to a founder, and KlimaDAO updated the dashboard on the Dune platform²¹². These data slightly differ from the one on Polygonscan I used, as shown in Fig. 3

²¹¹

<https://discord.com/channels/841390338324824096/841611717208178700/888117753028943904>

²¹² https://dune.com/queries/279269/526854?_dde-refresh=csv

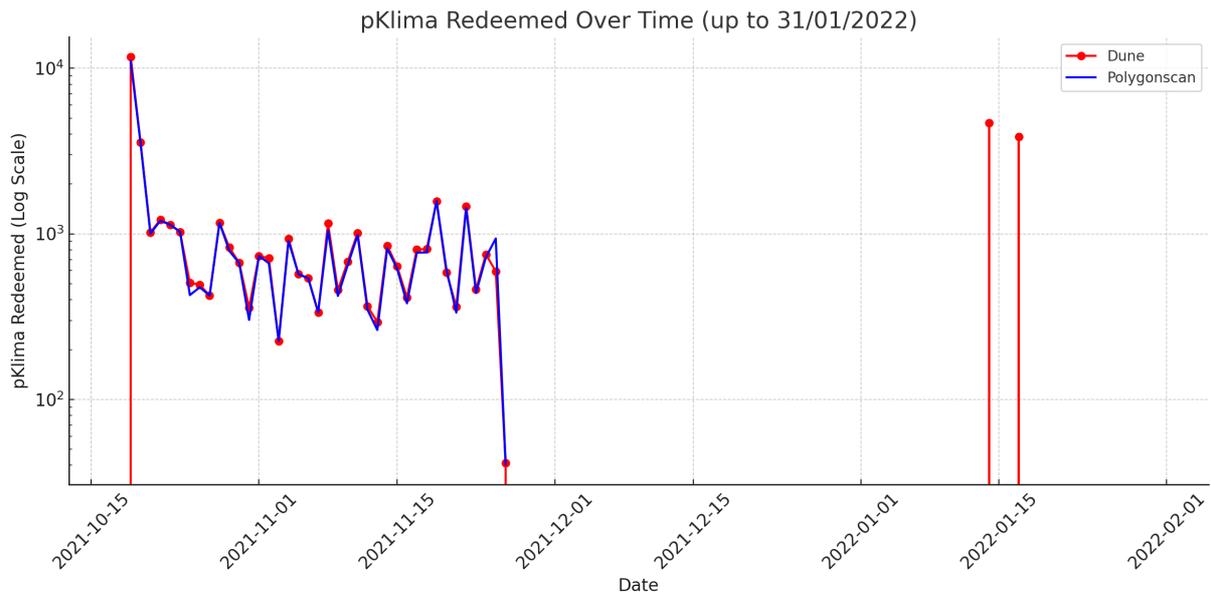


Fig. 3 pKlima redemptions according to Dune.com and Polygonscan

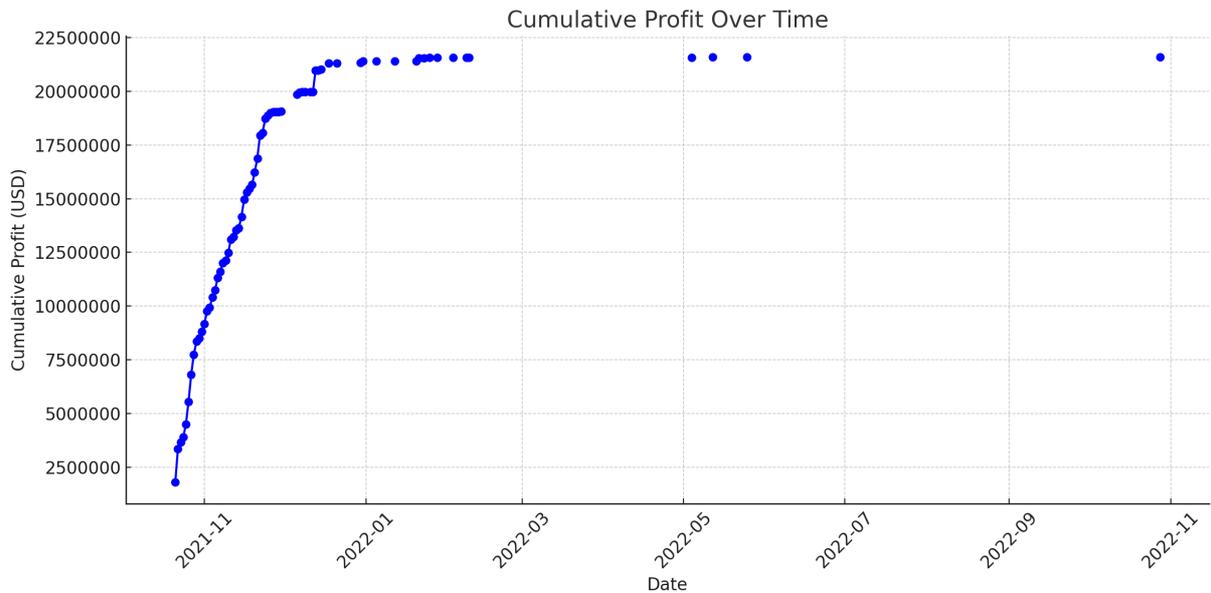


Fig. 4 pKlima sales according to Dune.com

Using the data from Dune and the formula mentioned before, it turns out that pKlima holders profited \$21,585,787.12 and, as Fig. 4 shows, almost all of them were made before the November 27 ban: a 208% return in a few months. In total, 12,103 pKlima were sold before the ban (fig. 5).

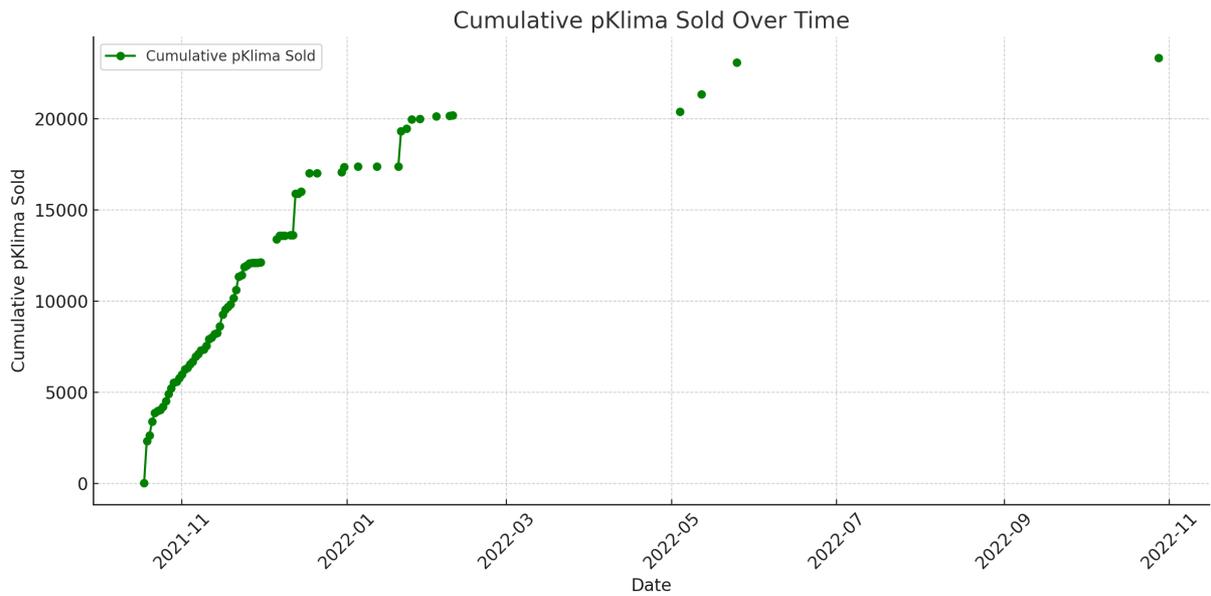


Fig. 5 Cumulative amount of sold pKlima

Another interesting data emerges from the Dune dashboard. It shows how, in the same period, 55,831 aKlima were sold. Given the price of 10\$ each, it creates a whopping \$64,801,377 in profits, as depicted in Fig. 6.

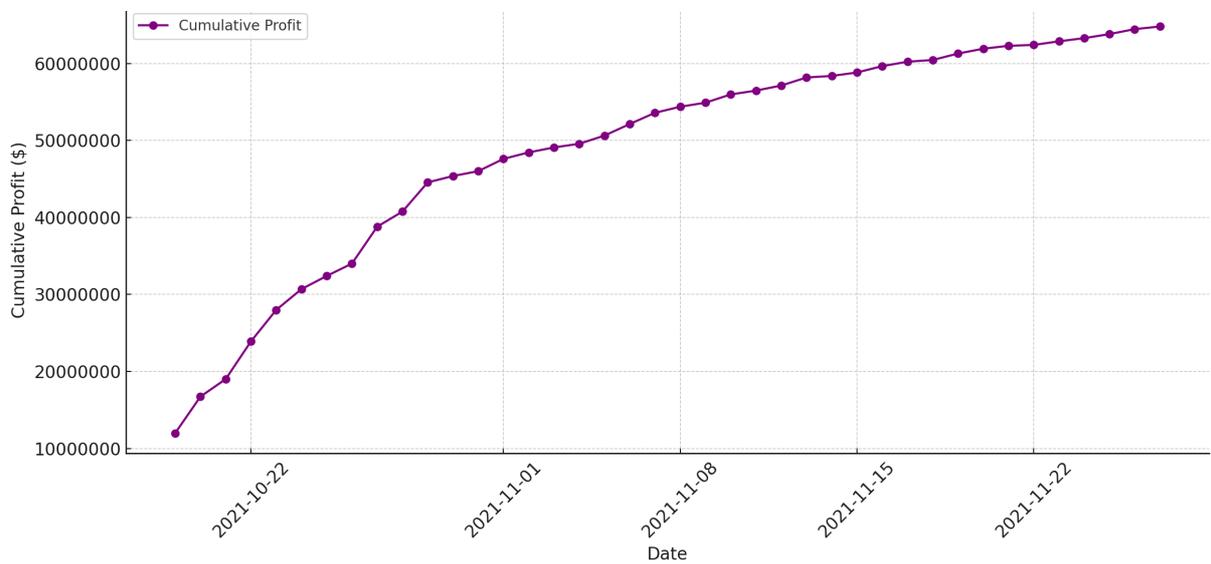


Fig. 6 Cumulative Profit from aKlima IDO Sells Up to November 27, 2021

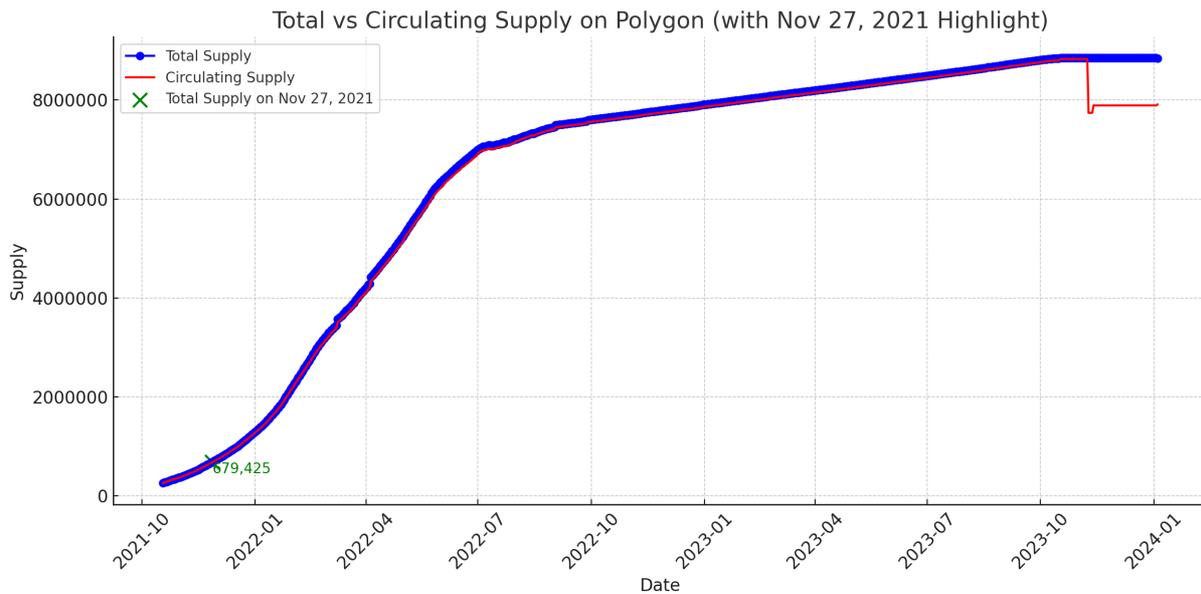


Fig. 7

Out of the 680'000 total Klima on November 27 (Fig. 7), around 96'000 came from the redemption of pre-launch tokens. Even if - according to the Dune dashboard²¹³ and repeated by many core members - the sales of pKlima and aKlima constituted a fraction of the total sales, nonetheless, they diluted the supply, further pushing down the prices. The step increase in the supply, fueled by the vast amount of pre-public launch tokens and the staggering interest paid on staked Klima, contributed to the rapid crash, even though the market capitalization proved to be more resilient.

The 3,3 strategy was unsustainable from the beginning, not because developers wanted to scam everyone but because of its design. Having at least a BCT in the treasury backing each Klima constituted a mechanism to provide value and avoid inflation. Users were encouraged to bond (1,1) assets to the treasury:

“KlimaDAO's bonds enable market participants to provide KLIMA/BCT LP, BCT/USDC LP, and BCT itself in return for discounted KLIMA tokens. Depending on market conditions, current bond discounts, and the size of the user's position, bonding can provide a cost-effective way to gain exposure to KLIMA.

For example, take the case where a participant wants to secure \$10,000 worth of KLIMA. Usually, they would place a market order on SushiSwap, and that would be the end of it.

In the case of KlimaDAO, a participant could provide \$5,000 worth of BCT liquidity and \$5,000 worth of USDC liquidity in a SushiSwap pool to receive BCT/USDC LP

²¹³ <https://dune.com/queries/279269/526856>

tokens and then sell that liquidity position to the KlimaDAO treasury for a bond priced at a discount to the current market value of KLIMA in BCT (given the bond discount is positive).

Hence, in the case that a bond is made when there is a 5% discount rate for participating in the BCT/USDC LP bond program on the provision of \$10,000 worth of BCT/USDC LP tokens to the treasury would secure \$10,500 worth of KLIMA.”²¹⁴ On November 27, 2021, there were almost 12’000’000 carbon offsets in the treasury; BCT were only 2’300’000, and bondholders provided the rest. The “decentralized central bank” failed to achieve what traditional banks do: fractional banking. Most of the treasury was composed of interest-bearing²¹⁵ liabilities fueling the inflationary mechanism (or rewards) that was one of the main selling points of the cryptocurrency. The supply tenfold in a month; it slowed down only in July 2022, as shown by Fig. 7, that is after the DAO voted to lower the APY almost to 0%²¹⁶. The flywheel that made the price go “to the moon” caused the crash, as illustrated by Fig. 1 in *The White Paper and its Consequences* chapter. The astronomic interest rates are the subject of many YouTube videos²¹⁷ and blog posts²¹⁸; the word “APY” appears more than 24’000 times in the KlimaDAO Discord server and, according to a widely circulated article (Alexander 2022), it constitutes one of the tricks used to lure in investors in these DAOs. These complex financial instruments, like magic²¹⁹, work until people believe in them, providing another example of the modern return of mystical practices, a theme I have already illustrated and to whom I will devote a chapter in the final section.

²¹⁴ <https://web.archive.org/web/20211123020927/https://docs.klimadao.finance/bonding-staking-and-game-theory>

²¹⁵ According to the Dune dashboard, bonds offered about a 5% discount on Klima, which translates in a 5% inflation *ceteris paribus* <https://dune.com/Cujowolf/Klima-DAO>
²¹⁶ <https://snapshot.org/#/klimadao.eth/proposal/0xfb993e02d6481161330c3064bbc64cd715eb9814d8bcaaa2a298a0a7aa3d27f1>

²¹⁷ https://www.youtube.com/results?search_query=klimadao+apy

²¹⁸ <https://medium.com/crypto-climate-and-carbon/what-is-klimadao-a-deep-dive-3c76204bfaac>

²¹⁹ https://worthwhile.typepad.com/worthwhile_canadian_initi/2010/01/finance-as-magic.html

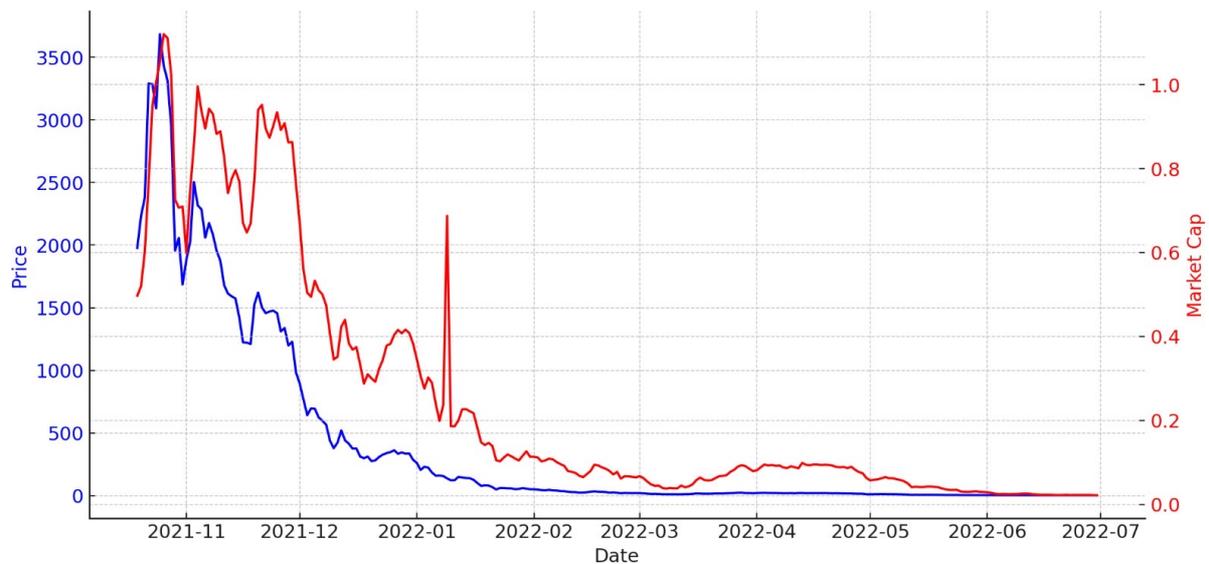


Fig. 8 KlimaDAO price (USD) and market cap (billions of USD), non logarithmic scale. Data from Yahoo! Finance and Dune.com

Critiques, however, focused especially on pKlima. Many users felt the team and VCs betrayed them; also, my source was shocked by their existence. Even if the first drafts of the official documentation don't mention it, the channel "Announcement"²²⁰ mentions it in the first message.

They became an issue in September 2021 (so before the public listing) when users noticed Marc Cuban received them²²¹; it was like the imagined horizontality was gone, VCs stepped in and got access to a mysterious resource that gave them an advantage. Furthermore, they did not appear in most of the articles or videos about KlimaDAO.

zoidbergz — 12/09/2021 12:56

How come Mark got a sweet insider deal over the rest of us? I understand Olympus DAO getting pklima, but Mark Cuban?

Entorg — 12/09/2021 14:20

²²⁰

<https://discord.com/channels/841390338324824096/841605164985090058/849725874491621376>

²²¹

<https://discord.com/channels/841390338324824096/841390338324824099/886519542120054784>

maybe give others the chance to acquire pKLIMA too? I don't think anyone who believes in the project minds having their token locked for years, especially when they get them at 0.01\$

The typical reply from promoters and core members didn't help. The 0.10\$ price per token is never mentioned, and neither the names nor surnames of the recipients appear. They simply stressed their importance for the long-term sustainability of the project or accused critical authors of spreading "fud".

Marcus Aurelius (10,10) | UTC-5 — 01/12/2021 23:03

they are not locked, they are vested based on supply

the more supply grows, the more pKLIMA can be redeemed

it's about aligning incentives

long term protocol success => long term pKLIMA holder success

Similarly, after Camilleri's article began circulating, core team members simply lashed the author and defended the pKlima mechanism and its crucial role in "aligning long-term incentives".

Oxymoron — 07/05/2022 22:52

I think Marcus shared some thoughts above. Fake News is about right... Or maybe more accurately, it is generally lazy journalism presenting opinion as fact

If the article might present some incorrect technicalities, it underlined how this mechanism benefitted insiders who made millions out of smaller, late-comers' investors. Instead of being open, "Klima core" members decided to cast a magic formula, a phrase constantly ushered to get rid of responsibilities. As I will explore in the next chapter, they resorted to this speechifying any time they faced a controversy. Instead of poor PR, I see another example of the return of irrationality and magic in contemporary capitalism despite the technical progress.

The rebuttal to these critiques from core team members and contributors

resonated with those given after the journalistic inquiry “Zombie on a blockchain” in May 2022 showed that most of the carbon credits bridged on the blockchain were worthless (Badgley and Cullenward 2022). Somehow anticipating the 2023 collapse, the article showcased how KlimaDAO and Toucan Protocol (the startup behind the BCT token) gave new life to decade-old worthless carbon credits generated by hydroelectric projects in China and India and unqualifiable for any market and now sold on the blockchain for hundreds of dollars ²²².

A spokesperson from KlimaDAO commented that the cryptocurrency “has never been proposed as a solution to underlying supply-side issues [rather, the group is trying to address] clear market failures present at the demand-side, where many are making huge profits from asymmetric information while normal people are locked out” (KlimaDAO 2022b).

KlimaDAO mitigation approach can be summed up as “If we buy all the old, low-quality credits, prices will go up, carbon price goes up and for industries will be more economical to develop carbon neutral solutions”. This “sweeping the floor” strategy requires blind faith in the markets, a feeling exposed by a core member when I asked for a comment on these accusations:

“KlimaDAO members intended to develop something for the Voluntary Carbon Market...The idea came about after learning the pitfalls of the VCM [...] It was clear that DeFi tech stack could be applied to help overcome those failures.”

Technology, like markets, is seen as a neutral device capable of providing the best outcome in the long end. While responding to a user lamenting the poor design of pKlima, a core member stated simply:

“we aim to scale climate action by bringing DeFi to environmental assets, starting with voluntary carbon credits. I'm sorry you've lost money, I know that's not easy - it's important to do your own research and not risk more than you can afford to lose with novel projects like KlimaDAO.” ²²³

²²² I will analyze the quality of the carbon credits in the next chapter

²²³<https://discord.com/channels/841390338324824096/841390338324824099/1019719149099950080>

This tone clearly screeches with the one contained in the white paper. While interacting on Discord, the platform, I also carried out a series of interviews through private messages and met two very small investors in person during an Ethereum conference in Copenhagen.

All the people interviewed told me they wanted to do something good for the climate. However, none of them defined themselves as a climate activist. Most are regular people trying to “do well while doing good”. I also got different answers from communities like Gitcoin, where I interacted with *solar punks* who showed a certain diffidence toward KlimaDAO. Among the vast realm of the *ReFi*, KlimaDAO is perceived as the most orthodox oriented.

Fungibility and the Tokenization of Nature

KlimaDAO and Toucan employ a mechanism that standardize nature. Rather than a peculiarity, this process of homogenization seems to be one of the tenets of the contemporary economic system, and not only for what we already said about the creation of the derivatives. In a recent contribution, the Swedish anthropologist Alf Hornborg (Hornborg 2023a) recognized how modernity and capitalism fostered cultural homogenization and biological monocultures. Setting profits as the primary goal encourages the adoption of whatever maximizes financial returns, creating incentives for standardization, the process of uniforming products and processes to simplify production and marketing. At the same time, the focus on efficiency prioritizes the most effective use of resources, often leading to the selection of specific, high-yield practices. Contemporary money serves as a universal measure of value, thus reinforcing this process of never-ending accumulation and homogenization; it is not hard to see how BCT and Klima's tokens exemplify these trends.

One of the prerequisites of industrial capitalism was the separation of economic activities from their environment. But workers were separated from their creations, too. The way how KlimaDAO managed the exclusion of the controversial gas HCF23 from their pool of underlying assets provides an interesting glimpse into the relationship between capitalism, money and the environment.

HCF-23 (trifluoromethane or CHF₃) is a greenhouse byproduct of HCFC-22 (hydrochlorofluorocarbon) production, used in refrigeration and air conditioning systems. Its global warming potential (GWP)²²⁴ is estimated to be about 14'000 times that of CO₂ over a 100-year period²²⁵. Under the Clean Development Mechanism (CDM) of the Kyoto Protocol, factories producing HFC-23 could earn carbon credits by destroying this gas. This created a perverse incentive mechanism: factories ramped up the production of this gas just for its destruction and the creation

²²⁴ "The Global Warming Potential (GWP) was developed to allow comparisons of the global warming impacts of different gases[...] it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂)" <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

²²⁵ <https://www.epa.gov/climate-hfcs-reduction/control-hfc-23-emissions>

of an enormous amount of carbon offsets given the GWP of this gas. The use of carbon offsets generated by the destruction of this gas was ruled out from the ETS in 2013²²⁶, while Verra announced on January 10, 2014, that it would no longer approve or accept new methodologies and projects related to HFC-23²²⁷; furthermore, the Montreal Protocol has initiated the phase-out of HCFC-22, that should be completely abandoned by 2030²²⁸.

Credits issued with this methodology were rendered useless because they did not represent any real reduction of carbon emissions, yet they still exist on the Verra registry. The Toucan bridge, so their tokenization and standardization, however, represents the lion's share of these “zombie credits” (Fig.1); few companies (Offsetra is among them) employed them between 2021 and 2023²²⁹ (fig. 2)

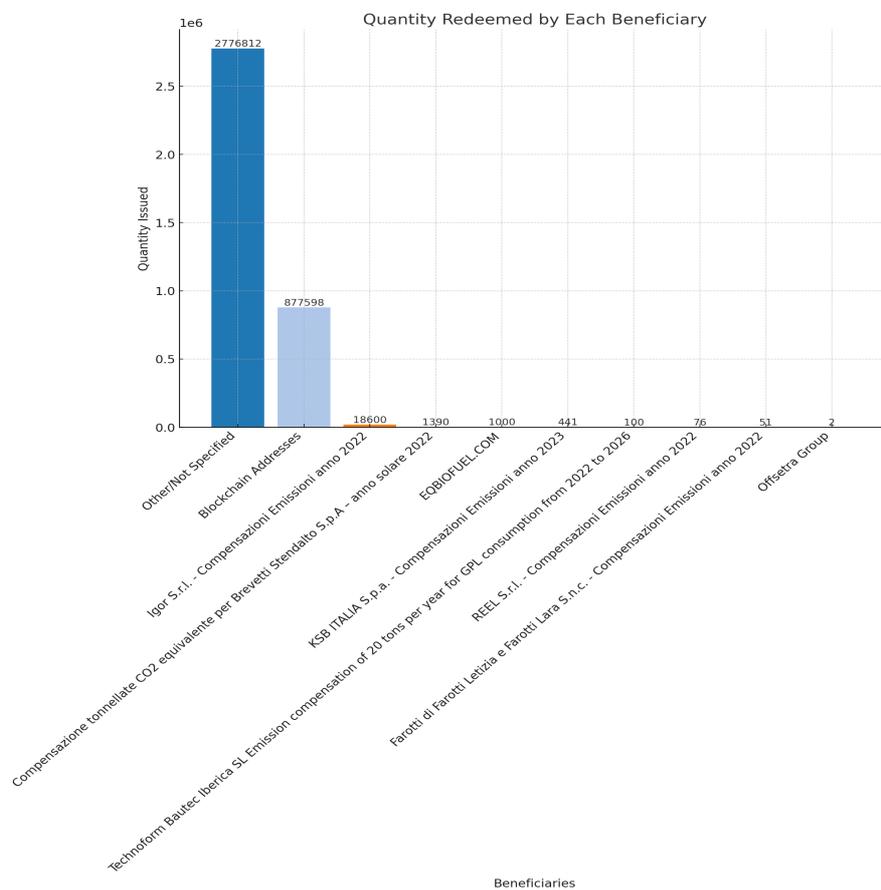


Fig. 1 Beneficiaries of the retirements

²²⁶ <https://www.demos.org/blog/when-markets-misfire-carbon-credits-and-case-hfc-23>

²²⁷ <https://verra.org/press/major-win-climate-voluntary-market-closes-door-hfc-23-projects/>

²²⁸ <https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol>

²²⁹ <https://registry.verra.org/app/projectDetail/VCS/439>

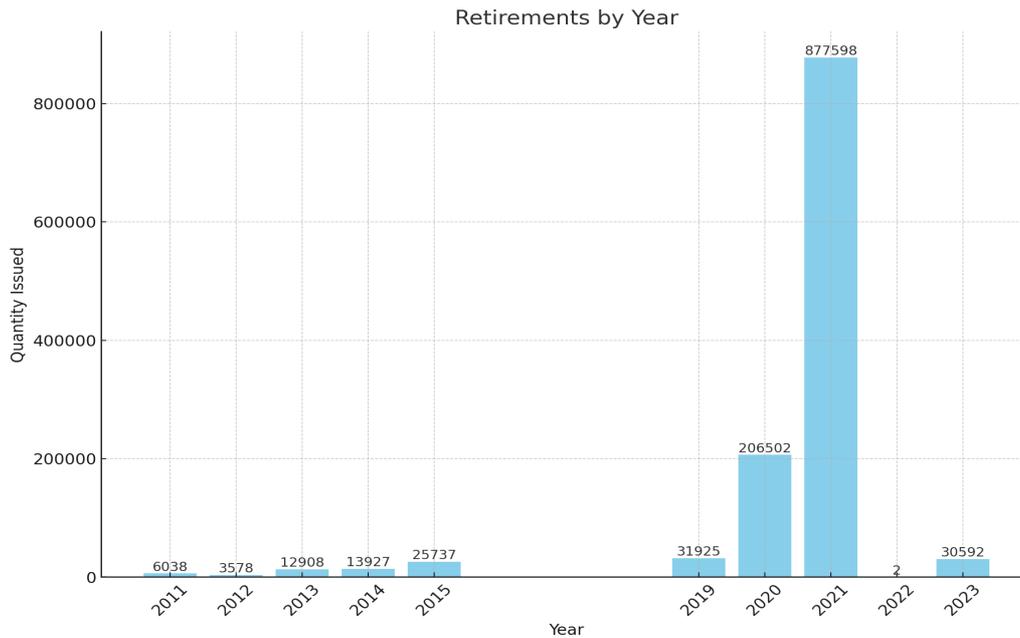


Fig. 2 Retirements per year. Beneficiaries not specified are not shown.

On the Verra register, it appears that the address “0xAf529400FF068AFbdc907c699B9184a4381481B0” bridged on Toucan 28999 units on 13/10/2021, a few days before the launch of KlimaDAO. This address is the Klima bridging address itself²³⁰, so Klima’s team provided initial liquidity by addressing these low-quality credits. But we will see how Offsetra and Creol always bridged similar, low-priced assets. In December 2021, in a telling interview on Carbon Pulse website²³¹, Raphael Haupt, Toucan Protocol CEO, stated that “The BCT criteria were designed with strong input from Klima DAO – not knowing HFC-23 credits are still floating around Verra. We will see how we can stop the bridging of these credits”, openly admitting that did he not know how carbon markets worked.

These movements did not go unnoticed, and a user questioned KlimaDAO about them already in November 2021²³²,

ucarbonregistry — 07/11/2021 06:20

²³⁰<https://forum.klimadao.finance/d/36-rfc-nct-value-allocation>

²³¹<https://carbon-pulse.com/146462/>

²³²<https://discord.com/channels/841390338324824096/878363632222732340/906774064125853736>

there is a reason why HFC-23 destruction VERs has not sold since 2008..such projects are part of the negative list on almost all voluntary registries

The subsequent answer by a core member summarized all the future justifications for any critique addressing KlimaDAO's carbon offset quality:

Marcus Aurelius (10,10) | UTC-5 — 07/11/2021 06:20

the only requirement for the BCT pool at this time is that the credits are Verra-issued and have vintage > 2008

remember a big part of Klima's goal is to raise the floor price of offsets, so getting these "crappy" offsets off the market helps to lift that floor

ucarbonregistry — 07/11/2021 06:21

no @Marcus Aurelius (10,10) | UTC-5 , these would never have been bought by any polluter in the first place

Marcus Aurelius (10,10) | UTC-5 — 07/11/2021 06:23

the goal is to raise the price of offsets - that renders more offset projects profitable and disincentivize greenwashing with cheap offsets

ucarbonregistry — 07/11/2021 06:23

yes but HFC-23 have been designed to stay on the floor for a reason, they are called perverse VCUs

Marcus Aurelius (10,10) | UTC-5 — 07/11/2021 06:23

many on-chain consumers of BCT such as individuals and protocols won't care nearly as much about project type or vintage as legacy offset consumers like corporate polluters

we don't want to incentivize crappy offset production, that's why we have the 2008 cutoff

but ultimately there will always be things at the bottom of the barrel

The conversation went on, and I will report the end of this exchange:

ucarbonregistry — 07/11/2021 06:33
*no new HFC can ever be created since 2012
but they have no market until KLIMA fell for them*

Marcus Aurelius (10,10) | UTC-5 — 07/11/2021 06:33
*ok friend
i appreciate your concern but it's late at night for me and i'm going to bed
i'm curious to hear the perpspective [sic] of others who have more experience in
the carbon marketes [sic]
but you seem to be acting a little "chicken little" about this small % of BCT's
composition*

Later, between the end of November and mid-December 2021, 846176 credits from the same project were bridged on-chain by a few addresses, as shown in Figure 3

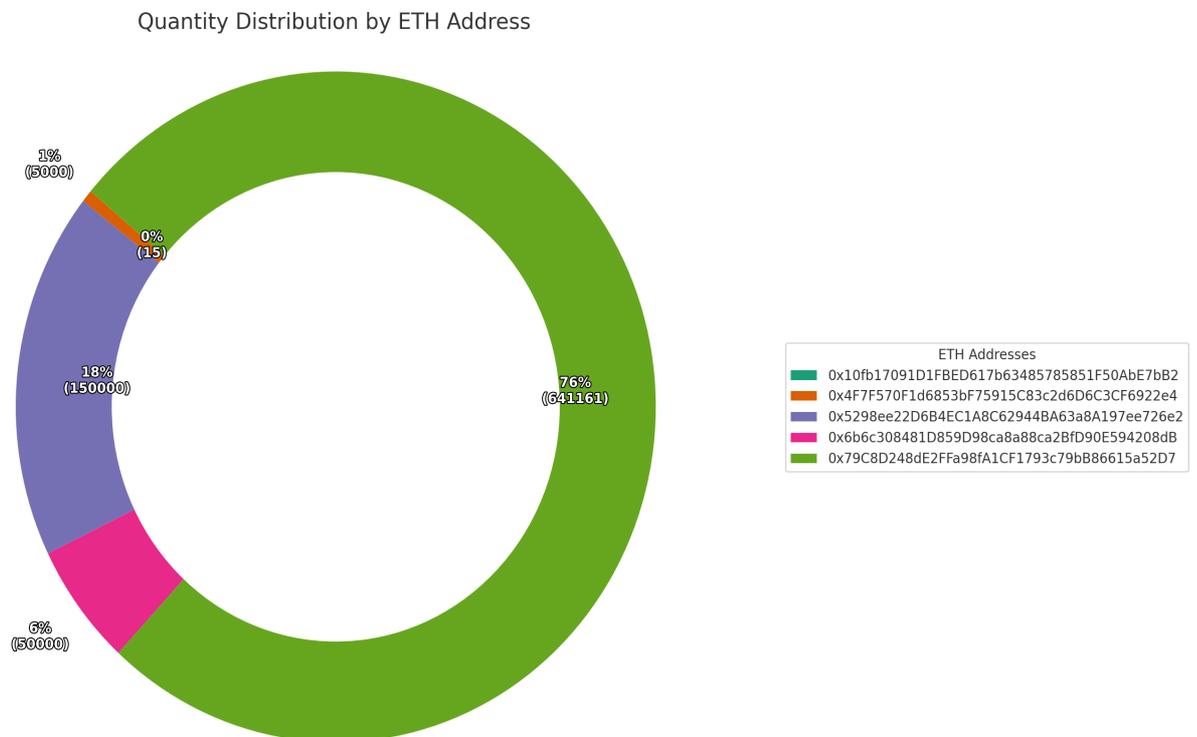


Fig. 3

These movements didn't go unnoticed, and users/investors complained about

how these credits would lower the overall quality and seriousness of BCT and KlimaDAO²³³, possibly affecting the “intrinsic value” of the token²³⁴.

Interestingly, not everybody was worried about these credits. The techno-optimist ethos characterizing utilitarian morality and philosophy reassured this user:

es0 — 13/12/2021 14:46

Considering that new pools are otw and in general newer vintages are starting to enter the BCT pool I don't see this as some existential risk.

Things move extremely quick in this space, and I think the carbon market folks will be surprised by how fast Klima adapts and keeps moving forward.

A similar *longtermist* view was employed to justify their presence in the BCT. The subsequent exchange summarizes how environmental and economic returns can go hand in hand only in a highly theoretical, long-term scenario:

Marcus Aurelius (10,10) | UTC-5 — 10/12/2021 22:42

*Well, the question is really "where does the intrinsic value for BCT derive?"
you're assuming it's from legacy corps who won't touch HFC credits with a ten foot pole*

but we have a bunch of degen apes and crypto protocols who just want to know they're doing something to help save the planet

and by taking those offsets off the market by bonding them into the treasury or burning them on-chain

we're preventing major polluters from doing the same

“Apes” is a slang term typically used in online investing communities to describe highly risky actors that invest according to a “follow-the-herd” rationality. In short, questionable credits were not a problem because, in the long run, the never-ending thirst for profits would have sold them.

Even if the “zombie credits” scandal eventually led to the separation between

²³³<https://discord.com/channels/841390338324824096/878363632222732340/918978790800125963>

²³⁴<https://discord.com/channels/841390338324824096/878363632222732340/918980802077933588>

Verra and KlimaDAO, it is clear that they do not differentiate substantially. They used the same rhetoric to defend themselves and rely on the same view of nature.

KlimaDAO and Verra see carbon offsets as fungible contracts, almost like securities traded on the financial market: fungible assets or goods are interchangeable because their individual units are identical in value and function. This means one unit of a fungible asset is the same as any other unit of the same asset, making them interchangeable without any loss of value or utility. Verra's "buffer pools" work on a similar principle, as we saw; KlimaDAO, in the end, adopted a similar solution, burning the same number of tokens ²³⁵.

This also meant removing from the circulation a determined amount of a currency, further stressing the continuity between cryptocurrencies and the modern economy. Contemporary capitalistic money, unlike pieces of art, gold, or jewelry, is fungible: it has a fixed value independent from its inner characteristics. A 100€ banknote can be exchanged for five 20€ banknotes or for another 100€ banknote; it has no exogenous characteristics or qualities. Furthermore, its history bears no value: until it is legally valid, a banknote will retain its value regardless of its emission date and the number of trades. On the other hand, a piece of jewelry or a painting cannot be simply exchanged for another one. Personal tastes, historical relevance, and individual emotions all influence the values of non-fungible items²³⁶.

We stated that, according to the Marxian theory of commodity fetishism, in capitalism, different objects become comparable commodities because of the adoption of prices. But this comparison is possible only under the social conditions of

²³⁵ <https://www.klimadao.finance/resources/klimadao-cleans-up-hfc-23-credits-from-the-base-carbon-tonne-bct-pool>

²³⁶ I am aware of Zelizer (1997) work on the significance of money beyond mere economic transactions, which might blur the difference between fungibility and non-fungibility, and its influence on current economic sociology and anthropology (eg. Bill Maurer). Zelizer proposed a theory of "multiple monies": money used in households is qualitatively different from money used in formal economics. In familiar context, for example, money is re-signified through earmarking practices, creating limited-purpose money, and thus assigning various cultural meaning to a medium supposed to be neutral; at the same time, life insurances "price-in" non-economic and cultural factors when valuing children's life.

Zelizer's approach is rooted in post-keynesian theories of money, which state that money in general is a credit-money, emerging from social relations rather than the neoclassical ahistorical evolution from barter. As highlighted by Lapavistas (2003), however, Zelizer's perspective fails to adequately address the homogeneity of money and its central role in the capitalist economy; from a marxist perspective, money functions in relation to the class and production structure of a given society. If markets and money organize society is not for their unique properties, but because socio-historical and material conditions made them so

industrial capitalism, in which we assist the shift from concrete labor to abstract labor. Abstract labor refers to the general expenditure of human labor power without regard to the specific form that labor takes. It's an abstraction from the concrete, particular kinds of labor, focusing on the common qualities that all forms of labor share – mainly human productive activity. In a capitalist society, abstract labor allows for the comparison and exchange of different commodities, creating the basis of the equivalence between different goods and services in the market, as they can all be reduced to the *socially necessary labor time* (the average amount of abstract labor time required to produce a given commodity under the prevailing social conditions of production). Technology played a crucial role in this process of abstraction: technological development changed the nature of labor itself. As machines and automation become more sophisticated, they alter the skills required for work and the nature of labor activities, making them more standardized and homogeneous. The results are the de-skilling of workers and their alienation, their separation from their product; the production process, including the organization of labor and the application of technology, is shaped and dominated by the imperatives of capital accumulation. Marx refers to the result of this process as the “real subsumption of labor under capital” (Marx 2005): the entire production is designed to optimize the generation of surplus value, with capital investment focused on technologies that enhance control over labor and reduce the reliance on skilled labor. Workers are further commodified, and capital’s necessities extend to personal lives, subsuming them. As the distinction between work and life blurs, inequalities arise; at the same time, however, profits’ needs lead to the constant increase in the “organic composition of capital” (the ratio of constant capital - investment in machinery, technology, and raw materials - to variable capital or labor costs). But, according to Marx, only labor can generate value, so despite increasing productivity, the rate of profit tends to fall because the total surplus value generated grows less rapidly than the total capital invested (the *tendential fall in the rate of profit*), generating constant crisis.

Marxian theories can be employed to read and explain this situation. Indeed, KlimaDAO and Verra participate in the capitalistic process of abstraction, expanding it to the environmental world, treating carbon reduction as fungible, abstract commodities even though they embed a tangible reality, and funneling technical developments toward profit extraction. In this sense, they actively subsume the

nature under capital to extract surplus. Even if Toucan recognized that “not all carbon offsets are equal”²³⁷, by attributing the same price to different offsets, it homogenizes them.

HCF-23 offsets were produced through an energetic expenditure that could have been used for something else; at the same time, they could be traded because of a complex techno-political *assemblage* and shifted capitals from more impactful projects. In short, an HCF-23 carbon credit is “worth” way more than the ton it represents, making the nature generating a carbon surplus they will appropriate, exactly like workers with the surplus value. Similarly, when a project certified by Verra registers a loss bigger than what has been set aside, it has to buy an equivalent amount of credits, even if these are less valuable (different projects have, indeed, different prices) or it caused a consistent spillover effect. As for the commodification of human labor, the commodification of nature rests on abstraction processes, the appropriation of a surplus, but, at the same, the depletion of the same source that generated that value.

²³⁷ <https://mirror.xyz/0x84F5590Ffe54e0f684b845807D036D8C1D18e684/Fqlc41yUQF4Jw-ppjJh1x28Wh143D2CjG1fGk3sGzWc>

Silence and Violence

KlimaDAO legitimized its actions by appealing to an already existing certification mechanism and to the power of markets. As we already said, bureaucracy, technology, and markets closely resemble each other when it comes to justifying an already existing order. The main issue concerning HCF23 credits is that they were created only because a market for them appeared, and producers spotted an enormous arbitrage opportunity: destroying the gas rather and selling the resultant credits was more profitable than improving the refrigeration liquids production, thus bearing no additionality. Technological innovations gave them new life: they were diluted and “made the same” of other credits.

Now we face circular reasoning: even if they were the result of market inefficiency and the creation of a “risk-free” asset, KlimaDAO proposed more markets to solve this problem. The previous comments from “Klima core” members provide the chance to better outline the theoretical framework we employed since it follows a frame that appeared many times.

As in magic, the belief system is never questioned, and it’s rather reinforced through an unnecessary and confusing jargon, somehow reminding the intricacy of magical spells: why owners of a financial asset (BTC) are defined as “consumers”? What is more interesting is the final insult. I had a similar experience when I questioned the very basis of KlimaDAO and is coherent with what anthropologists said about the relationship between imagination and violence: the notes written by two Maussian anthropologists, David Graeber, and Maurice Godelier are crucial to understanding the dynamics behind crypto projects. As we have shown, these spaces are permeated by the myths of market and technology superiority.

In Godelier’s *The Enigma of the Gift*, myths recount extraordinary events that are believed to have given rise to the present order of the cosmos and society. By attributing these events to supernatural characters, myths endow the social order with a sacred character, thus generating a convincing and impressive proof of the legitimacy and inviolability of the social order that myths themselves established. As a result, myths become one of the most effective sources of societal assent,

effectively representing a form of *hegemony* (Gramsci 2014), power without physical violence.

But the threat of violence is what, in the end, always legitimates myths. They provide a framework that rationalizes and normalizes violence, making it an integral part of the social fabric and governance. In Godelier's account, Baruya's myths legitimize men's powers: the violence against women in mythological narrations serves to legitimize the physical and structural violence against women. The imaginary plane is made by what humans add or remove from their real capacities; myths operate on a supernatural level, bestowing a sacred aura upon the events they narrate, and the human and non-human actors involved. Going against their narratives means going against the very foundation of the world order. This can explain the harshness shown by core members towards those who went against their narratives; besides the comments posted above, a co-founder stopped discussing with me after I criticized the idea of carbon markets. I always feared being banned from the Discord server after expressing my sincere opinions: I always had to censure myself a little bit. The source I mentioned at the very beginning of this work told me they received death threats and had to take a gap year to recover from the stress the whole situation created. They lamented, among other, how the only way to be heard was a 70 Tweets, heated thread.

Anthropology has shown that violence can have many forms, most of them non-deviant or without a single agent clearly responsible, and the concept of "structural violence" (Farmer 2004) describes how social arrangements or institutions harm or disadvantage and marginalize individuals and groups. These events are structural because they are embedded in the political and economic organization of a specific group and can be harder to notice and eradicate because of their nature.

An interesting reading of violence comes from David Graeber: the American anthropologists contrasted societies that rely on dialogue, negotiation, and consensus with those that use coercion and violence to maintain order. According to him (Graeber 2004), violence is the recourse of those who lack the ability or willingness to engage in intelligent response. It is a form of stupidity, as it is incapable of adequately responding to complex social situations, rather suppressing any form of dialogue; it is typical of hierarchical structures and authoritarian systems. These latter points are critical to understanding crypto-online communities. To further strengthen our working hypothesis - that cryptocurrencies reinforce current

bureaucratic and hierarchical structures rather than challenge them - it is now worth shortly recollecting what David Graeber also said about bureaucracies, and how they inhibit changes and innovation. In his “Utopia of Rules” (Graeber 2015), the American anthropologist linked them to a less sophisticated form of problem-solving, relying on rigid, oversimplified frameworks to understand and manage complex social realities; the same reductionism is openly present in the design of blockchains and carbon markets, as we saw. The subsequent “infantile stupidity” - generated by this lack of critical and deep understanding - consists of “attacks on those who insist on alternative schemas or interpretations” (80), shutting down possible forms of dialogue through physical or bureaucratic, structural forms of silencing. Bureaucracy and violence resemble each other, since they work to suppress any change. This ignorance, however, is not accidental but a byproduct of a system that simplifies social arrangements at the expense of a deeper understanding: we already saw how Verra and KlimaDAO rely on these simplified views of nature (Verra) and human relations (KlimaDAO and crypto-communities in general). As a result, according to Graeber, those in positions of power seldom need to engage in empathetic thinking, something that emerged in founders’ messages about the HCF-23 question and that will re-emerge again. If, in state societies, the monopoly of physical force is what back-up the bureaucratic apparatus, virtual one can have theirs as well, as we saw.

Cryptocontradictions

The absence of critical dialogue means that only glorifications and positive remarks are allowed, even though rhetorics surrounding cryptocurrencies (and bureaucratic institutions) stress their neutrality and value-free nature; what happens when a conflict arises?

We will now analyze how the contradiction between cryptos as a means of exchange and a store of value manifests in KlimaDAO and how it is managed by the community.

The risk of devaluation is one of the reasons stated by Satoshi Nakamoto and repeated in many other white papers explaining why a new form of money is needed; indeed, financial actors developed “currency swaps” to hedge against that risk, whose market register a multi-trillion dollar daily volume ²³⁸. But if the value of a

²³⁸ https://www.bis.org/statistics/rpfx22_fx.htm

currency is stable, then it is impossible to make any profit from it: the interests of two trading merchants or the interests between a business owner and a speculator diverge, and the creation of a vast array of derivatives is the result of it. While futures for cryptocurrencies exist so that investors can create some (although very simple) hedging strategies, when it comes to online discourse, users at the same time share news and hopes about “mass adoption” when cryptos are added as a payment method in a store and at the same time, hoping that the price will go “to the moon”.

These communities are thus animated by conflicting values: hoping that the value of Bitcoin remains stable means that it becomes economically sound for a business owner to use it in daily operations (“mass adoption”), which is the opposite of a steady price increase (“going to the moon”). The same paradox can be seen in KlimaDAO’s design: if the crypto succeeded in driving up carbon offset prices so that companies had to lower their carbon footprint by employing better technologies, then *ceteris paribus* Klima tokens would become almost useless since the carbon offsets would represent carbon reduction claims for a market not existent anymore. The *Pareto optimum* between financial and environmental returns appears to be, in the long end, inexistent. How are these paradoxes dealt with, then? We can observe a sort of rituality embraced by various users when it comes to express doubts so that they do not end up harming the group. These rituals aim to suppress any form of dialogue or changes, thus fitting the parallel between bureaucracy and violence described by Graeber.

The act of doubting about crypto is called “spreading fud” (Mann 2023) (fear, uncertainty, and doubt), spreading negative and unconfirmed news that will hurt the industry or a project; what is cast upon is a moral judgment: the person does something wrong because of jealousy, ignorance, malice or, more rarely, to profit by lowering the price and buy the token at a discount. Hoping for a mass adoption would imply spreading FUD. These terms appear hundreds of times in the KlimaDAO Discord server (fig. 1).

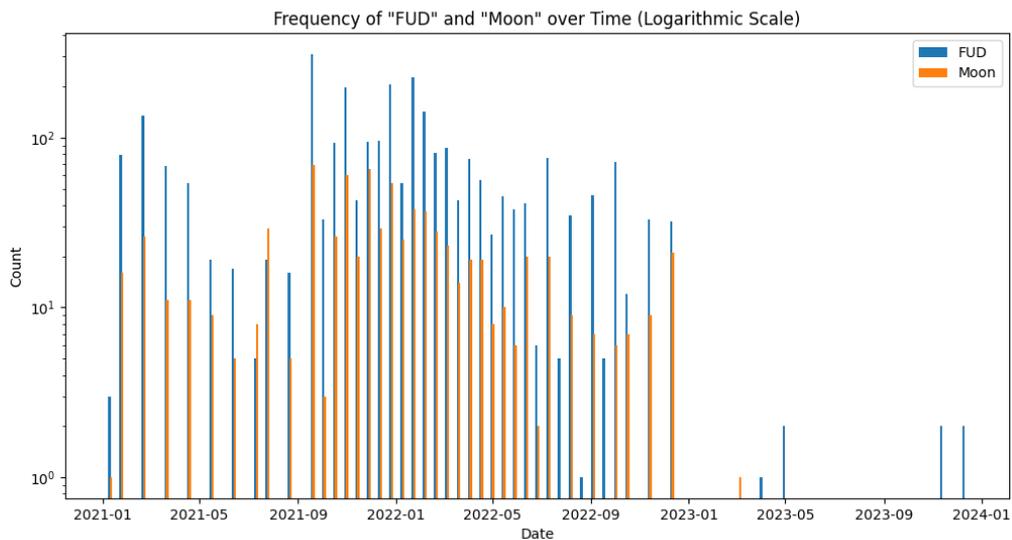


Fig. 1 Occurrence of terms “FUD” and “moon” in the “Klima-chat” channel on the KlimaDAO discord server

In KlimaDAO’s Discord server, we see at play the same dynamics characterizing other online blockchains’ communities, where despite the rationality and neutrality claimed by their members, mechanisms to solve conflicts are reduced to evaluative judgments. The moralistic aspect behind these sentences was made clear by a Klima core member:

Marcus Aurelius (10,10) | UTC-5 — 29/10/2021 19:48

[...] genuine questions are never FUD

FUD is about your attitude, not your content - at least IMO

This environment presents dynamics similar to the bureaucratic, violent deafness accounted for by Graeber. Before expressing criticism or doubts, users feel they must justify themselves to avoid any accusations:

jamesgreenhalgh7 — 28/10/2023 17:35

[...]

Im not fudding btw, i really like this project and im looking to invest, i just need to understand a few things

Oxviracocha — 10/07/2021 20:27

Wow thank you Archimedes for this explanation, I'm absolutely not trying to spread FUD, because I can clearly see Klima has great intentions , it's the underlying market that I'm really curious about. [...]

“Fud”, however, also became an ironic term, used to exorcise critical moments, like price drops:

Astro (🌱,🌱) — 04/11/2021 19:03

why we dip why can't be only pump? this a skem i fud fud fud fud

Similarly, criticisms towards pKlimas felt unjust and unequal by many members of the community, or the involvement of Mark Cuban is reduced to “fud” by core members:

Marcus Aurelius (10,10) | UTC-5 — 18/10/2021 18:34

Cuban fud is back tho

Marcus Aurelius (10,10) | UTC-5 — 16/01/2022 17:06

please read the whole Medium article for context on pKLIMA - it's a constant source of FUD [...]

BoujeeQ — 03/12/2021 16:55

I recognise the long term incentive alignment, but wouldn't increasing the amount of BCT needed to claim be beneficial for the treasury & price stability - The premium earned on redeeming is massive

Marcus Aurelius (10,10) | UTC-5 — 03/12/2021 16:57

hmm i'm not sure if that's a parameter that we could vote to adjust - it depends on the agreements made with pKLIMA holders, I'm not privy to those

i can't emphasize enough that pKLIMA investors took on a very risky investment [...]

honestly the whole pKLIMA FUD is very overblown based on my reading of the numbers

The last message, among others, shows at least some bad conscience from the core team, since the 0.10\$ price was well known, and shows how the horizontal and transparent structure of DAO are such as long their developers want to. As in offline communities, a moral judgment is used to reinforce a power structure; at the same time, potential threats are neutralized using wordplays that sound almost like the Cuna shamanic songs to the child bearer: why call investors “on-chain *consumers* of BCT” when they are buying an asset in the hope it will appreciate if not to create more confusion, trying to appeal to the authority of economics concepts?

At the same time, this wording is at the base of the success of KlimaDAO: the “*whole metaphor of DeFi protocol and liquidity, Zeus Olympus style [...] algorithmic reserve currencies*” and subsequent confusion is what made these projects successful according to Alexander (2022).

These phrasings seem to play the same political role of magical rituals that, as we have already stated, work thanks to a shared representation of reality that, at the same time, helps keep in place. The paragon, even if it might seem too hazardous at first sight, is backed by the role played by modern bureaucracies, whose primary role according to Graeber is reinforcing the status quo and suppressing changes through highly standardized procedures and hierarchical divisions.

I experienced the same lack of dialogue, followed by rhetorical word plays, when I questioned another core member about some shady trades involving pKlima holders and directly linked to KlimaDAO itself, as we will explore in the next chapter. My experiences were not unique. For example, when I asked one of the founders how the blockchain could fix the baseline approach that, as we have shown, has clearly political implications, I was told to “check out dMRV and groups like OFP and Regen to dive into more supply side solutions. [...] KlimaDAO is more of a demand side solution”. “Demand side” is an expression that the core team began to use regularly use after the publication, in April 2022, of the article “Zombie on the blockchain” (Badgley and Cullenward 2022) and the subsequent journalistic inquiry (Fig. 2), as we already mentioned in the Introduction. Criticisms were answered through standardized, almost ritualistic, sentences that never addressed the core of the question.

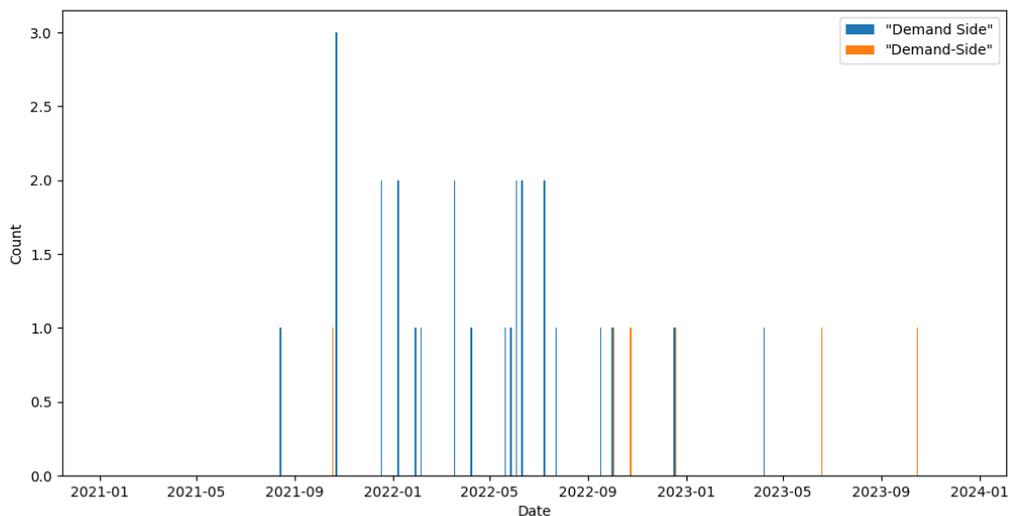


Fig. 2 Frequency of these terms in “Carbon Markets” “Chat” and “Question” channels

This investigation showcased the poor quality of the offsets. Besides the problematic HFC-23 credits, very little was said until then on the offsets, even though all data was publicly available on the Verra register and on the blockchain. The quality became a matter of interest only in May 2022, when Badgley and Cullenward (2022) noted how “nearly all bridged credits come from projects that have been excluded from major segments of the conventional offset market due to quality concerns”²³⁹. But this enquiry did not rely on private information or unsuspected development; it was public domain information that Klima was sourcing carbon credits through windmill farms in India, despite, according to a study “at least 52% of approved carbon offsets [in India] were allocated to projects that would very likely have been built anyway” (Calel et al. 2021) and REDD+ programs, which we thoroughly analyzed. I also did not do my *due diligence* at the very beginning of my investigation.

My informant, back in November 2021, was told by a broker that KlimaDAO’s theory of change was fundamentally flawed due to the quality of the credits, yet they were shortly reassured by Dionysus that there wasn’t a near-infinite supply of garbage credits. But honestly, everyone was a few clicks away to find it. These projects were listed on a public register, and the web has plenty of resources explaining what a

²³⁹ <https://carbonplan.org/research/toucan-crypto-offsets>

vintage is²⁴⁰ and why having an “old” one is bad²⁴¹. It should have been clear, especially to individuals adhering to orthodox economics, that if a commodity remained unsold for years, the market was communicating something about its inherent value. Or, more easily, how could owning a certificate stating that an Indian windmill or a Chinese dam produced fossil-free energy a decade ago represent an actual step to contain global warming? How could a few dollars offset hundreds of liters of fossil fuels? The combustion of one liter of gasoline produces 2,34 kg of CO₂. Carbon offsets are priced per ton, and this quantity is emitted by modern cars after 7000 kilometers. Assuming the fuel costs are 2€/l, this means externalities can be addressed through a 0,14% markup since some carbon offsets are traded for 2€/t, as we will see in the next chapter. Can saving the environment be so cheap? KlimaDAO’s theory of change was flawed because the whole “verification industry” (companies certifying carbon reduction like Verra and Gold Standard) presents numerous unsolved questions; these problems, we argued, are interconnected with the utilitarian ethos moving them and the subsequent loss of meanings caused by the homogenization process behind the financialization of nature. Carbon offsets are, in the end, a creative solution to avoid doing the simplest yet politically unacceptable thing: leaving fossil fuels under the ground. “Making things the same” (Mackenzie 2009) means avoiding any socio-political transformation.

In the current scenario, there is no space for structural changes, just for technical ones that are, however, perceived as revolutionary. This is the cultural milieu that generated KlimaDAO and was shared by its community so that the whole project and the messages it sent were coherent and legitimate in the eyes of the participants. A paper mentioning KlimaDAO (Sipthorpe et al. 2022) provides a relevant example; according to it, “the core problems with carbon markets include trust, transparency, and utilization. Trust in the legitimacy of the carbon savings being sold is a concern due to weak regulation and evaluation of projects, along with markets’ vulnerability to gaming and fraud and the potential for emissions leakage.

Poor industry accounting means the amount of carbon that has been offset is not accurately known. While offset generation data are publicly available, there is currently no database that aggregates this information.

²⁴⁰ https://en.wikipedia.org/wiki/Carbon_offsets_and_credits

²⁴¹ <https://www.consequence.world/climate-bible/what-are-carbon-offset-project-vintages-and-do-they-matter>

Complex trading processes and high transaction costs lead to lack of participation in voluntary markets and thus low liquidity and irrational price formation”. A perspective completely different from the one we developed but coherent with the one shared by KlimaDAO: according to which “the voluntary carbon market has historically suffered from illiquidity, opacity around buyers and sellers, and a lack of demand. It is very difficult for a buyer to navigate: to find the projects they want, to understand their specific qualities, and to purchase their carbon credits.”²⁴². The answer to Badgley and Cullenward (2022), then, could not but be:

“By incentivizing carbon credits to come onto the blockchain, we seek to fix the market failures that have enabled bad actors to leverage asymmetric access to information to turn huge profits while regular people are locked out of the market. Our solution increases transparency and market activity within what is currently an opaque, heavily intermediated market while empowering everyday people to participate in climate action and scale this key market.” (KlimaDAO 2022b). At the same time, “We’re not trying to be the standards body that’s creating the criteria by which we measure climate impact” (ibidem) and “the responsibility for certifying carbon credits falls to organizations known as standards bodies, such as Gold Standard or Verified Carbon Standards (Verra)”²⁴³.

KlimaDAO claimed its neutrality and denied any responsibility for the circulation of these “zombie credits”, subtly accusing Verra and Gold Standard.

The “verifying industry”, similarly, pleaded innocent. Already in November 2021 Verra stated that “Entities engaging with these activities and tokens do so at their own risk, are responsible for conducting their own due diligence, and cannot look to Verra for any matters connected with these activities and tokens”²⁴⁴; at the same time, Hugh Salway, head of environmental markets at Gold Standard said “You can see blockchain technology actually having a really important role because it’s a way in which you can create more security and transparency, but the way that this has been done in some examples is unhelpful.”²⁴⁵

²⁴² <https://www.klimadao.finance/resources/the-promise-and-challenges-of-carbon-offsetting>

²⁴³ <https://www.klimadao.finance/resources/the-promise-and-challenges-of-carbon-offsetting>

²⁴⁴ <https://verra.org/statement-on-crypto/>

²⁴⁵ <https://www.bloomberg.com/news/articles/2022-04-07/the-biggest-crypto-effort-to-end-useless-carbon-offsets-is-backfiring>

After CarbonPlan investigation, Verra halted the tokenization of new credits²⁴⁶, lamenting the confusion created by Toucan (and KlimaDAO): retiring a carbon offset should mean only that a company compensated its emissions, opposing their assetization (Birch and Muniesa 2020) and possible speculations.

What goes untouched here, however, is what Badgley and Cullenward (2022) criticized: the quality of the projects. The discussion is on its representations, another manifestation of the hyperrealistic phase of capitalism defined by Baudrillard, reinforced by the expansion of bureaucratic devices in all aspects of the life: “measures of achievement in general— succeed to the degree they become, in Nikolas Rose’s phrase, “technologies of the soul.” They provide legitimacy for administrative actions, in large part because they provide standards against which people judge themselves” (Porter 2002, 60).

When it comes to attribute responsibilities in a moment of crisis, KlimaDAO, Toucan and Verra recur to techniques that can resemble magical practices. As thoroughly explained in the first section, magic is a total social fact, a shared system of beliefs entangling relevant aspects of life. People do believe in magical acts, and contradictory and harmful elements are not considered: blame is eventually put on the performer who failed the procedure, not on the validity of the process itself. KlimaDAO, Toucan and Verra accused each other, acting like magicians who failed to perform their tricks. The anti-modern, irrational traits of bureaucracy emerge again, showing, furthermore, the inner fragility of these new forms of communities: the strictness and precision of modern regulations leave no room for dialogues and adaptive systems, freezing the present in a motionless state.

I will explore these arguments in the next section; what is interesting to note here is that technology, finance, and bureaucracy, three pillars of modernity and whose blockchain can be seen resulting from their convergence, all share a lack of trust in the other, suppose a certain distance. Even if purported as neutral, this strategy is riddled with political and moral aspects, as widely explained in Porter (2002, VIII-X, 60):

“Numbers, graphs, and formulas first of all as strategies of communication. They are

²⁴⁶ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/energy-transition/052522-as-verra-halts-tokenization-of-carbon-credits-toucan-vows-to-keep-web3-ethos-alive>

intimately bound up with forms of community [...] Quantification is a technology of distance. The language of mathematics is highly structured and rule-bound. It exacts a severe discipline from its user.

Reliance on numbers and quantitative manipulation minimizes the need for intimate knowledge and personal trust. Quantification is well suited for communication that goes beyond the boundaries of locality and community [...] In science, as in political and administrative affairs, objectivity names a set of strategies for dealing with distance and distrust [...] Where a consensus of experts is hard to reach, or where it does not satisfy outsiders, mechanical objectivity comes into its own. Rules are a check on subjectivity: they should make it impossible for personal biases or preferences to affect the outcome of an investigation.[...]In law, philosophy, and finance, where clever people make a business of exploiting ambiguities, much of what would otherwise go without saying ends up having to be said. [...]Scientific objectivity thus provides an answer to a moral demand for impartiality and fairness. Quantification is a way of making decisions without seeming to decide. Objectivity lends authority to officials who have very little of their own. The credibility of numbers, or indeed of knowledge in any form, is a social and moral problem. In theoretical writings, currents of mathematical realism, tending sometimes to geometrical or numerological mysticism, have run through science since Pythagoras [...] The dependence of categorization on circumstances would seem to imply that the categories are highly contingent and hence weak. Once put in place, though, they can be impressively resilient. Legions of statistical employees collect and process numbers on the presumption that the categories are valid. [...] They thus become black boxes, scarcely vulnerable to challenge except in a limited way by insiders. Having become official, then, they become increasingly real.”

The lack of credibility is compensated with top-down authoritarian practices, turning the pursuit of objectivity into the imposition of subjective moralities, as we saw in the attribution of responsibility for the zombie credits. An objective answer would have acknowledged the inner problems of carbon markets rather than defending subjective technicalities; such an answer, however, implies dialectical spaces and practices, both missing among these communities and in the broader epistemological framework.

An algorithmic riddle

Since setting up a dialogue was more complicated than I thought and it was not providing me any data, I decided to explore transactions on the blockchain and open this “black box” to see if something interesting would come out.

This operation turned out to be more complicated than planned. Klima tokens represent carbon offsets because they are backed at least by one BCT (Basic Carbon Tonne). According to the official documentation:

We say, "KLIMA is backed by carbon offsets" because each KLIMA token has an Intrinsic Value (IV) of 1 BCT - which means the treasury must have at least 1 BCT held in reserves in order to mint 1 KLIMA ²⁴⁷

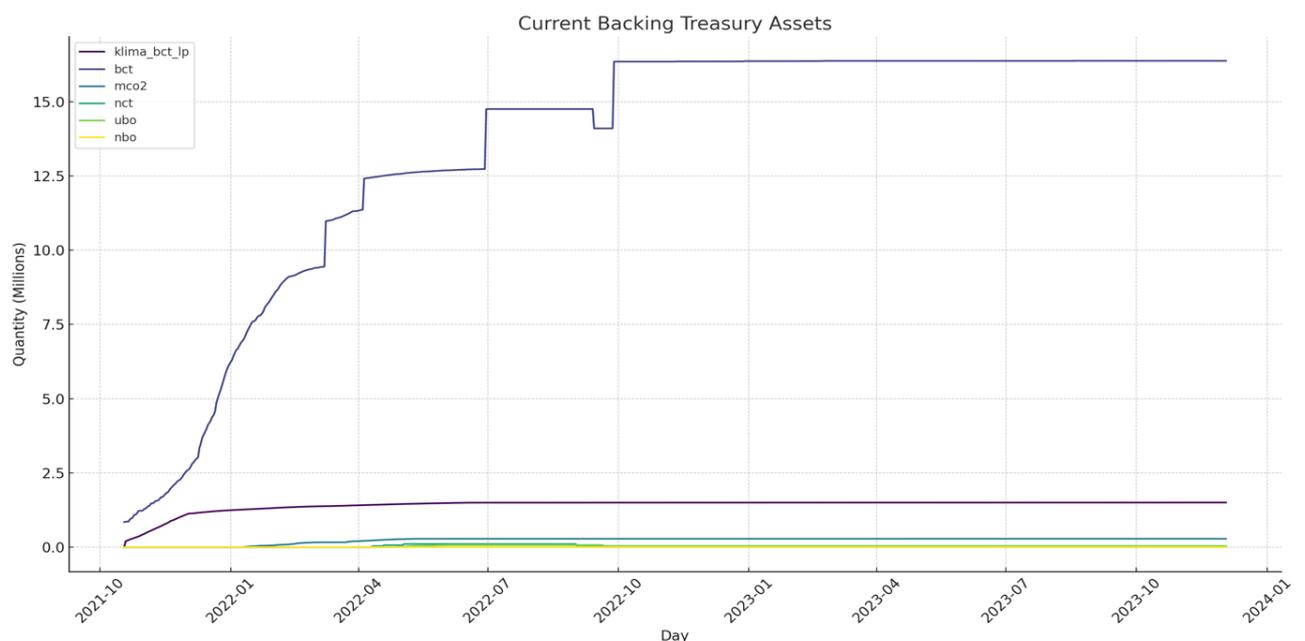


Fig. 1 Asset in KlimaDAO treasury. BCTs still constitute the main asset. Data from <https://dune.com/queries/203459/379978>

BCT still constitutes the primary reserve asset (Fig. 1); the token has been developed by people at Toucan, who are - according to Archimedes “the brains who, like, really took my original design and built it into something scalable, which you see

²⁴⁷ <https://docs.klimadao.finance/faq>

in those today is the toucan protocol”.

The source I quoted at the very beginning of this book worked as an interim executive at Toucan; they created a “bridge” between the Verra carbon offset registry and *DeFi* liquidity pools in SushiSwap; indeed, the main problem for Creole was finding the required liquidity to scale this new digital carbon market

Despite founders claiming to be carbon market veterans and experts on KlimaDAO’s website and through various interviews, the lack of expertise on carbon markets clearly emerged in an exchange between a user and a core member on Discord a few days before the public lunch, almost foretelling many crucial questions on the environmental impact of KlimaDAO that will emerge during 2022:

Karl-Heinz Häsliprinz — 03/10/2021 09:50

You need to focus on the primary market if you want to make a difference as long as you stick to existing already issued credits, the only way to have any impact at all is to buy compliance credits and drive up prices for emitters voluntary is fine, but only the primary market. Any project that can issue credits before having sold them is most likely non additional and selling hot air.

also, be careful on anything REDD. Don't trust it unless you know the uncertainty interval of their baseline calculations. And by "know" I mean actually having done the math yourself-

carbon is like crypto in the sense that if you don't understand the math, you are most likely being ripped off.

btw. I've not seen a single crypto-climate project that wasn't an obvious scam after looking into their math for more than a few minutes, so looking forward to seeing the Klima DAO do better...

Marcus Aurelius (10,10) | UTC+3 — 03/10/2021 16:17

Wow these are great insights Karl-Heinz, really glad to have you in our community to help us understand what it will take for Klima to have a meaningful impact

Short term, we just need to get the monetary system up and running, hence why we're buying up our initial credits on the secondary market. This will also drive up the floor price for secondary credits and prevent actual emitters from getting their hands on these cheap, low quality credits

Longer term we definitely want to fund projects directly, and potentially work with

other blockchain projects to implement more reliable monitoring and verification mechanisms than what exists currently in the traditional market

Karl-Heinz Häsliprinz — 03/10/2021 16:19

@Marcus Aurelius (10,10) | UTC+3 The voluntary market is massively oversupplied, so I doubt you will have a price impact in the near term (especially REDD+ Credits, due to inflated baselines).

Marcus Aurelius (10,10) | UTC+3 — 03/10/2021 16:36

Amazing, yours is definitely a perspective we need here to keep us focused on our mission of averting catastrophic climate change

My understanding is that the dev team decided to target voluntary offset markets precisely because they are lower quality, cheaper, and more likely to be used for greenwashing

Since Klima is not buying up these voluntary offsets to actually use them toward a carbon budget ourselves, but rather to lock them away in our treasury forever, we are more concerned with constraining supply than we are with the quality of the offsets we're buying - at least in the initial phase of our monetary expansion

It is surprising how stakeholders of a project that raised 7 million dollars and was about to go public with an initial market capitalization of around 80 million dollars could not correctly answer posted by an anonymous user, even if they claimed to know carbon markets “reasonably well”²⁴⁸.

The type of KlimaDAO offsets was already known in October 2021. Just two days after the warning messages by the user Karl-Heinz Häsliprinz, KlimaDAO published on its blog²⁴⁹ the projects that were about to be part of its ecosystem through BTC. They were the Wind Power Project at Jaibhim, the Pacajai REDD+ Project, and the Rimba Raya Reserve Project. The same projects are listed on the Offsetra website²⁵⁰, the company founded by Dionysus.

If we look closely at the offset projects KlimaDAO and Offsetra were targeting, things get interesting. I will try to reconstruct the chaotic first days, where probably few individuals linked to KlimaDAO scored huge profits, with the environmental question

²⁴⁸ As they proclaimed in the previously mentioned “Dox Party” episode

²⁴⁹ <https://www.klimadao.finance/resources/klimadao-carbon-sourcing>

²⁵⁰ <https://offsetra.com>

being a new way to extract profits from investors. Indeed, it should be remembered that *DeFi* trades are a zero-sum game: a profit can exist if someone else registered a loss, and their face value can increase if funds from *TradFi* are brought in.

Now, we will explore the projects that put this wheel in motion.

Offsetra chose to buy offsets from a wind farm in India since “carbon offsets help make this project possible by providing the necessary financing to make these energy installations cost-competitive with legacy fossil fuel technology in the region [...] By supporting these projects with carbon offsets, we can start to disrupt the fossil fuel generation with an additional revenue stream, which ensures local people are not exposed to increasing costs or reduced accessibility to electricity!”²⁵¹. The wording is interesting because it suggests that this project is still looking for funds or has might shut down if capitals are not collected; the website mentions that it delivers “localized co-benefits” aligned with Goal 7 - Affordable and Clean Energy. But the Wind Power Project mentioned was built in 2012 by the Serum Institute of India (SII)²⁵², the largest producer of vaccines in the world, and scored 3.2 billion dollars in revenue in 2022²⁵³; despite the acronym SII appears on the official documentation of the project, it is not mentioned on Offsetra or KlimaDAO websites.

The Rimba Raya Biodiversity Reserve Project “aims to reduce Indonesia’s emissions by preserving some 64,000 hectares of tropical peat swamp forest. This area, rich in biodiversity including the endangered Bornean orangutan, was slated by the Provincial government to be converted into four palm oil estates” according to the Verra website. The project is ongoing, with the Crediting Period Term ending in 2039²⁵⁴.

The Pacajai REDD+ Project, we read on the Offsetra website, would avoid “the net emission of 264.116tCO₂e for 40 years of the credit period of the project. This objective will be achieved by managing the land in the form of a "conservation

²⁵¹ <https://offsetra.notion.site/Wind-power-in-Gujarat-Jaibhim-682e1da4f1b44cd4bc84697443bf8>

²⁵² <https://cdm.unfccc.int/Projects/DB/LRQA%20Ltd1340102581.62/view>

²⁵³ https://www.careratings.com/upload/CompanyFiles/PR/03012023080634_Serum_Institute_of_India_Private_Limited.pdf

²⁵⁴ <https://registry.verra.org/app/projectDetail/VCS/674>

reserve private sector”, developing and implementing a management plan. This plan includes rigorous monitoring and inspection plan based on existing experience of surveillance activities underway in the area since 2008”; furthermore, it appeared to be actively involving native populations since the “monitoring activities will be undertaken actively with the participation of local settlers who live within the project boundaries” and Offsetra claims to have chosen this project because “not only produced environmental benefits but impacted the United Nation’s sustainable development goals”. However, Verra put the project on hold²⁵⁵ because it is under investigation in Brazil for land grabbing²⁵⁶: the project settled on public properties rather than privately owned. And apparently, local populations hardly saw any benefits: “They came here with beautiful words, saying their interest was in preserving the forest, in keeping the trees up because it’s important for oxygen [...] They said they were going to lend us money for equipment, but we never heard back from them. What am I supposed to do?” told Izaurino Alves, a local resident, to the journalist Tom Pettifor; indeed, this project is at the center of a well-documented and still ongoing investigation led by The Mirror during October 2023²⁵⁷. Another unsettling element in this story is how ADPML, the company behind this project, acquired the capital and the land: it has been founded and operated by the sons of one of the thieves involved in the 1983 Brink’s-Mat gold heist in London²⁵⁸, whose money was never fully recovered and is suspected to have financed many real estate investments thanks to off-shore financial institutions; many details lead to believe that ADPML is among those. ADPML, short for Avoided Deforestation Project (Manaus) Ltd, shares the same address as Oak Group, a self-appointed “off-shore financial powerhouse”, in Guernsey, and Oak Trust - part of Oak Group - administrates the Pacajai REDD project and the now suspended Kariba REDD project, since administrator were pocketing the money intended for local populations²⁵⁹.

²⁵⁵ <https://registry.verra.org/app/projectDetail/VCS/981>

²⁵⁶ <https://oimpecto.com.br/2023/10/05/empresas-sao-acusadas-de-grilagem-de-terras-em-esquema-para-venda-de-credito-de-carbono/>

²⁵⁷ <https://www.mirror.co.uk/news/world-news/amazon-people-had-no-help-31271025>

²⁵⁸ <https://reddmonitor.substack.com/p/verra-has-suspended-the-pacajai-adpml>

²⁵⁹ <https://www.bloomberg.com/news/features/2023-03-24/carbon-offset-seller-s-forest-protection-projects-questioned>

Given the novelty of this journalistic investigation and the general decline in Discord activity, the quality of these credits has not yet been discussed on the KlimaDAO discord server.

What should be done in case some credits become controversial or illegal? Verra's Verified Carbon Standard (VCS) Program Guide²⁶⁰ requires the creation of a "buffer pool", a reserve of carbon credits set aside to address the risk of reversals - events that cause the release of carbon back into the atmosphere - in carbon offset projects. Indeed, a certain percentage of the generated carbon credits are contributed to the buffer pool instead of sold. This percentage is determined on the risk assessment of the project; in the case of a reversal event that caused a loss equivalent to 100t of sequestered carbon, the same number of credits will be deducted from the pool; in the case of a loss larger than what set aside, the project must deposit (so buying) the difference in the pool. The guideline, however, does not state what happens if the project refuses to do so: neoliberal governance.

On the Pacaj REDD+ webpage, it is possible to download an updated list containing all the beneficiaries, people, or organizations that retired these credits. Three Ethereum addresses appear in it:

- 0x5e037e2f5C92dc9E180426171b62Da65d3AD5325,
- 0xAf529400FF068AFbdc907c699B9184a4381481B0
- 0xD2B66D6F50243D19Dc3Ae48E6C0CDc57C042428A

While the last one retired just 30 carbon units, the first two retired 129'000 and 100'000 units, respectively, with a 2014 vintage. Even more interestingly, they did it a few days before the public lunch of KlimaDAO, respectively, on 13/10 and 14/10. Who they are? The address "0xAf529400FF068AFbdc907c699B9184a4381481B0" is the Klima bridging address itself²⁶¹, so it makes sense to appear on the list: KlimaDAO needed carbon credits to back up Klima, and that they choose this project.

²⁶⁰ <https://verra.org/documents/vcs-program-guide-v4-4/>

²⁶¹ <https://forum.klimadao.finance/d/36-rfc-nct-value-allocation>

Who is 0x5e037e2f5C92dc9E180426171b62Da65d3AD5325? Exploring its history with PolygonScan, we see that it minted the first batches of BCTs²⁶² and continued to be linked to Toucan: as we can see from this transaction²⁶³ on February 10 2022, it minted and deposited 50000 BCT into Toucan Protocol; such units go under the name of “TCO2-VCS-934-2015”, and indeed on the Verra register, the “Mai Ndombe REDD+ Project”, ID 934, registered a 50’000 retirement the day before in the name of that address. So we can claim that this account is embedded with Toucan, bridging carbon credits, and we can infer that the holder worked closely with KlimaDAO. On October 18, 2021 it began bridging and distributing the digitalized credits in form of BCT.

This account immediately sent 63710 BCT to another wallet²⁶⁴, probably belonging to a very wealthy individual according to its transactions, and 240 BCT to another account holding 1’000’000 pKlima²⁶⁵. These shady trades, that ended up distributing a vast amount of BCTs right before their listing and comprised wallets to both Toucan and Regen Network, did not go unnoticed on the Discord server, and their history was meticulously reconstructed by a user during December 2021²⁶⁶, that, however, trusted the founding team and just admonished them to have distributed pKlimas too easy. Nevertheless, in October, just after the launch, few users noticed it²⁶⁷.

What in both cases what went unnoticed was the bridging of carbon tokens; indeed, I found the address 0x5e037e2f5C92dc9E180426171b62Da65d3AD5325 while exploring the Verra register. I began realizing that what most of the users were complaining about, the arbitrage made through pKlima, was not the only profit opportunity they had.

This address also bridged credits from the Cordillera Azul National Park REDD+

²⁶²<https://polygonscan.com/txs?a=0x5e037e2f5c92dc9e180426171b62da65d3ad5325&p=2>

²⁶³<https://polygonscan.com/tx/0x9f452dac05e90bcf8650a5ef0152b3f51993f19784eb81611d873479b8c6c54b>

²⁶⁴<https://polygonscan.com/address/0x108a95791570368560cc7f797db2c12003364867#tokentxns>

²⁶⁵<https://polygonscan.com/advanced-filter?add=0xa9aa11a4fe4844b07fa4d2241285db8dc0f37826&tadd=0xa9aa11a4fe4844b07fa4d2241285db8dc0f37826&tkn=0x0af5dee6678869201924930d924a435f6e4839c>

²⁶⁶<https://discord.com/channels/841390338324824096/888137769745002498/921633328656965672>

²⁶⁷<https://discord.com/channels/841390338324824096/841390338324824099/899991916165345281>

Project ²⁶⁸, a project that already appeared on the Creole website in 2020²⁶⁹ and is still available on KlimaDAO's child project, CarbonMark²⁷⁰. It should be noted that this project went under serious scrutiny during 2023: according to an investigation led by The Associated Press, the "project was flawed from the beginning, with far too many carbon credits generated and exaggerated benefits that allowed the nonprofit running the park for the Peruvian government to make more money — even as the tree canopy shrank"²⁷¹.

Unlike Bitcoin or Ethereum, Base Carbon Tonne tokens (BCTs), are not minted by nodes competing to resolve mathematical puzzles. They are digital representations of something else; if computers and electricity are the leading voice costs for the former, for the latter, verified carbon trades are the main costs. Furthermore, analyzing the journey of such credits would also show if their owners dumped them in the "black hole"²⁷² constituted by KlimaDAO's treasury in the hope of making carbon offsets too expensive for big companies or trading them for a profit, so proving that the point of these operations was to make a financial gain.

If exploiting a market discrepancy is, under capitalism, a legitimate and moral activity, trading upon confidential information is strictly prohibited. Where to draw the line between insider and lawful trading remains a thorny topic, which will not be explored because I lack the legal background necessary to explore such topic. Instead, I will present to the reader how few stakeholders – defined here as those who held pKlima - bridged and sold digitalized carbon offsets in the first weeks of the projects and what it means.

Those addresses appear on the Verra register and, at the same time, they hold or held pKlima:

- 0x4058f2d1e5851e25b6809fff874380843610c222
- 0x862be47d3461caf475e02b9c5473bdd3d3766df8
- 0xc8e9ecfa3f9d6851fa04d10d421405368c96f1e9

²⁶⁸<https://registry.verra.org/app/projectDetail/VCS/985>

²⁶⁹<https://web.archive.org/web/20200923232601/https://beta.creol.io/#/home>

²⁷⁰<https://www.carbonmark.com/projects/VCS-985-2013>

²⁷¹<https://apnews.com/article/peru-cordillera-azul-carbon-credits-deforestation-d02b39c4f90896c29319f31afef11b2d>

²⁷²<https://www.klimadao.finance/resources/introducing-klima-leveraging-the-supply-of-carbon>

- 0xeedd99bbf1b856f9841b4102dad349ad996dbd11
- 0xedf89984c7a9b25d05409ba32ca6e284b029384c

Different kinds of people held pKlimas. However, the following message suggests that they may belong to people close to the founders; the “Klima core”, as we said, was composed by those who were there before the public launch and, simultaneously, decided on vital questions.

Marcus Aurelius (10,10) | UTC-5 — 29/09/2021 17:44

[...]

Right now the Klima core devs are the primary buyers for initial supply, but they are also working with major institutions and big players to set up a steady flow of on-chain offsets beyond what the DAO can finance

Each account executed hundreds of trades during 2021, while very few during 2022 and almost none during 2023. Their balance went from hundreds of thousands to dollars to almost zero, having their funds moved to other wallets and eventually redeemed for US dollars. Table 1, extracted from the data provided along with Badgley and Cullenward (2022)’s paper, shows the quantity, the vintage and the project type of the credits these addresses retired, along with their cancellation date from the register.

Issuance Date	Vintage End	ID	Name	Country	Project Type	Total Vintage Quantity	Credits Issued	Retirement/Cancellation Date	Retirement Beneficiary

1		31/	78	Hyund	South	Energy	1,384	37	18	0x4058
1/08/2021	1/	12/20	6	ai Steel	Korea	industries	,786	,500	/10/20	f2d1e5851
	0	15		Waste		(renewable/			21	E25b6809f
	1/			Energy		non-				Ff8743808
	2			Cogenera		renewable				43610C22
	0			tion		sources)				2
	1			Project						
	5									
2		31/	81	Bull	Belize	Agricult	121,8	10	18	0xEdF
0/07/2021	1/	12/20	2	Run		ure	30	0	/10/20	89984C7a
	0	09		Overseas		Forestry			21	9B25d054
	1/			Forest		and Other				09ba32ca
	2			Carbon		Land Use				6e284B02
	0			Project						9384c
	0									
	9									
1		31/	81	Bull	Belize	Agricult	121,8	30	18	0xEdF
2/07/2021	1/	12/20	2	Run		ure	30		/10/20	89984C7a
	0	09		Overseas		Forestry			21	9B25d054
	1/			Forest		and Other				09ba32ca
	2			Carbon		Land Use				6e284B02
	0			Project						9384c
	0									
	9									
0		31/	11	Anhui	China	Energy	34,94	4,	18	0x862b
9/06/2021	1/	12/20	21	Guzhen		industries	7	311	/10/20	e47d3461
	1	15		Biomass		(renewable/			21	caf475e02
	0/			Generatio		non-				b9c5473b
	2			n Project		renewable				dd3d3766
	0					sources)				df8
	1									
	5									

0		31/	11	Anhui	China	Energy	34,94	2,	20	0xc8e9
9/06/2021	1/11	12/2015	21	Guzhen Biomass Generation Project		industries (renewable/non-renewable sources)	7	000	/10/2021	eCFa3F9d6851Fa04D10d421405368C96f1e9
1		31/	53	78	Turkey	Energy	93,38	48	20	0xEdF
4/10/2020	1/11	12/2015	5	MW AKOCAK Hydroelectric Power Plant		industries (renewable/non-renewable sources)	3	0	/10/2021	89984C7a9B25d05409ba32ca6e284B029384c
1		08/	10	Natura	India	Energy	729,3	20	18	0xEeD
0/07/2020	1/11	09/2011	02	l Gas based grid connected power project at Peddapuram, A.P. by Gautami Power Limited		industries (renewable/non-renewable sources)	15	,988	/10/2021	D99bbF1B856f9841B4102dad349AD996Dbd11
2		31/	90	Hebei	China	Energy	456,9	1,	18	0x862b
9/03/2020	1/11	12/2019	3	Guyuan County		industries (renewable/	68	000	/10/2021	E47D3461caF475E0

	1/2019			Dongxinying 199.5 MW Wind Power Project		non-renewable sources)				2b9c5473BDD3D3766dF8
16/06/2016	1/2016	31/12/2012	1525	Wind power project at Jaibhim by SILL	India	Energy industries (renewable/non-renewable sources)	64,029	580	19/10/2021	0xedf89984c7a9b25d05409ba32ca6e284b029384c
11/12/2012	1/2012	31/12/2009	426	Waste water Treatment with Biogas System in Palm Oil Mill at Sawi, Chumporn, Thailand	Thailand	Waste handling and disposal	22,609	4,311	18/10/2021	0x862bE47D3461caF475E02b9c5473BDD3D3766dF8
11/12/2012	1/2012	31/05/2012	426	Waste water Treatment with Biogas System in Palm Oil	Thailand	Waste handling and disposal	10,468	159	18/10/2021	0x862bE47D3461caF475E02b9c5473BDD3D3766dF8

	2			Mill at Sawi, Chumporn, Thailand						
1		31/	42	Waste	Thailand	Waste	28,52	10	18	0x862b
1/12/2012	1/	12/20	6	water Treatment with Biogas System in Palm Oil Mill at Sawi, Chumporn, Thailand		handling and disposal	3	,530	/10/20	E47D3461 caF475E0 2b9c5473 BDD3D37 66dF8
	0	11							21	
	1/									
	2									
	0									
	1									
	1									

Tab. 1

Once a carbon credit is used for offsetting purposes, it is "retired" to prevent double counting. This means the credit is officially recorded as used and is taken out of circulation, to ensure that the total amount of emissions reductions remains accurate. These addresses, then, bought these credits before these dates, and were removed from the register when bridged on the blockchain.

Analyzing their transactions shows up some ambiguous trades.

The Belizean and the Indian projects appear on Offsetra website, so we can suppose that KlimaDAO founders might know very well who is behind 0xEdF89984C7a9B25d05409ba32ca6e284B029384c. Using [archive.org](https://web.archive.org/web/20201129080550/https://offsetra.com/projects/bull-run), it appears that the "Bull Run" Belizean project was already showcased on Offsetra website²⁷³ in 2020; the website back then did not mention blockchain or cryptocurrencies,

²⁷³<https://web.archive.org/web/20201129080550/https://offsetra.com/projects/bull-run>

portraying itself as a platform to buy carbon offsets to finance projects that otherwise “could not continue without support from offsetters like you”. Exploring its Verra register page ²⁷⁴ is illuminating (Figures 2, 3): the project almost saw no retirements after 2013 until Offsetra stepped in 2020.

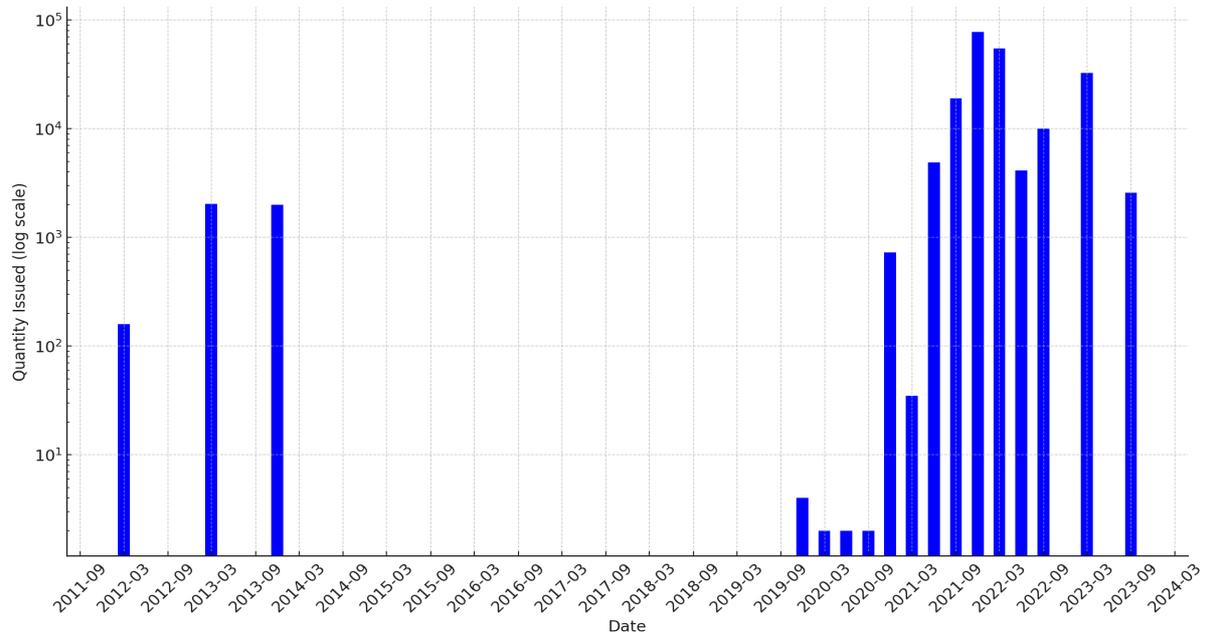


Fig. 2 “Bull Run” carbon credits retirements, expressed in units

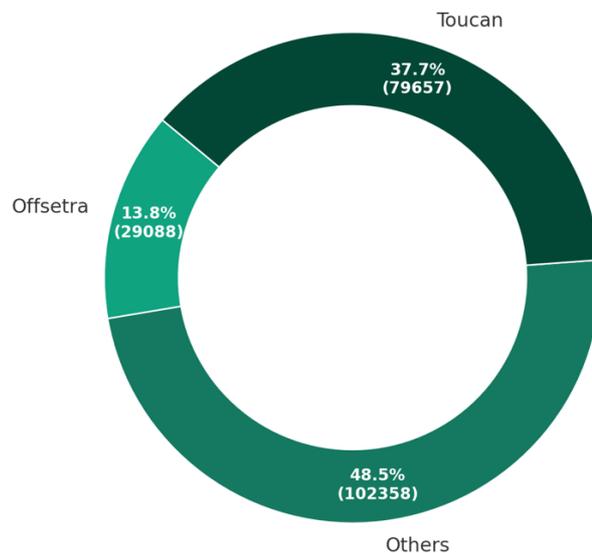


Fig. 3 Distribution of “Bull Run” carbon credits retired by beneficiary

²⁷⁴<https://registry.verra.org/app/search/VCS?programType=ISSUANCE&exactResId=812>

A crucial data is missing, their price of acquisition. The world's largest (cap and trade) greenhouse gas emissions market, the EU ETS, saw a spectacular rise starting from 2020, and data show prices are still 250% higher than the pre-pandemic stock and crypto rally. Somehow foreshadowing the 2022-2023 “commodities’ rally”, or inflation, a vast array of financial assets, including offsets and permits increased their value starting from the 2020 expansionary policies by central banks as a further proof of the enmeshment of environmental and financial questions.



Fig. 4 Carbon Emissions Allowances Prices under the European Union Emissions Trading System, prices in Euro. Data from tradingeconomics

Carbon offsets, however, are traded on the voluntary carbon markets: transactions are executed over the counter, so traders do not have to disclose economic information. This lack of transparency is a crucial selling point for KlimaDAO and is part of the “market inefficiencies” that it is trying “to improve”²⁷⁵. As of today, laypeople can access those data types recurring to price reporting agencies like Quantum Commodity Intelligence²⁷⁶, as I did. According to their website, to provide data “for less-established commodities where no standardization exists, such as environmental certificates or commodities, Quantum has worked with the industry and drawn on the experience of its management team to provide a robust

²⁷⁵<https://discord.com/channels/841390338324824096/841390338324824099/996854132222734457>

²⁷⁶ <https://www.qcintel.com/>

This address received 250'000 pKlima on October 17²⁷⁸ and immediately began redeeming its pklima and selling around 80 of them; the rest were sent to another address²⁷⁹ that did not hold any of them just one day before the fix was deployed: the latter address could redeem only of them. Furthermore, in the days preceding these trades, it received and sent back around 130'000 dollars of Ethereum, Bitcoin, and Solana²⁸⁰.

This address made tens of thousands of dollars by redeeming pKlima and selling them as Klima, selling BCT, or providing liquidity to various liquidity pools on Sushi Swap²⁸¹. As soon as Klima's price began declining, its Klima trading stopped, a behavior observed in many other wallets.

The address 0xedf89984c7a9b25d05409ba32ca6e284b029384c retired and bridged 580 carbon credits through Toucan²⁸², converting them into BCT on the same day ²⁸³.

The exact address had 250'000 pklima and redeemed all of them.

The address 0x4058f2d1e5851E25b6809fF874380843610C222 made many successful Klima and BCT trades. Discussing about these transactions shows feeble, in the end, is the link with real-world environmental impact. Until now, we have devoted many pages to understanding financial and technological niceties and very little about the environment.

Another critique of green finance emerges: these technological infrastructures did not build themselves. They require a team of dedicated computer scientists or, at least, self-taught programmers who have spent years of their lives understanding how to code and run these web apps: they require an extensive socio-economic

²⁷⁸<https://polygonscan.com/tx/0x0431d3db809c60cbce64bf075171cf096c998fdc1be35295f3b091593132fc7e>

²⁷⁹<https://polygonscan.com/tokenxns?a=0x9b0a9f86f3594256e99aa345f9526e197147a88a>

²⁸⁰<https://polygonscan.com/advanced-filter?fadd=0x9b0A9F86f3594256e99aA345F9526E197147A88A&tadd=0xEdF89984C7a9B25d05409ba32ca6e284B029384c&qt=1>.

²⁸¹ <https://polygonscan.com/advanced-filter?tadd=0xEdF89984C7a9B25d05409ba32ca6e284B029384c&qt=1&tkn=0x2791bca1f2de4661ed88a30c99a7a9449aa84174&fadd=0x1E67124681b402064CD0ABE8ed1B5c79D2e02f64>

²⁸²<https://polygonscan.com/tx/0x51ac357ee575ec2a91c526c6eb696b5f3dba786c1a3b23689ae21d4efdb44f6a>

²⁸³<https://registry.verra.org/app/search/VCS?programType=ISSUANCE&exactResId=1525>

apparatus and economic resources. Microeconomics theory employs the concept of “opportunity cost” to address the value of the best alternative foregone when a choice is made; does the *ReFi* represent the better trade-off for the environment? Let us have a closer examination of what

0x4058f2d1e5851E25b6809fFf874380843610C222 did.

This account made almost all its trades in BCT and Klima before the end of November 2021, so that before the pKlima fix went live. At that time, Klima was still trading many times above its launch price. On November 25²⁸⁴ it deposited 17'000 credits in the *Green Leverage Locker*²⁸⁵ on market.xyz, a platform that, as we can read on their homepage, “can maximize your yield, contribute to risk management, and create unparalleled opportunities to make the most of DeFi”. As its name suggests, this tool allows traders to leverage their own assets (up to 45% Loan-To-Value and with a 5% fee); a user deposits Klima or staked Klima and get USDC, which would eventually be used to buy more Klima in the so-called “9,9” strategy; the idea is to maximize the benefits (and the risks) of the buy-and-stake 3,3 strategy²⁸⁶. People adopting these strategies behavior are called *degen* on KlimaDAO’s Discord. Short for “degenerate”, *degen* is a slang used among cryptocurrency and investing communities to describe investors who make high-risk, speculative investments without any regard for traditional investment analysis or risk management. Leverage trading, of course, is nothing new, and retail investors can now access it on trading platforms like RobinHood; cryptocurrencies platforms, however, allow users to leverage almost every new asset with limits way above what a retail investor could access. Binance allows its users a 125x leverage on crypto futures, a type of leverage usually reserved for a few professional brokers. However, what does this have in common with the environment? How can leveraging digitalized certificates of improved energy management in a South Korean steel factory lower the amount of carbon in the atmosphere? Or how can it constitute an efficient or economical way to employ resources against climate change?

The legitimation of these financial speculative moves comes from the general

²⁸⁴ <https://polygonscan.com/tx/0xcf552f0b89c1b7c0264fcf3b384cce38d977c0ec3bf4495a832d297c6c4e007a>

²⁸⁵ <https://polygon.market.xyz/pool/5>

²⁸⁶ <https://marketxyz.medium.com/klima-9-9-pool-is-live-on-market-ef61851885d1>

faith in market mechanisms and the subsequent consequentialist approach we already saw in action: liquidity is necessary for markets to be efficient and to attract more capital so that *in the long run*, they will create the necessary incentives to solve problems. Recent literature described such pushes for non-transformative solutions as one of the categories of “climate delay” (Lamb et al. 2020), since they fail to acknowledge the need for a radical change and draw attention and resources away from more effective solutions. The following message, posted on the Toucan Discord server by a user advancing a proposal to use BCT as collateral for another DeFi platform, exemplifies the delay or the fetishization that these forms of green finance enable:

jokiez — 25/01/2022 18:17

Idea for extending the reach of BCT: Create a QIP on QiDao(mai.finance) for BCT to be accepted as collateral for MAI.

Problem: In order to expand BCT's reach on chain we need to encourage more uses.

Solution: Getting BCT to be accepted as collateral at mai.finance would allow it to be used as 'backing' for loans which can be used in DeFi without having to incur interest expense. There is current support for BCT in green leverage locker, but the borrow rates are high so I don't think its suitable for a longer timeframe asset like BCT.

Benefits for Toucan: A new scalable use for BCT on chain. (Collateral for funds as you wait for BCT to appreciate in value).

Benefits for mai.finance: New pool of collateral that is less correlated w/ other crypto assets. MAI can uniquely differentiate itself from other stablecoin protocols as a partially 'carbon backed' currency. Brings in a new set of users (BCT holders vs degens) that might not otherwise be exposed to mai.finance

However, is this so different from the mainstream policies and forms of decision-making when it comes to the environment? These pages were drafted while more

than 70'000 delegates gathered in Dubai to discuss how to implement measures to curb emissions²⁸⁷; if we account for all people involved (journalists, workers, tourists), this number might easily double. We are talking about the dimension of a small European city like Lund, Sweden, where I spent most of my time while writing this thesis.

What are the efforts made by *ReFi* traders compared to the vast network infrastructures and the competencies needed to coordinate and make international conferences on climate change happen? The current employment of the blockchain does not challenge the current status quo; instead, it allows everyone to participate actively in it, thus reproducing the ideas sustaining it. I call this movement “neoliberalism from below”.

Returning to the on-chain analysis, the address 0x4058f2d1e5851E25b6809fFf874380843610C222 would eventually send all its 233'851 \$ to another address²⁸⁸ that staked, unstaked, and sold Klima few times, just to be withdrawn a couple of minutes later²⁸⁹. I used verbs like *buy* and *sell* since the tokenized carbon credits were “swapped” on SushiSwap for USDC, a “stablecoin” pegged to the dollar and running on the polygon blockchain; stablecoins are a peculiar type of cryptocurrencies whose value does not fluctuate but remain anchored to a fiat currency like dollar or euro; this stability is currently obtained in two ways, in a centralized way, through a 1:1 reserve audited deposit (like for Tether or USDC) and thus akin to traditional banking, or in a decentralized way, through collateral reserves algorithmically determined (like DAI), so that the value is maintained through buying and selling underlying assets according to the relationship between their price and the demand of the stablecoin. Since our address redeemed USDC through Circle, and the latter is a fully regulated financial institution,

²⁸⁷ [https://unfccc.int/process-and-meetings/conferences/un-climate-change-conference-united-arab-emirates-nov/dec-2023/about-cop-28#:~:text=More%20than%2070%2C000%20delegates%20are,on%20Climate%20Change%20\(UNFCCC\).](https://unfccc.int/process-and-meetings/conferences/un-climate-change-conference-united-arab-emirates-nov/dec-2023/about-cop-28#:~:text=More%20than%2070%2C000%20delegates%20are,on%20Climate%20Change%20(UNFCCC).)

²⁸⁸

<https://polygonscan.com/tx/0x74e59b83104ac9aab786bce6ad52913763ff447ce9a8b30892bf62fca42b9236>

²⁸⁹

<https://polygonscan.com/tx/0xf8a9f3367052242a03d59b40c2edac83fc3acf3841e8eb96b4ca8b3ea55ef3c>

the transaction has been registered, and competent fiscal authorities have access to these data.

These profits were also made by trading Klima and BCT²⁹⁰, and the first transaction that appeared in the wallet was a deposit of 500'000 pKlima. As shown by fig. 5, this address profited more than 300'000\$, mostly made in few transactions during October 2021.

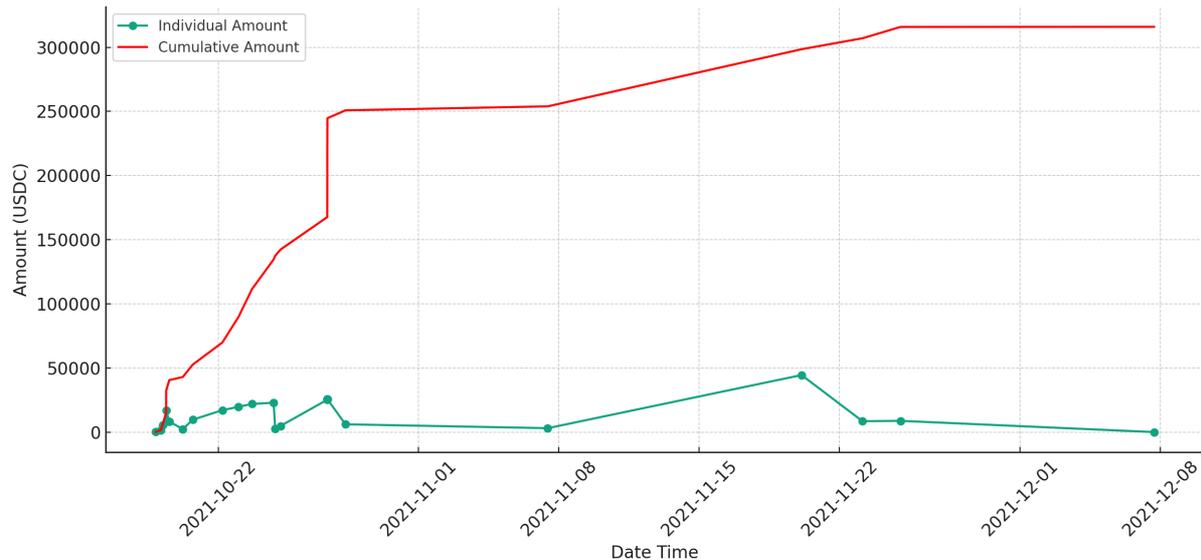


Fig. 5 Total profits made by 0x4058f2d1e5851E25b6809ff874380843610C222.

The more I dug into these activities, the more they looked suspicious.

This address bought and retired credits from an improved South Korean steel factory; the process was articulated in two phases. While this wallet engaged with the first one, many Ethereum addresses engaged with the second one.

Among the buyers of phase II, 0xeE9930a62FbF85fb443ad3d7410da665ebc90B83 appears to have retired 300,000 units. This address can be considered appropriately a “whale”²⁹¹, having retired 1,328,930 BCT.

I want to state that I am not accusing KlimaDAO founders of insider trading or

²⁹⁰ <https://polygonscan.com/advanced-filter?tadd=0x4058f2d1e5851e25b6809ff874380843610c222&mtd=0x38ed1739%7eSwap+Exact+Tokens+For+Tokens&tkn=0x2791bca1f2de4661ed88a30c99a7a9449aa84174>

²⁹¹ In the context of cryptocurrencies, “whales” are individuals or entities that hold a large amount of tokens.

any unlawful conduct, mainly because the legislation is still a shadow. But KlimaDAO's founders knew who was behind these wallets. On the other hand, they were selling Klima and BTC tokens while telling others to buy, treating late investors as exit liquidity for their trades. Furthermore, they never interacted with regulated financial institutions, while founders' real names were revealed only during 2023; as we already stated, given the expensive costs for mining, the easiest way to enter into cryptocurrencies in the second decade of the XXI century is through a tracked form of payment. Or, you could convince other people to buy your newly minted coin, and if the trade happens on a *DeFi* platform, it would be completely *KYC-less*. What emerges, however, is how little environmental conservation

Bearing this in mind, I asked KlimaDAO for comments. I specified that since I have not invested in KlimaDAO or any related products, I am not personally affected by their behavior; I am a researcher interested in understanding why people kept investing and believing in a project that provided such negative returns for almost all of them, explaining how DAOs and Carbon Finance are myth, narratives that move actors to action because they work on an ideal level. I specified I was not interested in finding culprits, I am not a judge, and until they paid taxes on their profits according to their jurisdictions' legislation, they committed no wrongdoings as far as I know.

I wanted to know their opinion on these trades, how they would explain these founders' (or cofounders) behavior since their actions contradicted their claims on the project's long-term vision, and how the employment of the blockchain was bringing all but transparency. Indeed, we can compare the launch of KlimaDAO on SushiSwap on October 18 to an IPO (Initial Public Offer) without the guarantees that the law provides.

As we saw, most of the critiques regarded pKlimas and other forms of arbitraging with different degrees of validity. Cryptocurrencies are a divisive topic, both within these communities and in the traditional world, so accounts of them rarely happen to be objective. Klima presented all the characteristics for a sensationalistic story: a small, anonymous team funneling a billion dollars towards environmental solutions in a few weeks just to see everything crumble apart, from the market cap to the proposed environmental solutions. Also, the original team split, and very few are still active today.

These narratives had an impact on me and on how I approached this subject.

The previous chapters and sections show why I do not think KlimaDAO might represent an effective environmental solution; its scandal would have been the cherry on top.

Yet, when I spoke to one of the co-founders, they were open to debating my findings on pKlimas and provided me with the data that made me downsize their role in the price crash. We calculated their sales moved around 21 million dollars, but it definitely spread a moral panic in the community, especially after knowing that venture capitalists were selling them.

I spent more than a year on this Discord server; more often, however, their replies to my questions were slow and rude whenever I mentioned any critical aspect. For example, they were very open when I asked how Klima worked and was happy to discuss how few users understood the price mechanism. Which is, by the way, real: it took me weeks to understand what a Klima was, its relationship with BCTs, and the incentive mechanisms. I noticed that there were arguments they were more confident and open about, for example, the flaws in the tokenomics and the irrationality of the markets during 2021-2022, arguments already discussed in the previous pages. Others, like the quality of the offset and the actual impact on the environment, constituted a sort of *taboo*: core members would just send me links to some pro-VCMs report²⁹² or to some blog post that they wrote. I thought it was useless to contact them.

After months of silence, they reached me in private after I asked to confirm an identity: I was writing the chapter on the team members, and I wanted to double-check the information I collected. The name of this founder never appeared on the Discord server despite representing KlimaDAO on many stages.

Their tone changed this time, and they were more open to discussing critical aspects; indeed, the Dune.com data discussed before was provided to me during this conversation. I realized pKlima had a lower impact than I thought, I explained the scope of my thesis and how various myths shaped the behavior of the participants. I made it clear that I was not looking for any scoop or culprits, telling them I was asking for opinions and comments from someone inside to provide a more nuanced

²⁹² For example this <https://www.mckinsey.com/featured-insights/themes/scaling-carbon-removals-and-voluntary-carbon-markets>

and balanced view; but I felt some hostility or sarcasm. I still don't know if their answers about accountability and responsibilities were severe; I told them I was surprised how an error worth million dollars was so quickly liquidated. And, of course, I became suspicious.

Many lost their money because someone made a mistake, and no one was held accountable. Maybe rudely, I asked to comment on the trades mentioned before. I felt it was immoral (I never questioned their legality) that founders/ "Klimacores" benefited from information unavailable to the public. Many of these wallets arbitrated BCTs, buying very cheap carbon credits, bridging them, and selling for a profit while telling people to buy them: a -3,3 strategy. Other wallets were bonding these credits, staking or swapping them for Klima or adding liquidity to a pool²⁹³. People holding these tokens knew that big VCs backed the project and that 7 million dollars had already been collected, information not available to the general public. They also knew, in advance, the criteria for the inclusion so that they were sure there was about to be a market for very low-quality credits.

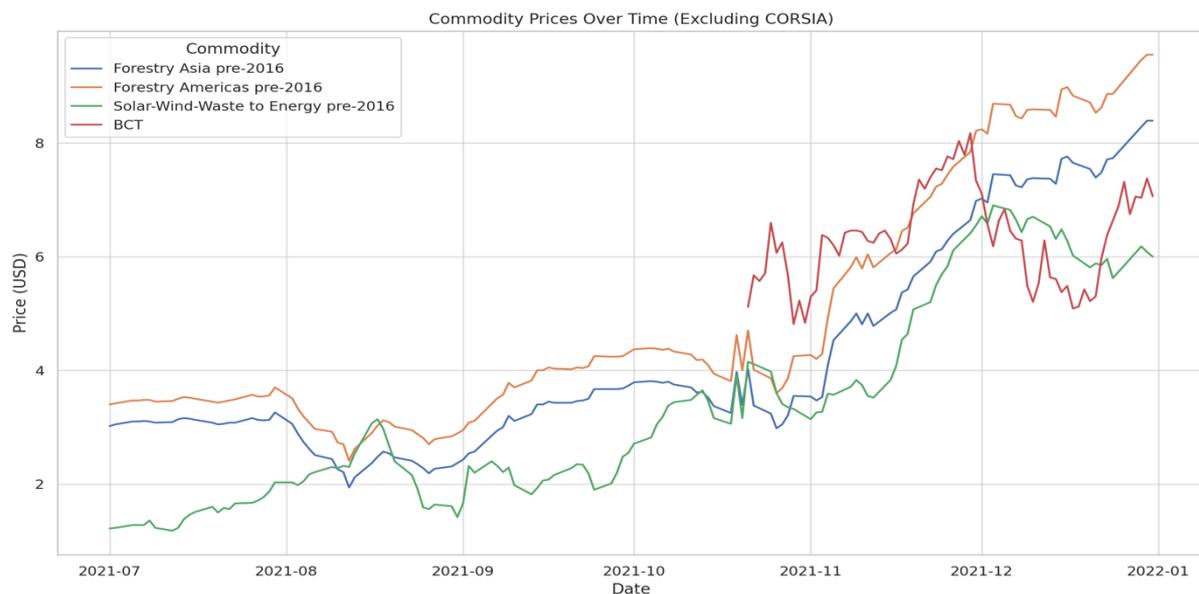


Fig. 6 Price comparison between BCT and the type of carbon credits bridged by pKlima holders. Data courtesy of [QCintel.com](https://www.qcintel.com)

²⁹³ In DEX exchanges like SushiSwap, users are incentivized to provide liquidity to the AMM through the issuance of LP tokens, representing a share of the fees charged on each transaction. See <https://www.gemini.com/cryptopedia/sushiswap-sushi-coin-sushibar-chef-nomi>

As Fig.6 shows, BCT effectively represented an arbitrage opportunity from October to December 2021. It should be noted that the cheapest credits remained stable during the first half of 2021 and experienced a rally during 2021 summer (Fig. 10); as Tab. 1 shows, the credits of many of these addresses were issued during these months. Lacking any other data, we can suppose that such addresses were the OTC buyers that drove their prices.

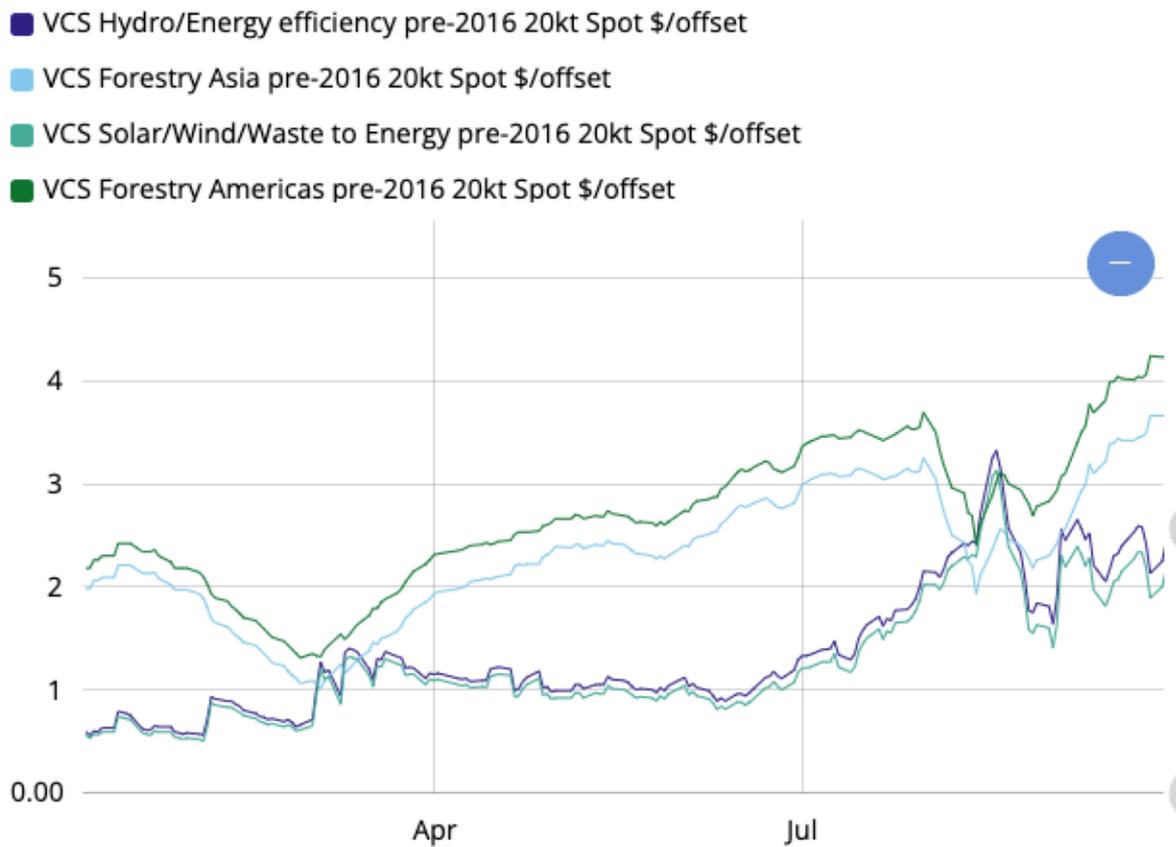


Fig. 7 Chart comparing different baskets of carbon credits. At the beginning of January 2021, renewable credits were trading for 0,54-0,57\$/offset, while forestry was trading for 1,99-2,19\$/offset. At the end of September 2021, the latter's prices almost four-folded (2,01-2,26\$), while formers' doubled (3,67-4,24\$). Screenshot from QCintel.com

From	To	Date	Asset Sent	Asset received	Hash Tx
0xEdF89984C7a9B25d 05409ba32ca6e284B029 384c	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506 (SushiSwap: Router)	Oct-25- 2021	270.6683597 2184319452 BCT	1,500 USD Coin	0x3e5ef8743c0722fb6e372d6402c4 31137bd78e0e050add27c4d5721d d7ad3080
0xEdF89984C7a9B25d 05409ba32ca6e284B029 384c	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Oct-27- 2021	1000 BCT	5,979.301807 USDT	0x2615831e4da6266f86e83e098de b9fe9e71f0909b0bb035ff3076731b ed38196
0xEdF89984C7a9B25d 05409ba32ca6e284B029 384c	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Nov-06- 2021	497 BCT	3,126.541605 USD Coin	0x7221628adef9d82e08149bd43ac 9637d22af29b3d9fd84372b59874a 7d3ed77f
0xEdF89984C7a9B25d 05409ba32ca6e284B029 384c	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Nov-07- 2021	350 BCT	2,160.349934 USD Coin	0xe236756211a5d486ebbd7237896 eb48446f3fa04ba31f155415c6f175c b96a4b
0xEdF89984C7a9B25d 05409ba32ca6e284B029 384c	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Nov-07- 2021	349 BCT 2,160.34993 4 USD Coin	0.00058240048945 016 SushiSwap LP	0x84b5c80a6e3d6a15bd4f69df690 149dc3ca17bbe6159df1dc344413 e74d6fb3
0xEeDD99bbf1B856f9 841B4102dad349AD99 6Dbd11	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Oct-23- 2021	7,979 BCT	10,991 Wrapped Ethereum	0xffc9d83397de0faab3515fad59cd 3bf2c1688569ebc0052e35aae26b24 da82bb
0xEeDD99bbf1B856f9 841B4102dad349AD99 6Dbd11	0x1b02dA8Cb0d097eB8 D57A175b88c7D8b4799 7506	Oct-20- 2021	10,790 BCT	60,364.12903 USD Coin	0x3bc331643a7b8fba24662d2fb2f0 c9068a0f152b0b21c37c35f661cc60 07e355

Tab. 2 Various arbitrages made by pKlima holders

I asked one of the cofounders about the arbitrages made by pKlima holders listed in tab. 2, providing links to these transactions. I also mentioned the connection with Offsetra and stressed that they knew about them. I never used the word scam or fraud. I first got this message as reply:

I said we should disengage as I am concerned that the lack of evidence (of which I genuinely believe there is none) could lead to more problems for the accuser(s) as well as the project.

This is an unprofessional way to collect data or interviews. Nevertheless, I am comfortable I've engaged in good faith. And am concerned about your methods, approach, knowledge and motivations

Then, I was accused of plotting against KlimaDAO along with someone under the guise of a researcher:

If you're a journalist LARPing as a PhD, fair enough. If you're seriously in academia, this is the most unprofessional engagement I have ever experienced.

I pointed out my credentials again and asked to comment these transactions. I received a series of nonsensical answers, and I decided to disengage from the conversation, stating that I was not “getting paid enough to be gaslighted on Discord” and stop answering.

Even if nervous because of the rudeness, the lack of dialogue and the vulgarity I experienced somehow was coherent with founders’ responses toward critics I saw on Discord, proving my previous theoretical points and giving me an ending for this section.

Epilogue

A few days before the deadline for this manuscript, I received a request on LinkedIn; it was the cofounder that I argued with before. I simply ignored it. Then, I saw many new messages on Discord. It was him again; the reader will now understand because I am using the male pronoun.

At first, I did not want to open that conversation again. I had to focus on the final chapters of my thesis, and I thought that contained nothing relevant. I was wrong.

Reviewing the messages, I apologise if I was sharp. But in return I hope you can see how it came across.

If you actually want a meaningful discussion, I can talk about:

my personal actions at launch

Offsetra's operations

my understanding of the protocol, what happened (sometimes why_

a general grasp of what company's utilised the infructure (Toucan/KlimaDAO)

What I do not really have the knowledge to talk about:

technical / policy / smart contract things

what individual people did

I have tried incredibly hard to be a good faith agent in this entire situation since day 1. I am aware some people made a lot of money out of KlimaDAO. However:

I was an antagonist internally to drive change and transparency, often w/ resistance, that is aligned with my personal ethics; what I think is correct for the project; from feedback I have received from peers:

[...]

No matter how tough, and how much I was personally attacked for the general haziness around KlimaDAO and actions of others, I have always personally shown up either face-to-face or on a call to answer the hard questions as best I can. Whether that's Bloomberg, Stephen Diel, or John Ellison. I have nothing to hide but a legitimate position to defend for contributing to something I believe has brought significant valu

I could not believe what I was reading. After years spent on social networks, I realized most of discussions are pointless battle between two egos, leading to nowhere. But someone just apologized to me after months; nonetheless, I proceeded with skepticism:

cardo — 24/01/2024 18:12

[...]

I would like to know why there were "klimacore" members (holders of pklima) bridging carbon credits (coming from the same projects listed on offsetra) and selling the BCT, making a nice arbitrage

[...]

I am genuinely not aware of any such activities.

They would have bridged them and used them to redeem pKLIMA I am sure. But dumping into the pool would surprise and disappoint me!

This latter point was exactly what I was trying to ask before! The conversation went on, revealing fascinating facts:

cardo — 24/01/2024 18:24

[...] What I see is that people who were part of Klima before it went public made a nice arbitrage.

[...]

it is known who bridged HFC-23. It's not for me to say. I know they made a lot of money out of the project, however. That is a Toucan bridge mistake to have ever allowed them in.

my genuine understanding at the time of KlimaDAO's launch was that there were not integrity concerns around the vast majority of Verra carbon credits (except arguably HFC-23). I believe that was the case for most people observing the carbon markets. It's easy to hindsight that. But as I stated, my personal belief is that KlimaDAO has taken a huge amount of damage for issues of integrity and has

propelled the market forward a lot by exposing the supply that is most used off-chain (including today!).

It was not generally known at the time. I think it's fair state incompetence about that - but that statement about incompetence reveals more about the market than about KlimaDAO

Interestingly, here emerges an argument I already pointed out: the general incompetence behind carbon markets. I felt that barriers between me and him were slowly falling down. I asked about `0xEdF89984C7a9B25d05409ba32ca6e284B029384c`; he did not know who this address belonged to, even though retired the same credits as Offsetra. It turned out that Offsetra was sourcing credits through brokers with an account with CBL²⁹⁴, a carbon trading firm.

There are other players who I know sold a lot of very cheap carbon by arbing between CBL and BCT...

So I think there's a lot to unwrap about bridging.

But those who really made millions actually knew what they were doing and did cover their tracks better..or just kept out of sight.

I think Offsetra is a convenient scapegoat. As is KlimaDAO for other things.

All I can do is continue to try and engage in good faith, but it's fucking tiring and sometimes I genuinely think there's just a massive conspiracy lol. Or that people legitimately become uninterested once there is no scoop.

[...]

What I would want / hope is a legitimate analysis of what really went on and who really made the money.

And the conversation degrades into the usual stuff every time. And that's my problem. It's not even a debate sometimes. Anyway whatever

²⁹⁴ <https://xpansiv.com/cbl/>

If any, another point of my analysis turned out to be true: crypto-communities are divided. Since there are no actual mechanisms to enforce regulations, even members of the same ruling “class” (in this case, pKlima holders) pursue their own self-interest at the expense of their “peers” and the broader social group (in this case, Klima/BCT holders)

there are concentric circles of founders right...

Founders who were the most involved would know exactly why it was. But they're not there anymore.

The conversation went on, we discussed the tokenomics, and we both agreed that it caused an “obscene inflation”, destroying the value of each token. While writing these lines, I realized that looking for a single to be held responsible for the crash was a sort of low-hanging fruit for many, me included: it is way easier to accuse Cuban rather than spending hours on Polygonscan, Dune, and Python. Of course, knowing that billionaires were profiting out of the environment and retail investors is something the vast majority - including me - feels morally wrong, especially if these operations are surrounded by anonymity (*“in 2021 at the height of DeFi - there was a strong cultural draw to being anonymous. Bad idea in retrospect probably, but just sort of happened organically. not a lot of klimaDAO was deliberately choreographed.”*); and of course, I do not think that without VCs acquiring shares in the project, KlimaDAO would have succeeded in its environmental mission: I spent hundreds of pages criticizing green finance as a concept.

Two points I want to develop shortly. First, anonymity, a pillar of libertarian ideals, can easily create contradictions among these groups. If cipher-activists saw it as a way to hide from and fight “Big Government”, a practice “from below”, what happens when it is used *against* them? The loss of credibility of the project and the subsequent price crash tells us that this conflict was not solved, at least for most participants. Second, we can go back to Mauss; looking for “bad apples”, the system goes untouched: if it is Cuban/Founders’ fault, then it is not *ReFi*’s or *DeFi*’s , and even fewer questions (green) capitalism gets.

We kept talking since I trusted what he was saying. Toucan Bridge is *permissionless*, so the “offsetter” does not have to share any personal information, a Verra account is just what is needed. However, it appears that 0xEdF89984C7a9B25d05409ba32ca6e284B029384c bought 1000 credits through Offsetra, so the cofounder knew this person. We were both surprised since they probably realized a loss according to the following transactions.

In the end, a few carbon brokers who knew about the project and knew the right people made a massive amount of money through the arbitrage window between August and December. I do not think finding their names is relevant for this work: these arbitrages show again how implementing blockchain technologies in carbon markets, rather than providing environmental returns, made many people richer than they were.

Indeed, my last questions were personal, and the conversation became more “intimate”; I was invited to publish the thesis and share this conversation on the server.

I will report large parts of it since provide another reading for the Central Bank metaphor while resonating with my general critique towards DAO as a concept and the homogenization of carbon credits:

Apparently, the only interest in KlimaDAO is to try and hammer it / the founders.

2022 was very difficult with all the shit slinging, and it wasn't helped by very aggravating tweets from people on KlimaDAO's side which made it spin out of control.

Nevertheless, I have become incredibly cynical about engaging with anyone about it - as don't think "objectivity" is the point of anyone trying to engage with me.

The reason why i tried again with you, is in the hope that if the analysis comes from an academic perspective it will actually take the emotion out of it and carry a degree of objectivity through.

[...]

I think the premise of KlimaDAO's launch was compelling.

A carbon central bank.

~ KlimaDAO arguably acted as such. It created the incentives for people to bond with it. And almost indiscriminately deposit carbon into it. In the central bank analogy, it then has to manage the assets and liabilities. KlimaDAO internalising so much "bad" carbon (which as mentioned before, it was not really known as "bad" at the time) -- isn't necessarily a bad thing or an unintended consequence; it meant KlimaDAO gave itself a mandate to manage the bad stuff... as well as the good stuff.

Theoretically acting as a regulator of carbon almost(?)

So, I think that the "sweep the floor narrative" made sense from the fundamental premise of its launch.

I think that more could have been done to double-down on that. It is only more recently that actions have been taken to fulfil that mandate (see related KIPs):

[...]

Nevertheless, the elephant in the room is: why did it take so long to double down on this?

You could absolutely argue mistakes were made on the initial calibrations: too much homogenisation in BCT; the incentives were cranked too high. A lot of the "bad" impacts of these could have been mitigated with rapid and concise adjustments with KlimaDAO's policy

Furthermore, I think the fundamental premise of the criticisms KlimaDAO come from "why did you pivot?".

[...]

Answer? KlimaDAO (and everyone else) was barred from further tokenization

So the direction of travel had to be to do what the DAO was actually able to, which included: engaging w registries; developing technology (i.e. software) that could add value to the market / stakeholders [...] making the case for "programmable" or digital carbon held on the blockchain [...].

KlimaDAO arguably didn't "pivot" as such, it just doubled down on its intentions, but in quite a specific direction. I.e. did what it could.

*But that doesn't really answer the crux of the questions
why didn't policy move faster?
why wasn't the change in focus effectively communicated, etc..?*

And I think that comes down to the chaotic nature of a DAO. If this was a typical org, it would have happened quickly and decisively no doubt. But with no single decision maker or leader able to conceptualise the problem alone and take decisive action, it was literally a blob of people with different wants / agendas / interests / perceptions / skills.

It's taken KlimaDAO a long time to really get on top of everything. Manage the fall out; cut through to the ideas of the incredible number of people who have contributed to the project (must be over 150 people?); the reputational damage from hits taken from the biggest names in the carbon markets for its role in disruption, etc.

How do I feel? KlimaDAO has changed the face of the carbon markets. Hundreds of "blockchain climate start-ups" were launched after KlimaDAO's launch. Eye watering amounts of money was raised off of the concept - and some have already failed.

If KlimaDAO fails, then its started something impactful (imo) which speaks to the role essentially disintermediating the markets.

Unless there is something out of the leftfield, I don't think KlimaDAO will fail. I think it will continue to recalibrate itself and add value to the markets; if that simply comes from forward finance agreements fine. But I do think its more than that.

As the reader saw, this epilogue confirmed most of my findings while challenging others, added nuances to a Manichean topic and acted as a reminder against tempting easy pickings.

Embracing the complexity and pursuing objectivity should not be seen in antithesis with critical (or militant) research, quite the opposite.

Third Part: Synthesis

This final part needs a short introduction. The previous chapters were devoted to KlimaDAO, the core argument of my thesis; I tried to reconstruct the history of the social group, and to understand what motivated actors. As stated in the introduction and illustrated in the following parts, I embraced the notion of “total social fact” to explore and understand the complexity of reasons moving the actors involved. This final section is another result produced by such complexity. To better understand how cryptocurrencies and blockchains work, I explored their “epistemological unconscious” (Foucault 2018), understanding their fundamental assumptions, principles, and ways of thinking that define the boundaries of what is considered valid knowledge. Many of these “conditions of truth” could not fit the main text of the current work, as well as reflections stemming from them. These last chapters contain additional findings related to the proper ethnographic part. Rather than a proper conclusion, they should be read as an addendum, as a complimentary but necessary part of the main body, where ideas coming from the ethnographic enquire are further discussed and developed.

Technologies of responsibility. How green fintech is shaping technofeudalism

After all these pages, it seems that the Weberian ideas of modernity as “dis-enchantment of the world” could hardly be applied to describe the practices we explored. Even though critiques of “irrational” post-Keynesian capitalism aren’t new, as we saw in Baudrillard’s work, now illogical, anti-economical aspects of capitalism are becoming prevalent.

If we can start talking about capitalism after the XVI century, and so after the generalization of market relationships (Wood 2002), what are we witnessing after the spreading of contradictory economic practices?

In this chapter, moving from Foucault’s ambivalence towards technologies, I will further explore the relationship between technology and morality to explain some characteristics and ambiguities of current capitalism, trying to answer questions that arose in the dissertation.

We will see how the re-emergence of moral and anti-economical traits in contemporary forms of finance - something in common both in green finance and cryptocurrencies - are among the factors pushing capitalism towards its “techno-feudalist” phase, a concept made famous by the Greek economist Yannis Varoufakis in a series of blog posts²⁹⁵ and in a recent non-academic book (Varoufakis 2023). The former Greek finance minister showed a great interest in the transformation of capitalism, also highlighting the role of cryptocurrencies and their possible alternative use²⁹⁶. I will go back to his analysis in the last chapter of the thesis.

Now, instead, I will move from a few of the points he made about this new phase of capitalism to provide an original analysis of it based on part of the ethnographic material collected during the development of this work.

The scope of this last section is to invite the reader to resonate with broader themes, applying my theoretical and ethnographical findings to the social and macroeconomic levels.

²⁹⁵ <https://andrejmarkov.com/2022/01/04/varoufakis-techno-feudalism>

²⁹⁶ <https://diem25.org/yanis-varoufakis-crypto-the-left-and-techno-feudalism/>

Technofinancial responsibilities

The intertwining between finance, technology and morality is a theme already engaged by others (Coeckelbergh 2016). The rise of high-frequency algorithms and automated trading, as well as an always increasing distance between financial derivatives and the underlying assets question the agency and the moral commitment of single economic actors. In his book, Marc Coeckelbergh notes how different forms of financial technologies, from Sumerian clays to modern fintech are not neutral, creating new vertical and horizontal responsibilities and so power relations. Money and finance possess a moral and authoritarian dimension; the trends characterizing the “accounting society” have deeper historical roots. A paradox emerges: modern finance both connects and distances different individuals, challenging the optimistic views held by McLuhan (1994). The moral distance, as well as the social one, increased with the development of fintech instruments, as we explored in this work; Coeckelbergh’s book questions whether if we can keep use concepts like morality and responsibility for the actors involved in global finance, since they know very little about their consequences and, more important, no one has full control over it. Our point of view is different; first, material technical artifacts depend on a social infrastructure to run, so the question of responsibility in modern finance should be a political one. Their existence is tied to a particular division of powers, and their role transformative should not be over-emphasized; high-frequency trading firms use cutting-edge technologies to exploit arbitrage opportunities otherwise unseen by humans to “beat the market”, moving billions of dollars to generate few base points in return. However, insider trading proved to be a much more profitable and secure strategy, with US politicians’ investment portfolios overperforming the market by dozens of points²⁹⁷. The question of agency and responsibilities becomes more blurred, since the political apparatus constitutes another level of distancing. The second point stems directly from this one: current technological world is more organized than it appears. Moving from Baudrillard, we explained how contemporary capitalism prioritizes symbolical forms, *simulacra* and representations instead of the material reality; this seems to me one of the reasons

²⁹⁷ In the last year, services to track and copy US’ politicians trading activities have been launched <https://www.forbes.com/sites/investor-hub/article/what-is-autopilot-investment-app>.

behind the soaring of certifications, which extend beyond carbon credits. Marx already noted how capital tends to homogenize different forms of labor (“*real subsumption of labor under capital*”) to increase productivity and surplus value extraction; today, it is enough to look at white-collar jobs listings to see this exact phenomenon. Companies require the certified knowledge of software like Microsoft Excel or Salesforce and the familiarity with protocols like Scrumm or Agile, making labor similar (and interchangeable) across various sectors. Yet, certifications and emblems remind us of a past historical period, the feudalism, now enmeshed with IT.

Technofeudalisms?

Before proceeding further, I should explain what I mean by technofeudalism. This paradoxical term is usually employed to indicate how traditional capitalist dynamics are being replaced by the rise of big tech giants. According to Varoufakis (2023), economies are not dictated anymore by markets or profits but by their predecessors, fiefdoms, and rent (9), although in a digitalized form. This was made possible thanks to the rise of “cloud capital”, a new form of capital constituted by the agglomeration of various technologies (IA, data centers, network infrastructures); unlike traditional forms of capital, it can manipulate the behavior of both workers and consumers (“cloud serfs”). The latter constantly provide free labor: the growing relevance of websites like Google and Facebook was possible because users improved the algorithms for free²⁹⁸ through their daily interactions. At the same time, while the capitalist sector still produces exchange value, more of the surplus value generated is funneled in the form of cloud rent (fees on the App Store, costs for advertising, etc.) to the “cloudalists”, those who control cloud capital. These changes were fueled by the “endless funds” (181) poured by central banks in the post-2008 economy and, in particular, in the high-tech industry, saving financial institutions and, at the same time, generating a new class of techno-feudal lords.

Varoufakis shows a certain optimism towards the technologies that made *cloud capital* possible, defined “more revolutionary [...] than replacing autoworkers with industrial robots” (83) and “more revolutionary than any of their predecessors” (89) and, more broadly, about the impact of technical devices in the economy. Techno-

²⁹⁸ But also *freely*, since nothing (a part from, maybe, social approval) was forcing them to do so

feudalism would be, in short, the result of extraordinary technical advancements and the overreaching role of financial sectors in daily life.

The “dark side” of digital technologies (Ciccarelli 2018; Durand 2020) and the constant expansion of financial capitals (Durand 2017) are recurring themes among critical scholars, and capitalism is effectively shifting toward immaterial and rent-seeking forms, at the expenses of the vast majority. The emergence of platforms like Airbnb, Remotetasks, and Uber, where users can commodify their belongings and their free time, has been coupled with the rise of gig-workers, the decline of stable and salaried employment; at the same time, the smaller role played by political institutions has been coupled with the “democratization” of financial services²⁹⁹. These phenomena are hardly new for scholars specialized in media or contemporary history and can be framed in the context of postmodernism (Lyotard 1994; Crouch 2004); what we are now witnessing is their generalization, the feeling that we reached another stage of capitalism.

The role of finance and technology in the current era of capitalism should not, however, be overstated. In an iconic article, Graeber (2023) noted how recent technological developments were not as revolutionary as they were imagined, and the overwhelming number of bureaucratic regulations - the other side of a financialized world - is actually impeding the creation of real innovation (Graeber 2015), not contributing to the material improvement of everyday life, but rather making it more boring. Our research on the blockchain seems to confirm that, showing a continuity rather than a rupture with neoliberal capitalism; we do not share the same considerations on the “emancipatory” nature of Bitcoin that, according to Varoufakis (2023: 163), has been “betrayed” by the cloudalist class³⁰⁰. At the same time, the role of productive and unproductive investments in contemporary capitalism, as well as the extension of financialization processes, are contested topics, as shown by Lapavitsas (2013) and discussed further in the last chapter.

²⁹⁹ Robinhood, one of the most famous investing platform, openly declares that is “on a mission to democratize finance for all” <https://robinhood.com/us/en/about-us/>

³⁰⁰ It should be mentioned that Yannis Varoufakis already in 2012 explored the possibilities enabled by bitcoin, and while in the government actively worked on a blockchain-based alternative currency to provide liquidity to greek economy without recurring to the ECB (Varoufakis 2017)

The feeling that we have reached a new phase of capitalism should not be seen as the result of capital shifting *en-masse* towards rent-seeking investments but because of the continuous exposition of technoscientific capitalism on the tangible and intangible levels. We can touch it despite being intangible everywhere and at any time, thanks to the widespread use of smartphones and tablets, and providing a service or a product “at fingertips” is a well-known motto. What’s the impact of such a revolution on our daily life? Even if this question goes behind the aim of this research, it can be inferred that constant exposure to devices embedding certain ideas leads to their expansion.

However, we already described how technological devices are perceived and employed as a “magical toolbox”, as well as the wide usage of magical metaphors when it comes to the blockchain.

We should now go back to the definition of techno-feudalism. Moving from (Wood 2002) it can be argued that the generalization of determined socio-economic practices leads to a qualitative shift in the relation of production. I decided to employ the term “techno-feudalism” to signal the general resurgence of anti-modern traits despite to (or thanks to) new technologies, followed by a general embitterment of living conditions for the vast majority of the population and the growing relevance of anti-economical and unproductive practices.

By modernity, I mean the vulgarized depiction of Weberian Western rationality: the capacity to “master all things by calculation” (1919, 132), buttressed by impersonal laws, depoliticized bureaucracy, and formal citizens’ equality in front of the law. One of the consequences of modernity is an unprecedented capacity to generate knowledge, which would reinforce the rational means-ends relationships driving individuals. And to implement this new form of government, stricter control on various aspects of life and production is needed.

A contradiction has already emerged in the Weberian definition. Where should the line between surveillance and individual freedom be drawn? Where do pre-modern oppressive forms of control overlap with contemporary ones? Feminist critique outlined (Federici and Fortunati 1984) the continuity between pre- and post-capitalistic women’s forms of oppression and how free housewives’ labor made possible salaried/capitalistic jobs, while human geographers showed how the very industrial revolution was possible thanks to unequal global exchanges (Hornborg 2001; Malm 2016). Even without mentioning colonialism, we can say that modernity

found its roots in violence, an irrational force by definition (Graeber 2015). But violence (and irrationality) are traits that we showed characterizing online spaces. Technofeudalism – lacking a better description that future historians could provide – can be seen as the return of the moral and immaterial aspects in everyday socio-economic life, resulting in a generalization of capitalism’s violent traits thanks to the technology: the *re-enchantment of the world* (Landy and Saler 2009) coincided with the spreading of a (hidden) aura of irrationality.

The connection between immaterial capitalism and irrationality is not new. As already discussed, Baudrillard (1976) noted how late-capitalism embedded elements of “irrationality”, bearing “hyperreal” commodities with little or no references to any “real” meaning and having marketing departments a constantly growing role; at the same time Debord (1970) outlined how the coeval expansion of media was changing the XIX century Weberian-type capitalism forever. When Western countries shifted their economies toward the immaterial sector (FIRE) during the '70s, externalizing the material one (Graeber 2015), bureaucracy started having a growing role in everyday life. And bureaucracy, as discussed in the previous section, is inherently linked to violence and irrationality.

A small comment on the terminology. I am fully aware that European peasants and artisans experienced better working conditions during the middle age than their XIX century homologues, nor did they have to face moral and sexual repression as in the Victorian era. Despite this, it’s still fruitful to employ the term “feudal” to describe the embitterment of living conditions for the vast majority of the population. We can look at the term *techno-feudalism* also from a *technological* point of view and not from a socio-economic one. The provoking nature of the term derives from the fact that feudal Europe is usually associated with technological stagnation, since the rigid system of land tenure and labor obligations offered little or no incentives for innovations. Without entering into historical discussions, what is interesting to remark is how the advent of enclosures and the privatization of the commons, phenomena that signed the passage from feudalism to capitalism long preceded the introduction of industrial machineries, and for around two centuries old tools coexisted with a new legal and political framework, so that contradictory economic and technological states can exist.

After focusing on the feudal aspect of contemporaneity, we can now turn our analysis to term “techno”, further exploring a crucial theme for our work.

What is technology?

Technology itself is an ambivalent term, embedding (apparently) opposing meanings: on the one hand, when we think about the technology, we cannot but think about *material* objects and their (innovative) characteristics³⁰¹; on the other hand, the word “technology” comprises the word “technique”, which is *immaterial* knowledge, an ethereal substance that, however, provides a *tangible* effect on how we interact with the surrounding world. This duality has already been wholly captured by Marx (2004, 493), which defined technology as “the active relation of man to nature”, as we already mentioned. What we can say now is that technology does not “determine” human behavior, nor is it a spiritual force that manifests itself in some *genius loci*. It does not always imply the presence of a material tool: I could use a baton to grab a fruit hanging from a branch I cannot reach or ask someone taller than me to do that for me. Or I can pay them to do so: so, if money determines our abilities/capabilities (Marx 1982), then money and technology are intimately connected. Techno-feudalism does not look so stretched anymore.

About a century after *Capital's* first edition, the French philosopher Michael Foucault developed similar points. Despite being one of the concepts he analyzed the most, Foucault never proposed a unified theory of technology (Behrent 2013): his ambivalent use of such a word allows us to draw some similarities with the Marxian definition.

Drawing on Nietzsche, the French author shows how technology/power is a way to shape humans’ conduct, tacitly incorporating (political) strategies (Foucault 1990); it’s not a mere “no”, a purely negative, coercive force. In both senses employed by the French philosopher, as controlling or evaluative systems, technology is strictly related to the exercise of power. And requires a political *body* upon which to be executed. It requires a *savoir* (Foucault 1972), a realm of truth and falseness, of what can be accepted and what not. Technology and powers both shape and

³⁰¹ This duality is constitutive of the adjective “technological”

depend on these factors, making populations disciplined, productive, and governed with minimum coercion.

If we consider feudalism from a technological point of view, it ended in the second half of the XVIII century, long after the introduction of a crucial technology, the *confession*.

According to Foucault (1990), confession played and still plays a pre-eminent position in Western societies (“Western man has become a confessing animal”), producing *subjectivities* in a social ritual and establishing a regime of “truth” and a “balance” of the bad and good deeds (58-59). Reformation (a historical period beyond “economic” feudalism but within “technological” one) intensified spiritual and religious life in both catholic and protestant Europe; confessional practices spread among a varied array of fields (medicine, pedagogy, etc.) (ivi, 73), while registries and ledgers became a ubiquitous presence for everyone.

All these mechanisms *disciplined*, controlled, and made the bodies productive with minimum use of coercion: a political technology of the bodies themselves. This efficient employment of power is built upon a vast knowledge of the bodies requiring unprecedented transparency to operate. The late-XVIII century *panopticon*, an ideal prison designed by Jeremy Bentham, constitutes the epitome of such disciplinary apparatus (Foucault 2012). Such a prison would guarantee total transparency of inmates' and operators' actions since the internal watchtower could have been inspected at any moment by anyone. The panopticon is a mechanism impersonal and automatic like machinery that creates and sustains power relations, independently by the person who runs it: “it is a way of making power relations function in a function, and of making a function *functions* through these power relations” (ivi, 145); transparency and precision serve to make this technology of power employable everywhere.

Two noteworthy things can be pointed out now. First, impersonality, detachability, and lack of agency are what distinguish the modern form of technology from the “ancient” form of magic (Hornborg 2016), and their effectiveness doesn't rely on the person using it or the environment where they are displaced: they can be seen as a much more powerful and pervasive “total social fact” rather than magic or religion. Second, such impersonality cannot but imply a (supposed) neutrality and thus the depoliticization of this form of power. But the fear of personal judgment, the rhetoric

of objectivity, and the struggle for standardized, value-free measures are the results of a general crisis of societal trust, a way to avoid taking responsibility: bureaucratic machines. Indeed, if we analyze the historical path that led to the emergence of bureaucratic, impersonal standards, we encounter endless claims on the “moral duties” and the “sacredness” of the alleged value-free profession of regulators bureaucrat (Porter 2020).

More than two centuries later, in 2009, we will find this full transparency implemented in the Bitcoin whitepaper: every blockchain transaction is public, anyone can see the addresses, and there’s no need to trust a third party to authorize an exchange, while traditional monetary transactions need banks to approve and resolve them, blockchain-based solutions relay on CPUs to solve the “double-spending” problem. Blockchain’s objectivity and incorruptibility are constantly praised by its enthusiasts. However, the anonymous author of this protocol – unlike Bentham and his epigones – had in mind a technology *to avoid* any form of organized, political government: the whitepaper clearly echoes anarcho-capitalistic ideals and general disbelief towards any form of planned socio-economic activities. It was published right after the 2008 financial crisis and the subsequent FED’s plan to inject liquidity into the markets to save overexposed financial firms. In the eyes of wholehearted monetarists – for which money exists only as a fixed quantity that any institution cannot alter – such policies would constitute a deliberate plan to devalue the currency and, thus citizens’ wealth. In fact, by fixing its total supply to (an almost cabalistic) 21 million, Bitcoin would restore the scarcity principle in the era of post-Bretton Woods monetary policies; moreover, this political ideal will be accomplished through machines and ciphered pieces of code without the need for human intervention. Bitcoin seems to embed the double meaning of the word technology, material and immaterial; from a Foucauldian point of view (Behrent 2013), it both controls and *disciplines* users within its ecosystem and the society broadly speaking, since it rewards nodes that behave correctly and, more importantly, spreads neoliberal ideals (competition between nodes, ideals of scarcity, individualization), while appearing impartial and a-valiative.

Blockchain and the “reenchanting of the world”

Moving from Foucault, we can now trace a curious genealogy to show the role played

by blockchain in what we have called technofeudalism.

Bitcoin whitepaper explicitly draws upon and refers to the cypheractivism movement that can be depicted as its forerunner: the 90s witnessed the birth of the so-called cipher activism and cypherpunk movement, that is, the usage of cryptographic techniques to pursue political change (defending individuals' privacy from government and big corporations); "cypheractivists" bestowed upon the right to use cryptographic tools revolutionary and messianic powers. Cryptography, as we can read on their manifestos, is all about hiding from others; the right to privacy is the right not to be seen. In their visionary paper, Barbrook and Cameron (1996) already noted how the emerging "virtual class" combined new-age spiritualism and economic individualism, resulting in a blind "faith" in a technological solution to solve societal problems, spurred by enlightened entrepreneurs: "In place of counter-productive regulations, visionary engineers are inventing the tools needed to create a 'free market' within cyberspace, such as encryption, digital money, and verification procedures. Indeed, attempts to interfere with the emergent properties of these technological and economic forces, particularly by the government, merely rebound on those who are foolish enough to defy the primary laws of nature" (7).

The keyword here is "visionary", bestowed with supernatural powers. We can then expand the comparison with magic. According to Marcell Mauss (2005), we are facing a form of magic (rather than facing a religious fact) since the private, mysterious, and almost esoteric elements of cryptographic technologies, the interest in the natural world, and the technical, practical fields of application of such rituals. First and foremost, the cypheractivist must write code and produce something concrete, like the wizard for the French ethnographer. It is probably not a coincidence that Bitcoin is sometimes called "internet magic money". Unlike religion, magic is a private act usually performed in hidden places and among small communities. The very word "crypto" means "hidden" in Greek. However, it's still a total social fact, a shared system of beliefs entangling relevant aspects of life. People do believe in magical acts, and contradictory and harmful elements are not considered: blame is eventually put on the performer who failed the procedure, not on the validity of the process itself.

This individualization of responsibility, typical of magical acts, fits the neoliberal ideals permeating blockchain technology very well. For example, it is designed to avoid transaction reversal. By considering each user the only responsible for their

actions, any form of communal decision-making is made useless, and technical features influence communities' narratives. At the same time, blockchains put at their center moral and ethical questions, even if masked as value-free, as we already showed; but these are anti-economical themes according to textbook orthodoxy economics (L. Robbins 2007), and their blending with economic participates in the creation of what we called "techno feudalism".

We want to test this last assertion. Crisis and their solving are a common trope in anthropology, characterizing the discipline since its beginning. Van Gennep's passage rites can be seen as answers elaborated by societies to face crisis and sudden transformations of the social order (Van Gennep 1909); even if it usually carries a negative meaning, the word *crisis* comes from the ancient Greek κρίσις, "to make a choice", implying a plurality of actors and outcomes. This dialectical reading of crisis is central to Ernesto De Martino. De Martino believed that rituals play a critical role in managing, containing, and resolving crises within societies. In his view, a crisis often leads to a sense of disorientation and loss of "presence", representing a direct threat to the individual's or community's identity and existence. Rituals, according to De Martino, act as a means to re-establish order and meaning, providing a framework for individuals to understand and cope with their dramatic experiences (De Martino 2009, 2001). Against the risk of losing the capacity to act, subaltern groups adopted vital "diplomacy" and "politics" through songs, healing, propitiatory practices, and so on.

Similarly, among Baruya people - as reported by Godelier (1999) - during initiations of young males, so during moments when the social order is changing, myths surrounding the origin of men and women are recollected. These myths - where men violently steal powers from women - legitimize male dominion by showing the perils women caused in the primordial times and authorize the use of violence of stability is provided despite changes.

How do crypto communities react when the social order is at risk?

These concepts, it might be argued, won't fit modern, secular, and highly systematized societies that developed impersonal mechanisms to solve them, so an analysis of current social phenomena through the notion of crisis can be impractical. Van Gennep explicitly restricted his analysis to non-European societies, De Martino saw the *taranta* ritual as the only way for marginalized women to express their discontent in a marginalized society. But one of the features of techno-feudalism is

this return of pre-modern traits. And *crisis* is an inherently political term. We are constantly reminded that we are experiencing unprecedented changes and *crises*. Still, the parts involved in these changes are hardly mentioned, nor who's benefitting from the various choices.

Having reassured the heuristic validity of this concept, we can move further. A typical moment of crisis in these communities is when funds are stolen or wallets hacked; the decentralization of blockchains made in the crypto world when cryptocurrency exchanges are hacked or exploited, the typical refrain is “not your keys, not your wallet”: you should have moved your funds to your own private ledger. The blame is put on the single user.

The biggest financial loss ever registered did not happen on a central exchange: in a few days during May 2022, the LUNA/TERRA ecosystem lost all its value. Even if the 50-billion-dollar crash was amplified by DeFi design and only a few sophisticated investors avoided losses (Liu, Makarov, and Schoar 2023), and at the same time, the decentralized nature of the blockchain made it impossible to block the digital “bank run”, blame was often put on irresponsible investors that were lured by high-interest rates³⁰². Bitcoin maximalists were vocal about LUNA centralization and the importance of (true) decentralized finance³⁰³.

I interviewed many enthusiasts about this motto, asking who's to blame when, in a fully decentralized environment, funds get stolen or something goes wrong. I got different answers: it seemed to me that the more the people were “embedded” in the crypto space, the less they understood my question and, at the same time, the more they put the blame on the single users. It is interesting to see how the already-mentioned self-appointed “crypto-anarchist” and Nordea Bank representative confronted a question on responsibility and blockchains. The following excerpts are from the DeFi event mentioned in the *Crypto-altruism* chapter. People on stage were asked by the host about the MICA Act; he went on to explain that “Banks deal with trust [...] you need to have trust in DeFi, but people don't trust crypto for price volatility and having regulations can help people being closer to DeFi [...] How can we implement it? It takes long time to implement trust”

³⁰² <https://www.wired.co.uk/article/terra-luna-collapse>

³⁰³ <https://twitter.com/maxkeiser/status/1525114273617395712>

Another person on the stage, working for a fintech company, somehow presented an intermediated position:

“Rug-pulls can happen, so you need to be educated... [but] you still someone to be held accountable for the actions of protocol. DeFi and something else, a foundation, like Uniswap”

The crypto-anarchist was sitting next to me and visibly frowned each time the Nordea representative answered. Probably, he would have disapproved of the answer given by one of the consultants we met a few chapters ago. After the fancy dinner, I asked him the same question; without blinking an eye, he shuttered, “It’s programmer’s fault!”. I was surprised by the answer since he was the first one to openly recognize that software does not write itself and it cannot be expected users to be computer scientists; probably after watching my astonishment, he watered down the answer, adding that users also bear some responsibility.

After the event ended, I asked the crypto-anarchist about the “not your keys, not your wallet” motto in a fully decentralized environment:

“Single users are to blame everywhere” since “software developed to analyze smart contracts exists”. Pushing this question, I asked how decentralization can still be in place if I have to trust software developers. The proposed solution was educating themselves, and in any case, users decided to engage with this technology, so they are responsible for any failure. He went on to explain his moral and ethical standpoint:

Responsibility has many angles: spiritual, philosophical... [It means that] you have free will to get into something so you have to educate yourself. We trust [institutions] because we are forced. Do you even have the choice to not to? Being responsible means being free, you’re the one who makes your own decisions.

He grasped the double meaning of *responsibility*³⁰⁴: acting rightfully and having the capability of acting freely; kids are not held (legally) responsible for their wrongdoings. Coherently with their individualistic views, libertarians merge the two

³⁰⁴ From the latin *responsum*, the answer given by the highest religious authority in pre-republican Rome to litigants that brought him a judicial case

different meanings, so the right way to act is the one without any constrictions. Instead of supposed neutrality, however, the result is a circular reasoning that reinforces this system of value.

Supposed value-free institutions act in an evaluative way by individualizing the blame. This contrasts with the Weberian ideals of bureaucrats and, more broadly, with the ideals against which contemporary Western societies built their image. One of the main consequences of the French Revolution was the dismantling of feudal privileges and freedom in continental Europe. Populations would not accept any more aristocrats being subjected to different laws and rules. The state would represent the whole population and act to improve all of it, ideals embedded in the *panopticon*. As we saw in the Introduction, however, modern bureaucracy transformed into mechanisms to not get accountable. Blockchains, the embodiment of right-anarchist ideals, automated these processes. In this way, they participate in the re-emergence of pre-modern, feudal traits; the contestation, in the first instance of any authority, led to the dismissal of juridical institutions. “A judge can be corrupted,” I was told when I said that a centralized system to distribute responsibilities (like tribunals) can effectively find the culprit and recover stolen funds; recognizing the need for a central authority means also recognizing the necessity of a social organization, a shared morality and the impossibility of a fully decentralized system. Instead of an anarchist utopia where actors interact and protect themselves without any oppressive or corrupted entity, the emerging scenario resembles more *feudal* privileges exemptions from the law. Only individuals exist, and everyone is *responsible* for themselves; if everyone is responsible, the very concept of responsibility loses its meaning since it does not refer anymore to a peculiar behavior. Without a judiciary system, formal or informal, it makes no sense to see an action as just or not³⁰⁵, making room for injustice. Almost nothing can be recovered from the multi-billion dollar failure of FTX/Terra, while the impossibility of reversing a transaction makes it extremely hard to send back funds obtained in a fraudulent way.

The people I spoke with were very conscious of modern financial inequalities and double standards. Satoshi designed Bitcoin during the 2008 crisis. Yet, they don't

³⁰⁵ And indeed *longtermism* is the most diffused philosophy among crypto-communities, see next chapter

contest the apparatus they brought it in the first instance. It's always humans' fault, not technologies'. This refusal to admit the limits of a design that can incentivize misbehaving or that offers no protection appears to me as a typical fetish, a manifestation of an irrational factor, further reinforcing the paradigm of techno-feudalism as we defined: the contradiction between technological advancements and its promises and the social setbacks that actually enabled is solved by reassuring mythical principles and blaming the single individual.

Decentralization is undoubtedly one of these myths. Discussing blaming and responsibilities with a hackathon's teammate, he recognized that a distance from the world envisioned by Nakamoto, and the current world exists:

All our legal system, a lot of other processes in our society and in the constructs that we created in our economical systems, in our how we interact with each other, they are not decentralized, right? They are just not and we can, in my opinion, innovate and adopt step by step. Right now, we cannot decentralize our whole legal and financial system all from today to tomorrow.

It has to be gradual and it's never going to happen if we decouple from the current legal system.

His company is working - among others - on solutions to make cryptographic transactions debatable in courts. Questioning him how could interpret this with the stress on decentralization, I was told that

And at one point going to be that, you know, that something is secure, that you are protected, that something is actually real because that is going to be, I think the issue that something, an object or a data points, authenticity is verifiable and you can trust it because of math and not because some centralized person tells you and those things are going to be for those things, Blockchain technology is going to be useful for you.

His answer went on, to explain how trusting mathematics can improve societies:

Take news as a very tangible example. If you take your information about what's going on in this planet, on this little ball of math that we call planet from the news at eight o'clock in the evening.

Then you accept that's the reality that you perceive is shaped by somebody who decided what to show in this 15 minutes. [...] But this one reality, it's probably not the whole picture of what's going on.

The same thing goes [on] with social media, right? If you follow a specific people or

specific channels and accounts, that's the reality that you're going to see. On top of that, you have some algorithms that are controlled as well by interests, right? As much as the channels behind them that they are going to highly influence the that content that you see and therefore shape the reality that you see.

And with all the AI advancements that we are seeing, you're very soon not going to be able to even notice if that is a real reporter and a real magazine or not because for you, it's just going to literally look the same.

So how do you want to differentiate even? So let's say there is one kind of people that are going to say, I don't care if that is real or not or if my reality and my perception of reality is restricted or not.

I want to have a nice life [...]. [But] I'm more interested into reality and what is really true in one aspect of what's happening and all the rest, I don't care [...]

And then, but even if that is the case, even in just one subject, in one area, how do you make sure that all the information about that is true?

I answered back that the environment you grew up in, along with the educational system, provided the instruments to distinguish true from false. This is what I got back:

Bullshit. But let's look at the last happened, big things that happened worldwide politics. How many people were deceived, were blurred, were completely misinformed and they are still 100% convinced that they are on the right side that they have just the truth and nothing but the truth was served by them from mass media.

And unfortunately, it's not, it's just, I mean, we can argue about it, but unfortunately, it's not the truth, right? No, no, no.

And if you, even if you now take into account, let's take Twitter or things like this, how many fake posts or tweets are going out there that influence the overall landscape of what the opinion about something is right for you as well.

I said that from a sociological point of view, things are a little bit more complex, and asked if the solution was technologically enforcing transparency.

No, not at all. I don't, I would not say to enforce anything. I would say that if people want to prove that what they are saying is true, there should be a simple and trustworthy way to do that and how do you define truth that something happened for real?

The discourse shifted on how to define authority, and the difficulties in translating

concepts from the digital to the real world; in a blockchain network, authority is simply attributed through consensus mechanisms like proof-of-work or proof-of-stake, while among social groups it remains one of the most discussed topic since ever. Humans do not interact like computers in a network, yet my interlocutor tried to apply the same principles, resulting in conflicting statements.

But does it has to be one point of authority? No, that's the point. Why does the provider of authority be a centralized to be a centralized entity? [...] You can decide for yourself if you trust me as an authority or not, right? And me as authority, [I can give] person A B and C the stamp of a journalist, right? And if there is many people like me saying that this is a trusted authority that or this is a trusted journalist, right, then you can verify that or you can.

And if that is not a solution and at least make people accountable, if you say this is a real account of a real person that's standing behind it and writing, [then] this is already stopping a lot of bots and it's stopping a lot of people of writing fake things because they know that they are personally accountable for what they just wrote.

So already that is a point. And then afterwards you can deeplink, you can link information, right? If you use technologies that can help you to seal or authenticate digital documents and data points right, you consequently can source way more consistently all the information that get out there and minimize the opportunity to fake them in the process of sharing them, right? Because that's what often happens that in the process of sharing certain informations or certain events, critical aspects of information are left out or reformulated to draw a new picture.

And by sourcing truthfully and trace in a traceable manner with accountability in every step where you can make sure that if something is changed, I mean, it can still be shared, right? What's the problem? But the person that changed it is accountable for changing it and this can be found.

The problem, as always, is about the quality of the reporting and about translating and interpreting facts. By applying a seal, a certificate of authenticity and immutability blockchains can perpetrate fake news. Or, to say better, can give an aura of truthfulness to opinions representing certain interests, removing the need for debates, further weakening democratic institutions. At the same time, they reduced the civic role played by educational institutions: why teach and se critical thinking if

we already have the truth?

That is still gonna remain the same thing if we're talking about news. Uh Yes, yes, there has to be somebody but that can be done already, right? You can have uh uh cameras that have a certain uh encrypted parameters or chips in them that show and track your geolocation for photographers so that the people that buy these pictures can be sure that the picture they buy was taken at a certain time at a certain geolocation.

If then at that geolocation, everything is staged is another thing, right? But at least you know that it's a real picture that was taken there and it is not AI generator.

This exchange showed how the search for decentralization recreated autocratic and authoritarian principles. Going back to Mauss, paradoxes in the magical systems reaffirm a unity: “Quite disparate notions fuse and harmonize without the whole losing anything of its incoherent and dislocated aspects. The parts do form a whole. At the same time, the whole adds up to much more than the number of its parts. The different elements we have dealt with consecutively are present simultaneously, a unity” (Mauss 2005, 108). What is getting saved here, are the individualistic principles behind capitalism in his liberal and “feudal” phases. This latter point was explicitly outline by Varoufakis in an interview. There’s no democratic mechanism to allocate bitcoins and early adopters now sit as crypto-aristocrats: “when an asset like Bitcoin (whose exchange value is built on engineered scarcity) is embedded in any oligarchic exploitative system (capitalism, kleptocracy, techno-feudalism, etc.), it acquires the basic character of the (pre-capitalist) feudal order: a small minority are empowered to collect rents in proportion to the chunks of the asset that they began with”³⁰⁶

Despite the antisocial homo oeconomicus beliefs shared by blockchain enthusiasts, the magic-like nature of the acts performed by such communities reaffirms the primary role of a group: societies always reward themselves with “the false coin of [their] dream” (Graeber 2001). The fetishistic aspects of the technological development we outlined in the previous pages reinforce this linkage between real-world groups, economic activities, and online crypto enthusiasts.

³⁰⁶ <https://the-crypto-syllabus.com/yanis-varoufakis-on-techno-feudalism/>

Pre-modern mysticism

After more than a decade after the first release, bitcoin and other blockchain-based protocols have gained terrific popularity, and not exclusively for speculative reasons. Despite being designed *to replace* the current monetary system (rhetoric still employed by bitcoin's *maximalists*³⁰⁷), the very fact that bitcoin's *value* is expressed in fiat currencies like the U.S. dollar or Euro means that it lacks numeraire function, and we cannot employ it as a proper currency. Instead, we should treat it like other commodities lacking an explicit use-value, like gold (bitcoin is often dubbed "digital gold" and, in fact, is designed to work as a digital commodity-backed currency), art or jewellery. This perspective is coherent with the "hyperreal" capitalism we outlined in the previous section, where use-value has been replaced by exchange value. Bitcoin would simply occupy the last stage in the simulacra's procession (Baudrillard 1994): there's no relation between its value and reality. It's a purely digital and concealed, "hashed" amount of information. Here's where the pre-modern mysticism resurfaces, paradoxically: humans cannot simply de-cypher such data; powerful CPUs (managed and programmed by a skilful minority capable of *speaking*³⁰⁸) are needed. Machines assign values and significance.

But there's more. As said before, blockchains' success is not merely linked to speculation. In recent years they found a vast array of non-financial and non-speculative scenarios where to be employed. The encrypted information shared on such networks can be of any type. It's useless to say that such technology fits perfectly banking and financial scenarios (*pace* Satoshi Nakamoto) where security is a top priority³⁰⁹. But in a world overwhelmed by bureaucratic agencies, the need for certified data is almost universal. Oracles³¹⁰ bring real-world, non-speculative use cases for this technology, automatizing (thus de-personalizing) data fetching and validation. "It's virtual, so it's true, and if it's true, it's right" seems the rhetoric behind these applications³¹¹: a pristine example of machine fetishism (Hornborg 1992).

³⁰⁷ A very popular motto among them is "1 BTC is equal to 1 BTC"

³⁰⁸ The parallel, of course, is with the knowledge of latin and (more rarely) greek by clergy scholars

³⁰⁹ See for example how HSBC employs blockchain <https://www.hsbc.com/news-and-media/hsbc-news/harnessing-the-benefits-of-blockchain>. Ripple, moreover, is a blockchain made for international bank transfers <https://ripple.com>

³¹⁰ An oracle is a bridge between a blockchain and a source of data

³¹¹ See for example <https://chain.link/use-cases>

Like in pre-modern times, a pivotal role is attributed to immaterial, ethereal substances, and material/political/historical reasoning is simply not considered. The source of value/truth is located in certificates not comprehensible by the many; virtual and real, material and immaterial overlap. Rather than be disruptive, game-changing or potentially dangerous employed by extremist technology, the blockchain looks like the logical evolution of an overly bureaucratized world (Graeber 2015) in which numbers and accounting (Porter 2020) – like all Marxian *unproductive* activities – are become a pillar of socio-economic organizations. Rather than challenging the status quo, digital ledgers simply reduce their costs, being the work of accountants “stolen” by machines, thus helping its reproduction. Blockchains are among the factors pushing current capitalism to its own limits and contributing to its transformation in something different following, however, already present patterns and characteristics. If Varoufakis was right in labeling these changes as techno-feudalism, he was wrong in seeing a different economic system replacing capitalism itself.

As noted by Hornborg (2014), machines and technological innovations are subsumed capital, reflecting peculiar political-economic experiences. The vast array of financial/speculative applications simply corresponds to the general trend towards the financialization of every aspect of our socio-economic life; if blockchains, cryptocurrencies and NFTs are seen and portrayed by media only as speculative, “tech-bros” technologies, it is precisely because boundaries between economic and non-economic aspects of life are shrinking, and technological progress is actively taking part in it (Birch 2019). Rather than being an anomaly, such technologies look like the “normality” in a heavily financialized world.

The embeddness of the blockchain

Maussian anthropology helped us explain how the faith in the magical powers of the code, which can be deciphered only by incorruptible machines that don’t need human and political (corrupted) intervention, ended up establishing a dialectical relationship with the contemporary world it apparently criticized; the ideals shared by cypheractivists and blockchain enthusiasts don’t differ from the last-decades hegemonic ones.

Foucault’s double definition of technology helped us understand this process, since blockchain’s disciplining design closely resembles the neoliberal one.

To further stress the link between technology, immateriality and new forms of capitalism, it should be noted the financialization processes (Lapavitsas 2013) rest on the two-fold meaning of technology outlined earlier: material production could be moved to south-east Asia thanks to a new legislative apparatus allowing capitals to be deployed everywhere they were needed and thanks to the development of supertankers, airports, telecommunications and so on.

In this sense, web3-based green finance perfectly fits the scenario we have just outlined. KlimaDAO made possible for anyone having a credit card to participate in the neoliberal commodification of nature: instead of proposing political solutions, they offer markets one; tangible pieces of hardware are used to produce and enforce digital certificates of ownership; voting mechanisms are kleptocratic. Instead of being “disruptive”, blockchain lowered public companies’ barriers to entry. The “faith” put into the machines and their “naturalization” made participants unaware of the broader picture depicted, and indeed we employed the concept of *symbolic efficacy*. The embeddedness and the proximity with mainstream themes, and so with other techno-feudalist thrusts, also emerged in other interviews. For example, in one exchange held online with an active member of GitcoinDAO, a web platform that “*want[s] to build a protocol to enable anyone you sponsor a round. Like crowdsourcing but way way more evolved and permissionless*” I was told me that most participants in this platform are driven by market euphoria, and the quantity of people involved is directly proportional to bitcoin prices. If greediness is a widespread feeling, nonetheless climate change is a widely perceived problem; in many conversations I had, people seemed sincerely aware of environmental questions.

I didn’t have the impression of talking with market extremists; many see themselves as committed to building a better future, while others are simply investors looking for short-term profits. However, market-driven solutions are seen at least as valid as legislative ones, and very few users have also been involved in political or real-world activism. No one problematized international measures or the power imbalance stemming from them.

Probably, the most involved users in such platforms are the same people who also want to provide a positive impact: they decided to employ their spare time in unpaid interviews with me in a highly profit-driven milieu. In their eyes, blockchain technology does constitute a valid method, unlike traditional politics; they don’t seem

aware they are reproducing the same system which provoked the current crisis. I'll transcribe answers from different users meet on KlimaDAO

[Q] have you ever been involved into politics or activism, even in a low level? In general, did politics ever interested you?

[A] traditional forms of governance are incredibly useful, but suffer from inefficiencies of scale, dispersed mandates and trying to do too much all at once. So things that fall through the cracks, things that people want - we see they are building for themselves, trying to make better alternatives. To that end, we've certainly seen through shining stars like Gitcoin that blockchain-based solutions present a huge opportunity to better fund, and hopefully better manage, public goods.

And GitcoinDAO

[Q] how do you value the collective, sociality aspects of the DAOs?

[A] It;s hard to explain, DAOs are just a natural evolution, people wanted to coordinate differently..I joined the regen and web3 DAOs before they were named this way

[Q] before gitcoin, have you ever been interested/involved into environmental or societal question?

[A] Yes, multiple times since I was a kid. I did some drawings and artworks as a kid which were all about societal change and I was kinda 10-12 I think when I was drawing, painting those, I guess my parents managed to instill a critical spirit in my and my grandparent managed to open my mind wrt to nature I joined web3 to learn about the new tools not the new way of thinking

I have a small fashion concept(est in 2016) which is all about enlightenment and social change. [...] I have always felt very connected with nature since I was a small kid. Our way of living is very synergetic with nature where I'm from. [...]

It's complicated to answer ur question.

[Q] what's the difference between web3 and esg, green bonds etc?

[A] Well, web3 is way way bigger that "bonds"

bonds are just a financial instrument, in web3 you will have thousands of them

Web3 is the next evolution of the internet, it;s supposed to be more private, credible neutral and foster equal access

equal opportunity would is a little more complicated

but, really because in web2 we didn't have social media from the beggining...web3 is

the BRAND ... orgs that are not web3 will say they are web3 and it will be part of their mission statement

What does not emerge from the various dialogues is the lack of politics, and rather the repetition of keywords turned into *memes*. If any political discussion is removed, if struggles between different interests are reduced to “coordination problems” and “public goods”, then there’s no need to talk about different ways to organize socio-economic life. If everything is reduced to a number, there’s no need to talk.

Conclusion: technologies of responsibility

We showed through the chapter how technology and morality are deeply linked, using the concept of responsibility to explain this connection and its broader socio-political implications. In this last paragraph, I want to draw a last comparison.

A heavily financialized economy is an economy where a considerable amount of legal paperwork is needed not only because neoliberal politics imply the widespread of courts and juridical settlements (Foucault 2008), but also because financial instruments are contracts, legally enforced documents among two or more parts. Laws, traditions and morality are unquestionably bounded together³¹² and embedded in our daily practices; current ambivalent meanings of the word “responsibility” reflect the juridical/theological etymology of such term.

In an apparent paradoxical move, Weberian-rationality institutions and technical innovations brought back the morals and the morality into modernity. I used the word “apparent” because *in nuce*, the very idea of administration and economy embeds theological values and meanings, as a broad literature has shown (Agamben 2009; Stimilli 2011; Schwarzkopf 2019) and that we can summarize through Hubert (1904) definition of religion as the “administration of the sacred”: every administration implies a (mythical) division between administrators and administrated. Laws, customs and morals enforce this separation, in open or concealed ways.

Technological inventions fulfill the same role thanks to their very design.

At the same time, blockchains “discipline” societies since they are designed to mathematically enforce encrypted contracts without any questions and without the

³¹² I am voluntary ignoring jusnaturalistic theories around rights’ origins. What I want to outline here is the cultural relativism surrounding all laws and juridical systems; the reference is, of course, C. Lévi-Strauss and Unesco (1952)

possibility to reverse a transaction, bearing in its code the Thatcherian motto “there’s no society”. They recreate, in the digital world, the paperwork characterizing the national-state bureaucratic apparatus heavily criticized by the anarcho-capitalistic milieu from which they stemmed.

Morality on-chained. Finance and philanthropy in the era of the blockchain

Introduction

Research on the thorny relationship between finance, technology, and morality, set during the 2021-2022 rally, would be incomplete without a chapter on the turmoil that ended that market's euphoria.

This section was written during the Silicon Valley Bank (SVB) collapse. A moral hazard has caused this bankruptcy since its managers placed an unhedged bet on the FED's low-interest rates³¹³. SVB management decided to earn as much as possible from the vast number of deposits received during the 2020–2021 stock rally. Greed and overconfidence—the Keynesian "animal spirits—caused the biggest bank failure since 2008. However, as its name hints, SVB's clients were mostly high-tech startups; we should ask ourselves if this is just a coincidence or if the computer/cyber industry represents a privileged and peculiar spot from which to observe the entanglement between finance and morality, as suggested by the literature (Barbrook and Cameron 1996). The past year seems to confirm this relation, but in a negative way: 2022 started with the sentencing for fraud³¹⁴ of the former biotech entrepreneur Elizabeth Holmes and ended with the implosion of the FTX cryptocurrency exchange and the arrest of its founder, Sam Bankman-Fried (SBF).

On the eve of December 12th, 2022, SBF was arrested in his Bahamian residency after criminal charges were filed by the prosecutors for the Southern District of New York³¹⁵, roughly three months since his last meeting with White House Senior

³¹³ <https://www.forbes.com/sites/conormurray/2023/03/13/what-to-know-about-silicon-valley-banks-collapse-the-biggest-bank-failure-since-2008/>

³¹⁴ <https://finance.yahoo.com/news/elizabeth-holmes-theranos-founder-sentenced-to-1125-years-in-prison-222816236.html>

³¹⁵ <https://www.nytimes.com/2022/12/12/business/ftx-sam-bankman-fried-bahamas.html>

Advisors³¹⁶ and one month after FTX, the crypto-exchange he founded, halted all withdrawals³¹⁷. As legal proceedings are ongoing, SBF allegedly mismanaged depositors' funds and used FTX deposits to bail out sister trading company Alameda Research and artificially inflate FTT's (FTX native token) price³¹⁸. Accounting-book frauds are nothing new in the financial world, and SBF's fall resembles Enron's³¹⁹.

Then, if we wanted to write a chapter analyzing finance and morality, this \$11 billion scandal could simply be used as a starting point to reinforce the millennia-old refrain on the immorality of money and commerce: finance is the realm where morality is banished, and vice versa; blockchain is just a more technologically advanced way to launder money and commit frauds.

It could be relatively easy to support such a thesis due to SBF's embeddedness in the mainstream media. FTX arose during the 2020–2021 bull market³²⁰ and "lured" the general public into cryptocurrencies not only through an aggressive commercial campaign³²¹ and a user-friendly interface but also because its founder received extraordinary media coverage³²² for his philanthropic actions³²³. Sam Bankman-Fried, who, if found guilty of all criminal charges, could now face more than 40 years in jail³²⁴, was depicted by the media as a humble vegan billionaire, driving his old Honda and wanting to bring light and regulations to the dark realm of cryptocurrencies³²⁵ and create a better world through philanthropy.

³¹⁶ <https://www.bloomberg.com/news/articles/2022-12-29/bankman-fried-met-white-house-aides-in-pre-collapse-crypto-push>

³¹⁷ <https://www.coindesk.com/business/2022/11/08/ftx-exchange-halts-all-crypto-withdrawals/>

³¹⁸ <https://www.cnbc.com/2022/11/15/how-sam-bankman-frieds-ftx-alameda-empire-vanished-overnight.html>

³¹⁹ <https://www.investopedia.com/updates/enron-scandal-summary/>

³²⁰ t the beginning of 2020, Bitcoin was traded at around 7300\$, while in November 2021 it reached 68000\$; conversely, FTT went from 2\$ to 70\$

³²¹ For example, it aired a commercial during 2022 SuperBowl

<https://www.youtube.com/>

³²² <https://time.com/collection/100-most-influential-people-2022/6177770/sam-bankman-fried/>

³²³ <https://www.usatoday.com/story/money/2022/04/05/cryptocurrency-ceo-donate-charity/7272175001/>

³²⁴ <https://www.cnbc.com/2023/02/23/ftx-founder-sam-bankman-fried-hit-with-new-criminal-charges.html>

³²⁵ <https://www.ft.com/content/83bc681a-a0f9-43bb-b627-c6daca4e4a0a3>

This Icarian rise and fall cannot help but give a bittersweet smile and closely remember KlimaDAO's trajectory. His fate changed so swiftly that someone could argue that SBF simply scammed hundreds of thousands of customers with the complacency of the media (and politicians) and that the image built around him was just fake, and he simply lied in front of corrupt journalists. Given the scale of the fraud and typical shadowiness of the crypto world, a simplistic account like this could probably contain some truth. However, it would be an error to treat SBF as a fraudster who merely lied to people and was only moved by greed, characterized by a lack of morality, downplaying all his commitment to the philanthropic cause. Notwithstanding his collapse and criminal records, we will not consider his donations as a mere way to launder his reputation, but rather the opposite: our starting point is believing he acted in good faith, taking for granted his pledges to donate as much as he could. We will employ the same posture we had for KlimaDAO, trying to understand how his figure could rise and acquire power: they are offsprings of the same "culture", they are not isolated phenomena, and understanding them means understanding one source of legitimation of "the moral turn of finance" and of the "new spirit of capitalism".

The primary recipient of SBF's donations was the Effective Altruism ³²⁶(EA) movement, a good-doers community that is becoming extremely popular among Silicon Valley's entrepreneurs. According to its website, its members "aim to find the best ways to help others and put them into practice", which translates as finding the most dollar-wise way to employ donations to solve global problems. As we will show in the following sections, behind this broad movement, we will find the same utilitarian and positivist ideals that underlay the development of economics and computer sciences and the same tensions, paradoxes, and leitmotifs characterizing the development of late capitalism.

Sam-Bankman Fried is just one of the many blockchain entrepreneurs deeply interested in developing these forms of utilitarian philanthropy. Our thesis is that the rise of "crypto-giving" can be seen as the embodiment of modern economic orthodoxy since its proponents aim to find morals and values through logic and

³²⁶ <https://www.effectivealtruism.org>

mathematics, not so distant as Milton's definition of the economy as a "descriptive science" and they adopted into the design and the code of their applications the same highly mathematized and logic-based game-theoretic approach to economics; what makes this connection relevant is that cryptography, positive economics, and modern computers they all stem from US military founded think tanks, while the implementation of positive economics into software design happened in the 80s: blockchain's entrepreneurs fascination towards nonprofits would be than the last chapter of a novel started during WW2, and anthropology can help in writing it. Gifts and generosity are central themes in economic anthropology, from Marcell Mauss' seminal essay on the gift (2002) to Graeber's bestseller on the debt (2014): gift-exchange is seen as a collective activity in which actors create social links thanks to the obligation to reciprocate. A hierarchy can arise if the recipient cannot return it; Marcell Mauss (2002: 83) cleverly points out how this still holds in Western societies: "The unreciprocated gift still makes the person who has accepted it inferior, particularly when it has been accepted with no thought of returning it. [...] Charity is still wounding for him who has accepted it, and the whole tendency of our morality is to strive to do away with the unconscious and injurious patronage of the rich almsgiver." Competitive gift-giving among the Pacific population takes the form of a power fight (*potlatch*) among elites, while behind the concept of deities and sacrifices can be seen this struggle to reciprocate an original, supra-human gift (Bataille 1988) (Graeber 2005, 2001). Accounts of contemporary ultra-wealthy donations show how they can undermine democracies by tax elusion (Harrington 2017) or by replacing the government's actions (Saunders-Hastings 2022). Elites' morals and moralities are contradictory themes: the contradiction at stake here is a thorny, hoary one and as old as capitalism itself, namely how the market can pursue social welfare, a system based upon self-interests.

It should be remembered that every hierarchic system needs a moral justification; it cannot rest only on violence. Anthropology sits in a privileged position to observe it: as we saw, cryptocurrency enthusiasts claim the neutrality and a-morality of this technology by negating the existence of a social order.

The neoclassical definition of the economy as the allocation of scarce resources is

taken for granted in the design mechanism of these technologies³²⁷, while anthropology has long been problematizing both the concept of scarcity (M. Harris 1959; Polanyi 1965) and technology itself (Hornborg 2014, 2011, 2001, 2016), so we can deconstruct their axioms and see which objective function is at play. The reproduction of society as a whole is more important than any one of its singular components, and incongruences during this process are usually suppressed through (variably enforced) collective amnesias (Graeber 2001). For this reason, asking ourselves if SBF or utilitarianism can be labeled as "moral" is not the main point; here, it is sufficient to say that they were moral in a broader sense: moral comes from the Latin *mos*, a term that contains both an ideal and a pragmatical aspect on an individual and societal level. A person is moral if he or she acts according to the *mos*. It can be translated both in an ethical sense as the "proper way to act" and in a political sense as "tradition". SBF and utilitarianism were unquestionably moral because they aligned with the capitalistic tradition.

Moving from this definition, rather than see morality and finance as inevitably contrapposed, we want to show how they are ontologically interlaced and how the development of computer technologies, particularly blockchains, plays a fundamental role in such intertwinement.

One final note on methodology. This section will draw upon postmodern authors and concepts to explain the abovementioned phenomena. We will rely on this literature to analyze articles, podcasts, and blog posts. The collapse of boundaries and the end of solid definitions seem to characterize the story of contemporary finance and technology, and blockchain may represent the best example of this hybridity that we somehow already employed. The emergence of contaminations through different fields and concepts—that represents the blending between human and non-human thanks to technological development—is a phenomenon thoroughly observed and studied since WWII, for whom the term *cyber* has been coined (Wiener 1948); moving from the abovementioned scenario, where technological artifacts, finance, and morality connect each other, we aim to show how blockchain represents the

³²⁷ The term should be read in its broader - material and immaterial - Foucauldian sense (Behrent 2013)

continuation of the cyborg models conceived initially during the cold war.

In the end, this allows us to expand what we already said about the old substantivist-formalist debate: post-modern cyber societies are ruled and bounded by the scarcity principle in all of their aspects, even those—like generosity—that we thought immune to it, thus reasoning according to homo economicus formalists' principles, and we cannot distinguish between economy and other aspects of life, expanding this embeddedness to contemporary societies what substantivists reserved to precapitalistic economies: in contemporary cyber societies, the economy is way more embedded than what sociology currently states (Krippner et al. 2004) (Granovetter 1985).

The chapter will be structured in this way: we will first analyze SBF's story, highlighting his unique relation with the philanthropic association Effective Altruism, then turn our gaze toward the latter and its utilitarian approach and how it is profoundly diffused among Silicon Valley entrepreneurs, especially those working with cryptocurrencies. The reason could be seen in that Effective Altruism and other long-term-inspired no-profits share, along with blockchain's design, the utilitarian principles behind modern economic orthodoxy. Finally, this blending of economy, technology, and morality allows us to embrace the cyborg paradigm and frame web3 enterprises into the broader economic orthodoxy; we will end by reflecting on how classic anthropological themes can be fruitfully employed to study these new phenomena.

Effective altruism and long-termism

KlimaDAO aimed to drive carbon prices by "sweeping the floor" or buying and

removing cheap and low-quality carbon offsets from the market. As we saw, the whole mechanism has been heavily criticized because it gave them new life instead of removing them. In the polemic that ensued, KlimaDAO defended its choices because scaling up and making carbon markets work smoothly is more important than assessing their quality. Similar discussions around focusing on growth or quality characterize their sister company, Toucan³²⁸.

The examples of blockchain implementation mentioned above seem to hinge on a broader moral question: are temporary setbacks and sacrifices acceptable in exchange for greater future good? The positive answer to this question lies behind the "longtermism" philosophical movement to which EA participants and SBF adhere.

Despite being founded by the Oxford-based philosopher Danny MacAskill, Effective Altruism is a philanthropic movement gaining momentum among Silicon Valley entrepreneurs³²⁹. As we stated above, this can be connected to the fact that they spoke the same positivistic language. Hi-Tech Californian workers always sought how to make a social impact, but they always abhorred proper political and state-led intervention or regulation; this peculiar political behavior, highlighted by Barbrook and Cameron at the dawn of the internet era and defined as Californian ideology, is still very popular according to a recent survey among Silicon Valley's elites (Broockman, Ferenstein, and Malhotra 2019).

The argument of the two scholars can be summed up in this way: California's virtual class performs creative jobs that find their roots in the rebellious and counter-culture experiences of 1960s hippies, while at the same time, they champion conservative pinpoints like free markets and individualism because they are completely detached from production, in both a Marxian and material sense. They are alienated by the material aspects of the production, given that their labor is primarily digital and immaterial, and in a political sense, since they have no control over production and are often hired on precarious contracts. The faith in technological determinism made it possible to council these contradictory values and gave rise to a Jeffersonian democracy, where individuals could enjoy personal liberties without considering the

³²⁸ <https://governance.toucan.earth/t/increase-quality-of-the-base-carbon-tonne-bct/39>

³²⁹ <https://www.newyorker.com/magazine/2022/08/15/the-reluctant-prophet-of-effective-altruism>

historical conditions and the broader social aspects that made that possible. It is essential to underline that, to enjoy this virtual state, a virtual digital currency was needed and was indeed discussed back then, as noted by Barbrook and Cameron.

This detachment from "classical" political bodies and activism is at the center of EA's ideas and praxis, which we can define as the virtual class's morality³³⁰. What was an online forum now oversees charities worth more than 30 billion dollars³³¹. Elon Musk defined³³² William MacAskill's new book as a "close match" to his own philosophy. As stated before, SBF was a massive supporter of EA and donated millions of dollars to charities linked to this movement³³³; moreover, he pledged to give away all of his multibillion-dollar fortune³³⁴. EA invites its members to take a pledge³³⁵, which means promising to donate a sum between 1% and 10% to selected charities or, by prioritizing financial security³³⁶, postponing donations until a sufficient level of economic stability and life priorities are achieved. In order to maximize their impact, the organization openly invites its members to start thriving and highly paying careers³³⁷, especially in banking or finance³³⁸, to contribute the most in the long run. All projects founded by William MacAskill—EA, Giving What We Can (GWWC)³³⁹, and 80000 Hours³⁴⁰—share this long-term view of philanthropic causes, focusing first and foremost on the future effects of today's actions. As we will see, their attention on temporally distant potential returns allows them to hold and

³³⁰ Popular Youtube channel "Philosophy Tube" labelled Effective Altruism as rich-people ethic. However, since it is very popular between a certain type of wealthy individuals and has many adherents among all classes, we think it is more correct to define it as virtual class' ethic <https://www.youtube.com/watch?v=Lm0vHQYKI-Y>

³³¹ <https://www.newyorker.com/magazine/2022/08/15/the-reluctant-prophet-of-effective-altruism>

³³²

<https://twitter.com/elonmusk/status/1554335028313718784?s=61&t=3RzoF14xZX63imGYh6mc-A>

³³³ <https://blazetrends.com/the-founder-of-the-ftx-platform-wants-to-donate-his-fortune-during-his-lifetime/>

³³⁴ <https://www.bloomberg.com/news/features/2022-04-03/sam-bankman-fried-ftx-s-crypto-billionaire-who-wants-to-give-his-fortune-away>

³³⁵ <https://www.effectivealtruism.org/get-involved/take-the-giving-what-we-can-pledge>

³³⁶ <https://forum.effectivealtruism.org/posts/3ijnLaws7mCEogD6H/earning-to-save-give-1-save-10>

³³⁷ <https://80000hours.org/career-planning/process/>

³³⁸ <https://forum.effectivealtruism.org/posts/Jvq75g5ms7BxGDYWa/finance-careers-for-earning-to-give>

³³⁹ <https://www.givingwhatwecan.org/>

³⁴⁰ <https://80000hours.org/>

justify contradictory values and causes. "Longtermism", a term coined in 2017 by MacAskill³⁴¹, is the philosophical stance behind those organizations, and, as the name hints, it poses that today's actions should be guided by their potential long-term consequences and, in particular, in terms of their impact on future generations well-being.

Those ideas are not entirely new and reverberate in Parfit's *Reasons and Persons* (1984), an opera written during the Cold War that echoes the fear of that era for a nuclear confrontation and the end of the world.

Indeed, Derek Parfit can be seen as the inspiration for EA, explaining why these theories became popular among tech workers. They share the same vocabulary. He tried to reconstruct morality through logic analysis and Nash games, freeing it from its historical and theological roots; he retrieved and repurposed typical utilitarian tropes and discourses, heavily relying on calculation and optimization. As already said, *utilitarianism* is a *consequentialist* moral theory, which evaluates an action's morality according to its consequences. Actions are considered neutral, not inherently good or bad: judgments are based upon their results, if they maximize or not the overall happiness or well-being of the most significant number of people. So, in order to provide a moral framework for decision-making, calculations, and optimizations of the consequences of each possible social or ethical action are needed, and crucially, those are everyday tasks for software engineers and investors, the same type of people that would eventually constitute the vast majority of EA's adherents.

Furthermore, Parfit takes the utilitarian stress on the future to its limits. On the one hand, personal identity is seen as a psychological continuity (219) of past and future selves, and on the other hand, he thought that human history and the history of ethics may have just begun (453), so that each future life can have a more significant "marginal impact" on the total wellbeing. According to him, the difference between a nuclear war that kills the whole human population and one that spares 1% of it, and the difference between this latter scenario and world peace is way more significant not only because - as classical utilitarians would agree - the result would be the maximum destruction of happiness, but also because it would impede the

³⁴¹ <https://forum.effectivealtruism.org/posts/qZyshHCNkjs3TvSem/longtermism>

development of arts and science, which were just recently freed from their previous religious ties and could then grow exponentially in the following centuries. So, the greatest tragedy would be the non-existence of these non-existent people.

Without explicitly mentioning him, another philosopher in Oxford, Nick Bostrom, came to similar conclusions as Parfit. Bostrom, whose Future of Humanity Institute shares the same building with the Centre for Effective Altruism³⁴², in "Existential Risks: Analyzing Human Extinction Scenarios and Related Hazards" (2002), explored the concept of "existential risks", which are threats that could potentially cause the extinction of humanity or severely limit its potential. Even if the probability of any of these events is extremely low, it has to be taken into account; otherwise, we won't be able to grasp the fruits of technological innovations. In fact, Bostrom is a firm supporter of transhumanism, "the intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by using technology to eliminate aging and greatly enhance human intellectual, physical, and psychological capacities" (Bostrom 2014); however, such an "utopic" scenario would be thwarted by the existential risks that span from nuclear holocaust to any "misguided world government or another static social equilibrium [that] stops technological progress" (Bostrom 2002). The potential human loss due to delays in technological development is calculated in his subsequent paper, Astronomical Waste (Bostrom 2003), that Elon Musk recently endorsed on Twitter³⁴³. Relying on concepts of the self -similar to Parfit's psychological continuity - he estimated that, since from each star we could extract enough power to sustain a computer capable of 1042 operations per second, and given that each human brain is capable of 1017 operations per second, every century we delay of spatial exploration we lose 10^{38} potential (digital) lives. He concludes that "for standard utilitarians, priority number one [...] should consequently be to reduce existential risk" simplifying "the utilitarian imperative "Maximize expected aggregate utility!" into "the maxim "Minimize existential risk!"".

As we saw, Effective Altruism is not the first nor the only movement applying

³⁴² <https://www.newyorker.com/magazine/2022/08/15/the-reluctant-prophet-of-effective-altruism>

³⁴³ https://twitter.com/liv_boeree/status/1529158437585752064

marginal rationality to charities; in fact, Parfit's and Bostrom's ideas on future mass extinctions represent only one leg of EA and utilitarian philanthropy, even if the most relevant one as of today ³⁴⁴. The founding father of all of them was Peter Singer and, in particular, his *Famine, Affluence, and Morality* (Singer 1972). Singer—who popularized the animal rights movement and veganism—showed through logic and mental experiments how rich people are morally obliged to donate part of their income to poorer people because refusing to do so would be equivalent to letting them die: "If it is in our power to prevent something very bad from happening without thereby sacrificing anything morally significant, we ought, morally, to do it". For MacAskill and others, reading that text represented a turning point.

As we stated in the introduction, each power system needs a moral legitimation—a way to exert control and influence without recurring to brute force, even because it would be impossible to constantly recur the threat of violence for each community member. The ahistorical account provided by Singer seems to provide a moral framework for the Jeffersonian democracy that the virtual class aspired to create: despite using as an example the coeval famine experienced in what was East Bengal (current Bangladesh), he does not mention at all the colonial past of the area, and the other numerous famines and economic collapses the former English colony went through after the introduction of markets (John Bellamy Foster and Holleman 2014) (Hornborg 2011). The "externalities" produced by the current economic system are thus addressed without questioning the economic system that produced them in the first instance, a negation that which anthropology showed to be a universal mechanism of societal reproduction (Graeber 2001; Godelier 1986); utilitarianism's solution is through voluntary donations in the name of a (supposed) universal and objective morality.

Singer and Parfit became successful in the virtual class because they provided an apparent apolitical, religious, and ahistorical moral framework to structure their actions using their same language. It can be briefly pointed out that, by playing the same role as religions (and politics), EA effectively became a religion in itself, with

³⁴⁴ In the abovementioned interview with the New Yorker, Danny MacAskill confessed how he tried to speak about global poverty to Elon Musk, and he did not seem interested to the argument

SBF and MacAskill playing the role of gurus, as many commentaries noted ³⁴⁵.

To maintain a balanced account, it should be noted that this approach allows for fast and direct action; EA was born as a way to maximize philanthropic donations, and since its start, it has funneled millions of dollars to fight malaria through the adoption of bed-nests³⁴⁶, and the results they obtained should not be downplayed. According to EA's website, controlling malaria has the highest return in terms of lives saved for each dollar spent³⁴⁷. This rationalist thinking can be a slippery slope and can end up reproducing the dysfunctions it ought to challenge, especially when it comes to donations, and it created many tensions inside the community itself (Cremer and Kemp 2021): Bostrom's longtermism conflicts with Singer's directness. While they are both utilitarian and ahistorical movements, both refuse to consider the varieties of socio-historical aspects characterizing the actors, long-termism applies a temporal dimension to its utility function by factoring in existential risk. The figure of SBF himself embeds this conflict³⁴⁸, both for his contradictory acting — as we saw — and his beliefs, as we will see; but even though its main founder gambled and lost billions of dollars of customers' savings, the EA movement is still active, and the members keep donating and discussing on the forum.

Anthropology, particularly M. Mauss (2005), can help us skew the cynicism that may emerge from journalistic accounts since EA and linked charities received funding for hundreds of millions of dollars ³⁴⁹. The personal interest of MacAskill and other prominent figures may play a role, but this won't explain the grassroots activism or Musk's commitment toward a movement close to someone politically distant from him like SBF. The French ethnographer and his epigones stressed how, in a social group, the whole is greater than the sum of its constituent parts (107), so that incongruencies and errors of single components don't determine changes in

³⁴⁵ A now cancelled blogpost by SequoiaCapital, one of the biggest investors behind FTX, was titled "Sam Bankman-Fried Has a Savior Complex—And Maybe You Should Too" <https://web.archive.org/web/20221027181005/https://www.sequoiacap.com/article/sam-bankman-fried-spotlight/>

³⁴⁶ <https://www.malariaconsortium.org/support-us/effective-altruism.htm>

³⁴⁷ <https://www.effectivealtruism.org/articles/ea-global-2018-amf-rob-mather>

³⁴⁸ It is interesting to note how the other big supporter of Effective Altruism we already mentioned, Elon Musk, holds a public figure that is the opposite of SBF's, calling him "ineffective altruism" after FTX's crack

<https://twitter.com/elonmusk/status/1593261525258489856>

³⁴⁹ <https://time.com/6262810/sam-bankman-fried-effective-altruism-alameda-ftx/>

collective beliefs because everyone keeps believing in the overall unity or functionality of the system itself. Or, to quote Mauss, "the whole society suffers from the false images of its dream" (155)³⁵⁰.

But what societal group are we talking about? According to EA enthusiasts' descriptions provided by the now-canceled Sequoia Capital interview, we are talking about the abovementioned virtual class: "the EA rank and file draws from the rationalist movement, a loose intellectual confederation of scruffy, young, STEM-oriented freethinkers who typically (or, perhaps, stereotypically) blog about rationality and live gender-fluid, polycurious lifestyles in group houses in Berkeley and Oakland". The GiveWell foundation moved from Connecticut to San Francisco already in 2013 because "the tech community around Silicon Valley has embraced the movement with particular enthusiasm"³⁵¹. A survey conducted by another longtermism group found this cliched account to be accurate; according to this study³⁵², EA is a homogenous group mostly comprised of young, rich, white, atheist, moderately left-leaning, and vegetarian males that received a STEM degree from a top-tier university, although a large group chose humanities. Typically coming from an Anglo-Saxon country, they work as software or web developers or as managers and consultants; only a few currently work for or have worked for a charity.

Given their commitment to market-based solutions, the utilitarianism they share is, first and foremost, their belief in neoclassical economics and its utility function, while the rationality they discuss is Lionel Robbins' economic one. In this sense, even if they actively search for counterintuitive solutions, and the whole point of

³⁵⁰ The Routledge English translation of Mauss *Théorie Générale de la Magie* (Marcel Mauss and Hubert 2019) by using the verb "to suffer" gives a negative and pessimistic interpretation to this key notion. The original French text (Marcel Mauss and Hubert 2019) is «La société se paie toujours elle-même de la fausse monnaie de son rêve», and literally translates as "The society always compensate itself with the false coin of its dream", that is also the title of Graeber (2001). Suffering would imply actors feeling alienated by the social arena they are into or forced to partake in the games, thus implying values' misalignment; Mauss' elegant sentence, on the other hand, avoids any judgement. We prefer the original French definition then, since EA's utilitarian, atomized and individualistic principles are the same behind markets' mechanisms, and its participants on the forum keep sustaining and defend them.

³⁵¹ https://www.huffpost.com/entry/elie-hassenfeld-givewell_n_6927320

³⁵² <https://rethinkpriorities.org/publications/eas2019-community-demographics-characteristics>

consequentialism is to create an ahistorical and un-evaluative moral, they end up reproducing the broader market society's values and politics so that their moral coincides with the dominant one. This supposedly un-evaluative and scientific approach, in fact, closely resembles Milton Friedman's (1953) *Essays in Positive Economics*, where the author stated that economics should be concerned with positive analysis (the study of what is) rather than normative analysis (the study of what ought to be): facts, not political ideas, should guide economic policies. It should not surprise us that the beneficiaries of the neoliberal socio-economic system became adherents to a philosophical movement reproducing the same values. Peter Singer himself somehow confirmed this in The New Yorker interview; when asked why applied consequentialism was gaining popularity on the web, he answered: "People will say, 'I've had these ideas since I was a teen-ager, and I thought it was just me,' and then they got online and found that there were others". In his Ph.D. thesis, long-termist philosopher and former *Future Fund* CEO Nick Beckstead (2013) argued that "richer countries have substantially more innovation, and their workers are much more economically productive. By ordinary standards—at least by ordinary enlightened humanitarian standards—saving and improving lives in rich countries is about equally important as saving and improving lives in poor countries, provided lives are improved by roughly comparable amounts. But it now seems more plausible to me that saving a life in a rich country is substantially more important than saving a life in a poor country", an argument not so distant from the already mentioned charter cities' idea of Nobel Prize winner Paul Romer³⁵³, western (and thus, allegedly well-administrated) enclaves in the developing world to drive its growth. This top-down, bureaucratic-driven, anti-political approach to international development (Ferguson 1990) has been embraced for decades by many different actors, and utilitarianism constitutes its ideological background.

Effective altruists' idea of pursuing the greater good for a greater number of people closely resembles Alfred Marshall's (2009) idea of the economy as the pursuit of greater well-being and, in general, to the utility function (and the subsequent minor role attributed to political decisions) underlying the welfare economy theorems

³⁵³ <https://www.nytimes.com/2019/09/05/upshot/paul-romer-burning-man-nobel-economist.html>

(Hindriks and Myles 2013). However, contrary to Marshall, EAs don't consider economics a separate social activity; instead, they conflate morality, economics, and technology. In this sense, they constitute a further development of the cyborg themes (Mirowski 2002) that arose after WW2; the fascination of blockchain enthusiasts toward EA derives from this technology's very cyborg design and genealogy. Before moving on, it's necessary to describe the life of the protagonist of this section because he exemplifies this enmeshment between morality, technology, and economy.

Not only Sam Bankman Fried

Narratives and story-telling play a pivotal role in resource acquisition and legitimization for startups (Lounsbury 2001); uncertainty characterizes companies with no proven records, and stories about the founders and their vision help secure capital by creating a corporate identity (Martens, Jennings, and Jennings 2007). Identity creation implies a double process: the singularization and creation of a unique self (identic) and its reflection in a broader group (identical). In the case of Sam Bankman-Fried and FTX, this meant articles and interviews reflecting the values and stereotypes of the virtual class; before the bankruptcy, the narratives around him and his then-growing empire were not so different from those around Amazon, Google, or Apple and their founders: a college genius, a self-made man who started almost from zero and made billions thanks to his brain; despite the wealth, however, he remained the same dropout as before^{354 355}. He is the son of two Stanford professors, who, according to the flattering Sequoia Capital article, grew him according to utilitarian principles. He received a master's degree in physics at MIT and then started working in finance in 2013. As we already said, physics and economics have been very closely linked since the 19th century. He made his

³⁵⁴ <https://www.livemint.com/news/world/this-30-year-old-crypto-billionaire-plans-to-give-his-fortune-away-11649040889532.html>

³⁵⁵ <https://www.businessinsider.com/how-sam-bankman-fried-became-crypto-billionaire-ftx-story-interview-2021-12>

fortune in 2017 by arbitraging the so-called "kimchi premium", a difference in the price of Bitcoin between Asia and the rest of the world. He met MacAskill before leaving the university while the English philosopher was on a fundraising tour and pitched EA to him like a business plan. According to the interviews we already mentioned, earn-to-give guided SBF's career choice and prompted him to pursue a riskier business—founding its own trading company and crypto exchange—rather than the journalistic or political career he was thinking about because the greater risk was offset by the possibility of netting billions to donate and thus help way more people than if he had pursued the other careers. It is hard not to see in this a secular version of the prosperity gospel and Pentecostals' promotion of material wealth or, given the displayed humble lifestyle, a repurposing of the Weberian links between puritanism and capitalism; effective altruism, then, rather than a cult³⁵⁶, resembles more a religion, a "religion without revelation", to quote Huxley (1967), one of Bostrom (2014)'s sources. EA has been fundamental to creating his fortune: he managed to exploit the price difference because a Japanese EA graduate student opened a bank account on his behalf in a rural Japanese bank, and the first employees he recruited were EA members. But EA could have also been the reason for his fall; according to an allegedly close source of SBF³⁵⁷, the long-termist faith shaped his catastrophic investment strategies: "They all thought the risks were worth taking to accomplish the most they could for humanity... SBF thought he could do more for the world than others and that it was his responsibility to bear that risk, and he convinced many others in the effective altruism movement to align with him. When you start thinking the end justifies the means, anything becomes justifiable". The reliability of this account cannot be verified, but given the consequentialist and long-termist mindset of effective altruism's members, we find it plausible: what is a financial fraud compared to saving trillions of future lives? Bankman-Fried, similarly to Elon Musk, is not interested in "near-termist causes [like] global health and poverty [because they are] emotionally driven" and highlights that efforts shall be put on long-termism: "The majority of donations should go to places with a long-termist mindset," we can read in The New Yorker's profile. "I want to be careful about being too dictatorial about it or too prescriptive about how other people should feel. But I

³⁵⁶ <https://www.theatlantic.com/newsletters/archive/2022/11/sam-bankman-fried-ftx-crypto-effective-altruism/672247/>

³⁵⁷ <https://twitter.com/autismcapital/status/1590551673721991168>

did feel like the long-termist argument was very compelling. I couldn't refute it. It was clearly the right thing."

Longtermism has been heavily criticized for its elitism³⁵⁸ and broader detachment from real problems³⁵⁹. It could also be argued that donating to these philanthropic organizations allows substantial tax savings for the ultra-wealthy, and at the same time, by addressing remote causes, they reinforce the status quo and the material distance between billionaires and the Global South³⁶⁰; cold-war scenarios of mutual destruction, and so geo-political tensions and aggressive policies found new life because the consequences of nuclear wars are investigated rather than their prevention, a different approach compared to their hostile artificial intelligence. These recent philanthropic developments, moreover, could challenge traditional anthropological accounts of philanthropies and unreciprocated gift-giving because many of the recipients for those donations, being future human beings, by definition, don't exist or are not considered existing by the vast majority of the population, so it is hard to frame them using concepts as *hau* and *potlatch* (Mauss 2005) or to talk about "pure gift" (Parry 1986). Given the vast media coverage and praise received by SBF and others and the reinforcement of current inequalities resulting from their action, we may consider that Effective Altruism is playing the same broader historically objective role of unreciprocated gifts, that is, creating social relations where givers set themselves above the rest.

Someone could conclude then that all donations are prompted merely by self-interest, but in the last section, we will see how it could be possible that the virtual class, particularly those involved with blockchain, could genuinely not see those contradictions between private and public interests.

³⁵⁸https://ssir.org/articles/entry/the_elitist_philanthropy_of_so_called_effective_altruism

³⁵⁹ <https://www.nytimes.com/2022/11/18/opinion/effective-altruism.html>

³⁶⁰ SBF's Future Fund, for example, received more than 100 millions dollars to research on topics like AI's takeover and bioweapons response. Facebook's co-founder Dustin Moskovitz charity Open Philanthropy, working according the same longtermism principles, similarly employs most of its funding toward remote events <https://ftxfuturefund.org.cach3.com/index.html%3Fp=30.html>

Before moving on, we shall provide another example of this confusion to prove our initial statement on the role played by blockchain; we will shortly introduce Vitalik Buterin, the mind behind the Ethereum network. The Russian-Canadian engineer donated a billion dollars denominated in crypto³⁶¹ in 2021 to an Indian Covid relief fund and co-launched the Gitcoin platform, "the first implementation of quadratic funding³⁶² to maximize impact [and] for democratically allocating philanthropic funds". His blog is filled with posts about philosophy and politics; this latter term, however, should be read more in the sense of governance since what emerges from those posts, rather than ideas on where the society should go, is how the current state of affairs should be managed³⁶³. Politics is reduced to a coordination game where actors are rational egoistic individuals, and actions must be evaluated according to their results³⁶⁴: he is a long-termist. Finally, his political vocabulary relies on the heavily mathematized, game-theoretic, and axiomatic vocabulary that constitutes modern orthodox economic thought, especially Kenneth Arrow and his impossibility theorem (2012), which states how a perfect voting system that satisfies specific basic criteria of fairness and rationality cannot be constructed. He solves this conundrum by reducing politics to the application of Nash's-like coordination games to the Samuelsonian concept of public goods (Samuelson 1954), despite the latter having mixed feelings towards game theory (Dorfman, Samuelson, and Solow 1987, 445): Gitcoin and its quadratic funding can be seen as the pinnacle of his techno-philosophy. Gitcoin was founded in 2017 to monetize the development of open-source software; however, its scope quickly expanded thanks to a very loose definition³⁶⁵ of public goods, now intended as what "people get the benefits of them, even if they don't contribute to creating them" ³⁶⁶, so that on this platform is

³⁶¹ <https://www.bloomberg.com/news/articles/2021-07-28/what-s-become-of-the-1-billion-india-covid-aid-crypto-donation>

³⁶² Quadratic Funding is the application to grants of quadratic voting, a mechanism to allocate votes according to market principles, so that the Condorcet paradox is solved (Buterin, Hitzig, and Weyl 2019). The concept is heavily explored in Posner and Weyl (2018), an opera that influenced Vitalik Buterin's political economy view, as he openly admitted in a blog post https://vitalik.ca/general/2018/04/20/radical_markets.html

³⁶³ <https://vitalik.ca/general/2019/12/07/quadratic.html>

³⁶⁴ <https://vitalik.ca/general/2020/09/11/coordination.html>

³⁶⁵ It should be added that also an organ like UN officially employs ambiguous definitions, like "Digital Public Goods", where terms like "open source" go unproblematic despite its equivocal background linked to the entrepreneur Tim O'Reilly <https://thebaffler.com/salvos/the-meme-hustler>

³⁶⁶ <https://80000hours.org/podcast/episodes/vitalik-buterin-new-ways-to-fund-public-goods/>

considered philanthropy both financing the development of a new crypto exchange³⁶⁷ and funding a UNICEF's project³⁶⁸. Even if it may sound paradoxical because it ignores the socio-historical process creating what is public and what is private (Malkin and Wildavsky 1991), its logic can easily be illuminated by adopting a longtermist posture; in a podcast hosted by 80000hours, an EA's project devoted to promoting the most impactful career choices, when asked if the crypto community could be a fertile ground for longtermist ideas, he answered: "I'd say so. I mean we've definitely have tried [...] So I personally definitely believe in this idea that Ethereum should not just be a community about a cryptocurrency and should not just be a community about de-centralization; it should also be this kind of broader philosophical community that reaches out to these ideas that are potentially adjacent and really aligned in the tribes and forge bonds there." ³⁶⁹

Crypto-giving: the epitome of the cyborg movement

What seems to emerge is a pattern among tech enthusiasts that cannot be attributed merely to casualty.

When Steve Jobs took over Apple's reins again in 1997, he changed the image of the brand with the "Think Different" campaign: those spots showed clips of modern political, artistic, and athletic figures, both dead and alive, with Jobs' voiceover narrating a sort of rebels' eulogy. The untold message of the spot was that if those impactful people were alive, they would've used Apple's products, while those who are alive are indeed using them. Given the extreme success of this campaign, we can affirm that this conflation between fields is widely accepted among the great public. How else could a billionaire like Richard Branson be seen as a "troublemaker [with] no respect for the status quo"? Baudrillard (1994) rightly pointed out how, in the contemporary capitalistic world, the exchange value held by commodities ended up dictating how we experience reality, so that the distinction between reality and

³⁶⁷ <https://bounties.gitcoin.co/grants/3591/defillama>

³⁶⁸ <https://go.gitcoin.co/blog/gitcoin-unicef-qf-collaboration-pilot>

³⁶⁹ <https://80000hours.org/podcast/episodes/vitalik-buterin-new-ways-to-fund-public-goods/>

representation has collapsed, and value is no longer tied to the material aspects of objects but to their symbolic, fluctuating meaning. Both Apple's spot and Effective Altruism can be seen as *simulacra*, copies detached from reality, or as hyper-realities that exist independently of the real world, and the fact that both are enmeshed with technology might not be just a coincidence. Baudrillard's insights on the contemporary blurring of boundaries between meanings heavily influenced the so-called cyborg theory.

A cyborg³⁷⁰, according to Donna Haraway (2013), is the new subject that postmodernism (and technological development) made possible, a mythical creature that overcomes traditional boundaries and distinctions between gender, nature, and so on. In her Manifesto, computers and cybernetic technologies are seen as new revolutionary subjects; relevant for our discourse, however, is how she correctly identifies the "'hardest' science as the realm of greatest boundary confusion, the realm of pure number, the realm of pure spirit, C31, cryptography, and the preservation of potent secrets" (153, our italics). As we saw, this confusion led to the emergence of a unified theory of everything, starting in the late '10s of the twenty-first century: it is almost impossible to draw the lines between economy, morality, technology, public and private. The protagonists of our paper can be adequately understood through the cyborg paradigm, proving that Haraway's predictions on the emancipatory and revolutionary potential of technological development were utterly wrong. We have seen how they, in fact, represent a mixture of economic orthodoxy; an explanation can be found if we consider that computers, cryptography, and mainstream economics were all developed in the same place by the same people. Technological and economic development ended up intertwining and incorporating the needs of the American Army during the Cold War: lack of trust, uncertainty, coordinating agents from above, little or no space devoted to democracy, collective decision-making, sustainability, fighting poverty, and so on. How the history of modern economic orthodoxy has been "contaminated" by the development of computers, creating a hybrid creature, a cyborg, is the central theme behind Mirowski's *Machine Dream* (2002). According to the author, economics has become a "cyborg science" as it has incorporated concepts and techniques from

³⁷⁰ Cyborg is the short for cybernetic organism

other fields, such as computer science and game theory, representing a broader cultural shift towards seeing humans and machines as interconnected and interdependent. If we recollect the abovementioned Bostrom's Astronomical Waste and Buterin's Ethereum philosophical mission, we can see how this cyborg paradigm characterizes them.

Crucial, in Mirowski's account, is the role played by the RAND Corporation and the US military, starting from World War II, in funding interdisciplinary research to implement strategies ranging from anti-aircraft aiming systems to coordinating nuclear strikes. Economists' fascination for machinery and the natural sciences dates back to the XIX century (Mirowski 1991) (Malm 2016), while the Great Crisis already provoked many shifts and changes inside the discipline (Cochoy 1998). However, after World War II, a new pantheistic paradigm blossomed among the plethora of new disciplines characterizing the third industrial revolution: cybernetics. "Cybernetics even trumped the servomechanisms line of feedback thought by turning itself into a universal metaphysics, a theory of everything, as today's physicists and cosmologists use the term, a cyborg metaphysics, with no respect for traditional human and nonhuman boundaries, as an umbrella for the proliferation of individual cyborg sciences it claimed to embrace" (Pickering 1995, 31). Something radically new starts with the development of the cyborg sciences: a cyborg intervention gathers a diverse collection of people and machines, the active and the inert, meaning and symbol, intention, and teleology. According to Mirowski (2002), this transformation was possible because of computer simulations and the emergence of "Big Science", that is, large-scale scientific research projects requiring significant resources, such as funding, personnel, and equipment, characterized by planned coordination of teams and hierarchical structures explicitly inspired by the military ones. The cyborg paradigm was accompanied by a new understanding of physics, where the XIX century paradigm of thermodynamic equilibrium (and optimism) was replaced by Bohr's and Schrödinger's indeterminism (and radical uncertainty). Wartimes and the Cold War needed to coalesce new mathematical and statistical discoveries like Shannon (1948)'s information theory into "thermodynamics of suspicion" (Mirowski 2002, 54), where obscure mathematical formulas were deployed to anticipate enemies' moves. Simulations became so central that for Von Neumann, the most important postwar economist, manipulation of the simulation

eventually came to be considered equivalent to manipulation of the phenomenon itself (Von Neumann and Burks 1966, 22). Then, economics became more axiomatic and formalized, with Von Neumann relying on quantum physics and Hilbert's discoveries (Mirowski 2002, 120): particles could be equated to economic agents. The Von Neumann-Morgenstern utility theorem (Von Neumann and Morgenstern 2007) provides a way to represent an individual's preferences over uncertain outcomes mathematically and axiomatically, taking for granted that individuals can always accurately and consistently assess the probabilities and outcomes associated with uncertain events, structuring his game-theoretic formalism around the theme that most mental processes could be reduced to a gamble of one sort or another, deeply influencing post-war psychology.

Similarly, Nash's equilibrium axiomatically assumes that players are entirely rational and always act in their self-interest. It's not hard to see how these theories were drafted by conflating their authors' experience and life with everyone else's, assuming the homo economicus paradigm as the only anthropological specimen possible. The high level of mathematical abstraction characterized by them leaves no space for historically located human beings.

The utilitarian philanthropic principles we outlined before closely resemble these assessments: In the Sequoia Capital interview, SBF described his career choices in terms of bets and odds, closely adhering to the human as the betting machine imagined by RAND's researchers back in the 1950s, with psychology and economics melting together. It is not coincidental that tech engineers and entrepreneurs like him embraced those principles; in fact, linear programming mathematics resembles that of von Neumann's game theory; according to Paul Edwards (1996), "all computer programming, in any language, is gamelike" (170)

We can draw some more comparisons between the Cold War era's army-founded research and long-termists. "Thinking the unthinkable", that is, assessing the strategic consequences of the automation of a nuclear war, was a typical exercise done at RAND during the 1950s (Dyson 2012), which ended up providing Hollywoodian plots when the possibility of Soviet and American computers dialoguing and coordinating nuclear strikes was assessed: the very definition of "existential risk". The history of game theory is inextricably intertwined with Cold War

diplomatic and military history, moreover, because it was seen as a tool to coordinate US allies (Trachtenberg 1999, 316); despite McNamara's disastrous quantitative approach to the Vietnam War being seen as exemplary of this numerical doctrine, EAs' don't mention it at all³⁷¹.

But the history of computers, wars, game theory, and economics is way more interconnected. Computers, with their graphic interface, proved to be exceptionally fit for wargaming exercises (Ceruzzi 2003, 264).

The development of the first computers and the subsequent division between the machine and the algorithm running on it resembled Tjalling Charles Koopmans' visions for the future of economics: mathematical economists as pure "software engineers," writing the algorithms to allocate resources and discover prices, leaving all the institutional details of markets and organizations and history and politics to the "hardware engineers," like politicians (Mirowski 2002, 261).

Game theory, describing theoretical "rational actors, rapidly colonized these new, blurry scientific fields, and its promoters presented it as a grand unification theory: "Game theory is a sort of umbrella or 'unified field' theory for the rational side of social science, where 'social' is interpreted broadly to include human as well as non-human players (computers, animals, and plants)" (Aumann 1989, 460), using "irrationality to arrive at a strong form of rationality" (478), a sort of counterintuitive reasoning we already saw in action when we explained Bostrom's astronomical waste. Still, in a very long-termist fashion, according to the israelian mathematician Robert Aumann (Aumann 1985, 65) "game-theoretic solution concepts should be understood in terms of their applications and should be judged by the quantity and quality of those applications".

Starting from the 1970s (Mirowski 2002, 495), game theorists expanded their academic alliances, establishing contacts with computer scientists and programmers unsatisfied by the computer architectures of that era (Crevier 1993) (Anderson and Rosenfeld 2000) and looking for new resources. The idea of a "strategy" in game theory paralleled the idea of a "program" used by software engineers; all that

³⁷¹ <https://forum.effectivealtruism.org/search?query=mcnamara%20vietnam&page=1>

remained was to replace an agent with a program and have the agents compete against one another in a computer (Axelrod and Hamilton 1981).

Israel provided a fertile ground for these “contaminations”. Mirowski provides many more examples of the dovetailing between orthodox economics, game theory, and computers. However, for our discourse, we shall now just recollect how, under the auspices of Xerox and IBM, that country became a fertile ground for the application of game theory to computer programming, and various interdisciplinary conferences and publications succeeded in influencing the history of software development (499).

An example is constituted by the physicist and computer scientist Bernardo Huberman, who developed a free-market protocol to allocate computational resources in lieu of the previous one, structured on an algorithmic "planned economies style" rule for allocation (Huberman 1989, 1998).

Aumann is another explicit link between the army, neoliberal economics, and game theory. Again, another RAND researcher. When he moved in the late 1960s to Israel to develop a center of game-theoretic research, he maintained a close connection with Kenneth Arrow at Stanford, and he never disclosed how his career was deeply interlinked with the military (Mirowski 2002, 494). Aumann maintained an instrumentalist attitude toward game theory combined with a deep belief in neoclassical economic theory. For him, the principle of utility maximization is a synonym for "rationality": it is "the underlying postulate that pulls together most of economic theory; it is the major component of a certain way of thinking, with many important and familiar implications that have been part of economics for decades and even centuries" (1985, 35), and then it should not surprise that the pursuit of "the truth" is what is driving science (31-34). Echoes of this highly abstracted and materialistic image of human behaviors can be heard in his 2005 Nobel Prize discourse³⁷², where wars were seen as rational phenomena because they were driven by the will to acquire resources (and moral, we can add, because the same principles allegedly drive society) and avoided through an arms race. It should not surprise that he resorted to game theory to legitimize israelian aggressive policies toward Arabs, stressing the necessity of a "long-term vision" (our italic) and how "Game Theory does not presume to express an opinion on moral values, but rather

³⁷² <https://www.nobelprize.org/prizes/economic-sciences/2005/aumann/lecture/>

seeks to analyze the strategic behaviors of rival parties in a common game”³⁷³; despite this type of reasoning, which should now sound familiar to the reader, there is almost no discussion about Aumann on EA’s forum: it is like these authors became part of common sense for Effective Altruists, they don’t need be known or acknowledged to work.

A paradox then emerges. Through logic, amoral acts according to the common sense of the rest of the population - like waging wars, creating atomic weapons, and enduring global poverty - are rendered moral. This evaluative movement is, however, presented as neutral, “scientific”, so objective, and then the best one. Probably in an unconscious way, these groups legitimize the perpetrators of the above-mentioned amoral acts. Yet this "amoral moral", as we tried to show, is not part of a plot by some evil, quirk scientist *a la* “Dr. Strangelove”: it embraces the same principles and logic characterizing contemporary market society.

We should finally turn our attention to the blockchain. Satoshi Nakamoto, the anonymous creator of Bitcoin’s protocol, designed this technology to process electronic payments without relying on a third party. As we can read in the whitepaper³⁷⁴, the banking system increases transaction costs because it requires a certain level of trust: trusting the origin of the funds and the proper execution of the transaction. Blockchain-based solutions don’t trust people but cryptographic hashes: a transaction is considered legit if approved by most nodes (participants) in the network. Nakamoto’s world is populated by greedy (rational) individuals motivated only by their profit, and that cannot be trusted in advance. Moving information is risky: nodes’ behavior in the blockchain is modeled upon the "Byzantine generals problem" in game theory. Bitcoin solves this game by rewarding nodes that follow the rules through the allocation of tokens: the solution to an economic system that rewards exactly individualistic behavior is more individualism. It cannot be otherwise since it relies on technologies (in the broader, Foucault sense) like cryptography and game theory developed at RAND; the latter, in particular, structures the design of

³⁷³<https://web.archive.org/web/20100707001827/http://www.aish.com/jw/me/97755479.html>

³⁷⁴ <https://bitcoin.org/bitcoin.pdf>

many of Web3 and other blockchain-based projects and communities.

The pervasiveness of game theory among blockchain enthusiasts is something I witnessed throughout my research. For example, many speakers at events I attended were using the same terminology (“trad-offs”), openly drawing upon the anthropological ideal type imagined by such games: a computer science professor told the public that programmers, a “very conservative community” (he was not referring to the political meaning of the term) usually assume a “paranoid behavior” when it comes to the design of blockchain applications. All discussions started about methods on how to enforce trust since all “players” were seen as potential fraudsters.

Advice on L2

For decentralized app, choice of which L2 to enforce should be decided by essence of **risk** it is ready to expose its users to:

- centralization risk,
- **game**-theoretical risk,
- technological risk,
- implementation risk, and,
- adoption risk.

Fig. 1 Slide from a conference, scenarios on potential risks are explicitly modeled upon game theory

We already devoted many pages to KlimaDAO’s incentive mechanism and tokenomics, modeled upon a Pareto optimum that only worked as a rhetorical device. Even if the technicalities behind the Klima token prevented double-spending or mass stealings, very little could do against the greed of few early backers and the irrationality of market euphoria. Those who retained their tokens and “played” according to the rules were those who lost. It should be added that “hodling” tokens is a widespread practice in the crypto community (Yogarajah 2022), so selling is considered immoral and a lack of faith in the blockchain ecosystem behind the token.

Similarly, Wall Street's short sellers are often seen as immoral³⁷⁵.

Conclusions

A blockchain, then, results from a decade-long process of advancing the cyborg sciences and the subsequent blending of economics, computer sciences, and morality; it embeds and solves its contradictions as the socio-economic system it derives from. As stated by the Bitcoin whitepaper, the blockchain has been preceded by cypherpunk, a movement that, starting in the 1990s, advocated using cryptographic techniques to pursue political change (intended to defend individuals' privacy from government and big corporations). "Cypheractivists" bestow upon the right to use revolutionary cryptographic tools and powers; as we can read in their manifestos³⁷⁶, cryptography is all about hiding from others; the right to privacy is the right not to be seen.

We can see in their ideas the fears and anxieties of the then-emerging "society of control" (Deleuze 2017), paradoxically solved by recurring to more technology and more individualism.

The blockchain appears to be a conflictual and a-moral/immoral technology. But those contradictions, like SBF donating hundreds of millions while committing fraud or Vitalik Buterin imaging a democracy based on Arrow's antidemocratic ideas, appear as contradictions only if the whole system is observed at a distance. From the inside, from an emic point of view, they appear ethical and moral because they participate in the reproduction of the system from which they sprang in the first instance. We should finish by recollecting Mauss' (2005, 108) words again: "quite disparate notions fuse and harmonize without the whole losing anything of its incoherent and dislocated aspects. The parts do form a whole. At the same time, the whole is much more than the sum of its parts. The elements we have dealt with consecutively are present simultaneously, creating a unity."

³⁷⁵ <https://www.thestreet.com/investing/stocks/nyse-president-tom-farley-calls-short-sellers-un-american-icky-14199902>

³⁷⁶ <http://www.activism.net/cypherpunk/crypto-anarchy.html>

Fix the money, fix the environment?

KlimaDAO and Toucan, like all other cryptocurrencies, described themselves as new forms of money. However, alternative forms of money for social and environmental purposes long predated their advent.

We still have not explored the relation between money and environment, nor analyzed money proper, even though Klima was meant to be a currency. In this final chapter, we want to discuss these different forms of money and the relationship between credit and carbon emissions. Furthermore, previous alternative currencies experiment will be discussed, showing a continuity between “old” and new special purpose money: both did not succeed for the same reason. Relying upon economic anthropology and heterodox economics, we will show how these projects are not designed to grasp the complexity of a “total social act” as money, resulting in a failure. Finally, this chapter can be seen as a step towards the political economy of the blockchain and the imaginaries opened by this technology. Current technological innovations can be employed to steer the “riddle of money” on a more sustainable path.

Despite the greater relevance held by cartalist and Keynesian theories on money among anthropologists, we will employ a Marxian framework since only the latter treat money as a Maussian “total social act”. Addressing money’s role means managing the socio-economic environment from which it stemmed, they are two sides of the same coin. In the following pages, money will be considered a historically determined artifact: what money does is what money is, and there is no unique definition.

Contemporary monetary forms

Assessing the environmental question also means questioning the role played by money in our society and eventually intervening in it. Marcell Mauss employed the notion of “total social fact” to describe those phenomena influencing many social aspects: money, in a contemporary capitalistic society, can be seen as such.

Economists embracing heterodox concepts of money’s endogeneity and anti-quantitative theories, then, share the socio-historical approach to money implied by economic anthropology. The functions performed by current money should be finely

analyzed to exploit the existing contradictions; studies (Bohannon 1955) on different forms of money, more than as a starting point, should be seen as the undeniable plurality of what constitutes money, and how we can tinker with money.

Embracing this heuristic tool means analyzing the form and functions money has assumed under advanced capitalism and understanding its broader objective role in our economy (Costas Lapavitsas 1991). Today, money acts primarily as a means of deferred payment (of credit) and is deeply interconnected to central banks' policies and decisions. Marx (2004) employed the notion of "money as money" to describe the "dominant function" (Lapavitsas 2016) played by money in an advanced capitalistic society. In this stage, due to the broad role it has assumed, and the intricate social and political relationships it is imbued with, money is no longer only a means of exchange, or an abstracted numeraire employed by institutions. Instead, it is an integral part of societal reproduction. By providing credit and solving monetary crises, the central bank effectively influences the articulation of exchanges (Costas Lapavitsas 1991, 295), thus playing a crucial role in the socio-economic life.

At the same time, contemporary economic system, with its unsustainable practices, is endangering the reproduction of the human and natural resources that made its existence possible. As a result, economic and monetary crises assume a whole new meaning.

A fully developed capitalistic economy relies on a continuous cycle of debits and credits (*money as a means of deferred payment*); whenever there is a monetary crisis, that is, whenever money can't perform the function of means of payment anymore, central banks can step in to solve such crisis with their authorities and solve the impasse. In the era of Marx, gold performed this task, while in a post-Bretton Wood era, this role is - partially, see Costas Lapavitsas (2013) – performed by the dollar. Quantitative easing measures embraced by the Federal Reserve after the 2008 and COVID-19 crises are examples of CB's stabilizing power during times of turmoil. Those expansionary policies, aimed to save and bolster financial markets, ended up reproducing the same socio-economic system in crisis, solving the latter in favor of a tiny minority, while leaving untouched and strengthening the structural causes (e.g., the commodification of sectors like housing and healthcare) which in first place generated it.

Such policies have often been labeled as "extraordinary" or "exceptional"; however,

they align with recent financial developments. It was the capitalistic imperative to shorten capital's circulation time to secure more profits to form credit's dramatic expansion: credit money doesn't lay idle like commodity money (like gold); it flows continuously, constantly creating and looking for new investment opportunities. This shift of money's function followed the growing role played in advanced economies by unproductive (in a Marxian sense³⁷⁷) labor: the last decades saw a rise in the number of people employed in logistics, finance, and real estate.

Money, then, plays a primary role in the current environmental crisis: the other side of the coin of the terrific financial markets' expansion - which essentially meant employing capital everywhere and almost in real time - has been the delocalization of productive activities and the overgrowing role played by transportation and logistics infrastructures. Buildings and hubs are needed not only for commodities to be shipped and stored but also because they are now seen as proper forms of investment; the expansion of financial markets is not only a geographical phenomenon but a broader societal one. Finance and environment are strictly correlated.

The prominence assumed by exchange value in advanced capitalism, already noticed by Baudrillard in the '70s as we explored, and the consequent weakening of the relation between production and profits have been made possible by a mix of technological and monetary innovations. The widespread of pension funds and other household investing channeled enormous amounts of funds toward products like real estate, with a tangible impact on the environment. These socio-political policies made possible the proliferation of Polanyian "fictitious commodities": credit money allowed land markets to proliferate and opened to investments provided by governments (utilities, education, healthcare). The generalization of financial initiatives had an impact on societal relations too: since credit is given exclusively on receivers' ability to repay it, and market actors usually seek only their profits, trust – a demeanor that makes market exchanges possible while at the same time negates self-interest – cannot spontaneously grow and must be enforced through a strict legal/normative framework (Graeber 2015): climate, economic, and social crises are deeply intertwined, and our study of KlimaDAO showed how cryptocurrencies

³⁷⁷ Shortly put, unproductive labor does not directly contribute to the creation of surplus value.

exasperate these contradictions rather than solving them.

How to break this spell? How do we slow down both capital and commodities circulation? Since the current unequal global ecological and social exchange (Hornborg 2011) is strictly related to the expansion of credit monetary relations, regulating how investments are made has become crucial: public institutions must play a more significant role in planning economic activities, redesigning monetary institutions. In this sense, CBDCs (Central Bank Digital Currencies) could be a tool to build a more sustainable economy. We will provide an example in the last paragraph. Since this type of currency relies on blockchain, a technology designed to solve the double-spending problem without needing a third party (namely, commercial banks), central banks would have complete control of the monetary system and how idle money is employed. However, using their powers to fix current economic and environmental disequilibrium remains a political decision.

Money as a total social act

If money plays an overreaching role in organizing our society, then Marcell Mauss's *The Gift* (2002) is the right tool to read it. The French ethnographer noted how the social institutions studied in his book were "total" (*faits sociaux totaux*), involving "the totality of society and its institutions" (100): in every human group, there are phenomena that "are at the same time juridical, economic, religious, and even aesthetic and morphological" (101).

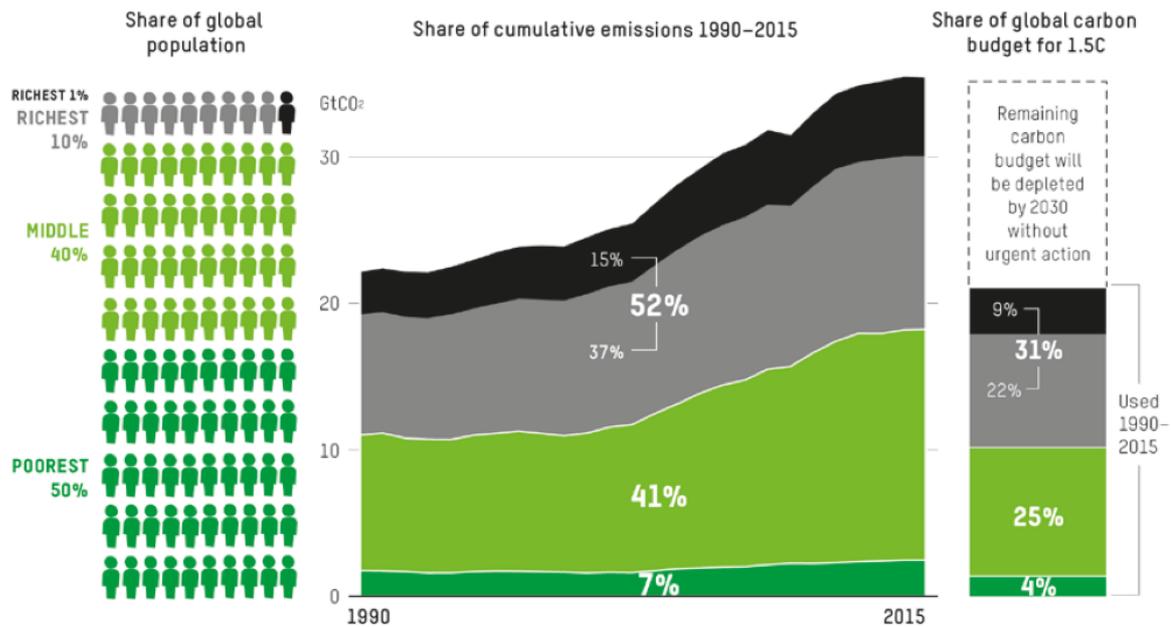
Drawing from this last sentence and the role played by credit, money can be a proper social fact. In a capitalistic society, it orients and dictates our actions and how we relate to the environment and to others: money shapes our economy³⁷⁸. It structures our *values*, what is meaningful for an actor immersed in a larger group: it's not a coincidence that we use the same word, *value*, to perform both objectives, quantitative measurements like prices³⁷⁹, as well as the subjective, qualitative ones like *moral* statements. The ambiguity implied in such overlapping of monetary and moral values is a well-known fact, already spotted by Shakespeare; the latter

³⁷⁸ We rely on the Marxist definition of economy already outlined in our works, as the way human groups relate with the environment to sustain and reproduce themselves (Godelier 1986), rather than the marginalist one of allocation of scarce resources.

³⁷⁹ Measurement of value is in fact one of the functions usually performed by money

dedicated many words³⁸⁰ in *The Life of Tymon of Athens* to describe the mesmerizing capabilities bestowed by the gold to its owners. Money appears contradictory since it can create new hierarchies while overcoming past ones. In a market society, it gives the owner enormous power (Smith 2010) since it's a commodity that can be exchanged against anything else, including human labor. Capitalism, moreover, is an *autotelic* process (Stimilli 2016), a never-ending practice where the means conflate with the ends: profits for the sake of profits. Since it assumes the actors to be unaffected by kinships or relationships, such a mechanism cannot but pay little or no attention to the externalities brought to others. As we saw, market-based methods for accounting for them (Coase 1960) don't aim to eliminate the roots of these problems, which are the economic processes put in place to extract profits but to integrate and expand even more such activities. The moral dimension of the market actor cannot but be feeble: the *homo oeconomicus* model upon which mainstream economic theories are built presupposes greedy, profit-seeking individuals. It should not surprise anyone then how current ecological problems are directly linked to wealth (Oxfam 2020) (fig.1). Despite the rational framework upon which modernity described itself, patterns of conspicuous consumption still dictate and shape contemporary lifestyles and habits: Bataille rather than Weber can help us understand and explain the rise of space travels, private jets, and ultra-luxury mansions.

³⁸⁰ Such pages will be then used by Karl Marx (1982)



Per capita income threshold (SPPP2011) of richest 1%: \$109k; richest 10%: \$38k; middle 40%: \$6k; and bottom 50%: less than \$6k. Global carbon budget from 1990 for 33% risk of exceeding 1.5C: 1,205Gt.

Fig. 1 Share of cumulative emissions from 1990 to 2015 and use of the global carbon budget for 1.5C linked to consumption by different global income groups. Reproduction from Oxfam (2020)

We should notice then a contradiction. Contemporary forms of wealth are immaterial both because money is primarily electronic and because ultra-high net worth individuals' assets are made by stocks and other financial instruments³⁸¹: even if markets could provide trillions of dollars of liquidity, selling these shares will inevitably lead to a waterfall effect on prices and thus on the wealth itself. This immateriality creates a conundrum for traditional, tangible assets-based tax authorities. For example, many CEOs receive shares instead of a salary and then use the former as securities for loans (*pledged shares*); in this way, taxes cannot be collected because profits are not realized³⁸², but the intangible wealth assumes a concrete, material and pollutant form. The rise of cryptocurrencies can be seen as another example of the rise of immaterial wealth and problematic taxation; given the gray zone of the latter, we did not explore the legal aspects of the blockchain in this

³⁸¹ According to a Federal Reserve survey, tangible assets constitute a fraction of ultra-wealthy households net worth <https://www.federalreserve.gov/econres/scfindex.htm>

³⁸² For a deeper analysis of this phenomena, see the ProPublica 2021 report <https://www.propublica.org/series/the-secret-irs-files>

work.

To capture the opacity underlying every discourse and reasoning around money, we should stretch the labor theory of value to its limits, as Graeber (2001, 47) suggested, and see value creation as a process capable of making visible and worthwhile anything a human being is capable of; the variety of forms through which values manifest themselves then should be as what society wants to achieve and how a culturally determined material and immaterial process of human capacities expenditure. Money, through prices, clearly makes visible what is worthwhile, creates hierarchies, and selects our choices; it is not a neutral, value-free medium of exchange: rendering it as a fair one means abandoning the more advanced “money as money” function it has reached. Prices serve as a basis to exchange goods that are not produced for their immediate consumption or to be put into circulation in a tradition-bounded circuit (e.g., the *kula*); their importance is strictly linked with the emergence of commodities and market relations, creating a link between foreigners: “Because all commodities, as values, are objectified human labor, and therefore in themselves commensurable, their values can be communally measured in the same specific commodity, and this commodity can be converted into the common measure of their values, that is into money. Money as a measure of value is the necessary form of appearance of the measure of value which is immanent in commodities, namely labor-time.” (Marx 2004: 188).

As already noted by Herodotus in his Histories (I, 94; III, 89-97), money arises to carry on exchanges between strangers; both anthropologists (Polanyi 1965; Graeber 2011) and economists (Lapavitsas 2003, 2016) confirmed the relationship between money and foreignness: a universally-accepted commodity is needed when the exchange cannot be waged according to parental and or traditional rules. Bitcoin was designed to automatically execute exchanges between potentially fraudulent commercial partners, without any need for trust.

Money acts as a social glue holding commodity owners, but the relations it creates are unequal. Since it can buy all other commodities, the money sits above everything else, it creates a hierarchy, conferring power to the owners of this particular commodity; through an unexpected turn, markets create new orders and bring back non-economic aspects into the economy.

However before the modern era, money and trade relations had little impact on

everyday life: capitalism rose from the generalization of market mechanisms, a long and troubled process (Thompson 1971) aimed to reshape societal norms and values. Before the advent of capitalism, money was relegated to the “intermundia” of human societies; their material reproduction relied on customary laws and moral duties. Our everyday experience confirms this: paying a friend or a parent for a job is always a sensitive matter. As Maussian anthropology remarked, the exchange of gifts is what creates long-lasting links between people, while commodities don't. Money, then, serves to build a nexus between otherwise unrelated commodity owners. This role of medium between distant actors will be crucial when analyzing *limited* circulation currencies.

In modern capitalistic economies, money circulates essentially in the credit form³⁸³; credit itself is a polysemic word used in both economics and moral fields, and credit institutions arose thanks to the generalization of banking and commercial relations. Furthermore, states always played (Graeber 2011) and still play an essential role in the creation of banks and loans: current debates and turmoil on interest rates, on the necessity for central banks to turn “hawkish” or “dovish”, prove how the history of money and credit is undoubtedly the history of social conventions and clashes between different stakes, with the ensuing inevitable crisis and instability.

But for this very reason, society-wide problems cannot be fixed by addressing money itself; if the current economic model is unsustainable from every point of view for most living beings, then what is needed is a complete change of such model. Money as a total social fact involves a circularity with the other elements re/producing the society as a whole because it not only influences, but is also influenced by other factors. Wholeness implies a circularity.

The moneyness – the universal acceptability (Marx 2004) - of modern currencies is the result of a process of centralization culminating in the establishment of state-backed money, whose acceptability rests on the power of the state itself and has been dictated by capital's necessities to overcome the narrowness of private banknotes so to shorten circulation time, reduce transaction costs and avoid crises. Monetary proposals must consider the social contacts from whom the money comes into existence (ivi, 40): gold's general acceptance and power of the “universal

³⁸³ Monetary base m0 constitutes a fraction of monetary aggregates m1 or m2

equivalent” was the result of a social custom. It was not only its physical characteristics (durability, divisibility, homogeneity) but also its esthetic ones (Godelier 1999). Nowadays, the dollar plays a similar role because of the US economic supremacy, notably a historical development itself.

This “immaterial” aspect should not be overestimated. In our digitalized and financialized world, theories like neo-Keynesian/MMT ones are appealing since they see money’s emergence as a top-down, arbitrary activity; furthermore, by treating all money as credit money (Graeber 2011), immaterial and detached from any “real” form of economy - money creation can be seen as an easily remolding process. These theories, however, don’t consider the objective role played by monetary artifacts: treating these commodities not as exogenous, a-historical, or essentialist entities (like mainstream monetarist theorists tend to do) doesn’t mean denying the concrete and spontaneous role played by money. Commodity money was replaced by symbolic (paper) money because gold can deteriorate or be counterfeited; the various forms of credit arose to speed up the circulation of commodities and remove the need to deliver paper money physically.

The more the economic system becomes complex and distant from daily life experience, the more money becomes abstract. And the higher the level of abstraction involved, the more *trust* in the whole system is needed, paradoxically bringing back a sentiment instead of characterizing small, vis-a-vis communities: post-modernity closes the gap between *Gemeinschaft* and *Gesellschaft*. Crucially, this can be seen as another factor that sustained the shift towards techno-feudalism, as we saw.

But money always relies on abstractions. Since, as stated before, it makes possible comparisons between different goods, money acts as a measure of value, exercising an immaterial and external “judgment” on existing exchange circuits. The total amount of money is then *endogenous*; it cannot be pre-determined but depends on the peculiar economic circumstance: a more sustainable economic system requires more sustainable monetary policies.

The ambiguity of credit

Embracing the heuristic implication of the “total social fact” notion also means focusing on how the macro and the micro levels influence themselves; the

overwhelming arbitrariness in money creation and allocation of CBs' quantitative easing doesn't mean that money is an empty symbol of power.

This became evident because when analyzing credit money current development, we start facing endless ambiguities: for example, the expansion of credit after the 2008 crisis reinforced the financial system that caused the crisis, or the opening of credit lines for pollutant industries undermines the reproduction of nature capital. Interest-bearing capital relays on a dual nature of modern rational foresight and old usury, on an inner tension between the different interests at stake. The ongoing crisis proves that conflicts between long-term and short-term interests and general and private profits are still unsolved. The spectacular rise and fall of Klima spot price showed how cryptocurrencies amplified this tension.

"Digital metallism" and its opposite resemble each other from this angle. Indeed, credit money can create both the conditions for its own repayment (Itoh and Lapavistas 1998, 49) and never-ending spirals of damages: pre-capitalistic elements embedded in interest rates became an autonomous element that can profit from the destruction of productive forces. Money-lending activities in archaic societies were usually related to financing war, slavery, and all sorts of conspicuous consumption, as economic anthropology has notably told us (Polanyi, Graeber, Bataille). Starting from the '70s, the extraordinary expansion of credit led paradoxically to the resurgence of these archaic aspects: if in premodern and capitalistic societies, credit arose through anti-economic personal contact, anti-economic practices nowadays characterize the management of ever-increasing fortunes, as shown by Harrington (2017), wealth management strategies aim to *not decrease* capitals accrued, and strong personal links are built among ultra-wealthy people and their wealth managers.

In the era of globalization, the maussian totality assumes a whole new range of meanings: contemporary forms of capitalism are global processes relying on transcontinental forms of exploitation (Hornborg 2001); the borders of the society within money coincide with the world itself. Moreover, the sum of the functions now performed by money must also be considered. In capitalistic exchange, money and commodities are also forms of capital that realize their surplus of value through continuous interactions (Weeks 1981). Hence, expanding their volume and shortening the circulation time is imperative. The expansion of credit serves these

purposes strictly: for example, commercial (or trade) credit emerges between closely related firms without the need for money, even if - paradoxically - one of the functions of money (mean of circulation) is negated.

A more critical role today is played by generalizing bank reserves, which are first and foremost credit relations. Every deposit constitutes both an asset and a liability for a bank. These sums don't lie idle: in an advanced capitalistic economy, hoarded money became a commodity, loanable capital, that is, money with the price corresponding to the interest rate. The profitability imperative forces economic actors to continuously employ such sums: new markets are created in the sector (privatization of schools, healthcare, pensions) and geographies (globalization) previously untouched. The abovementioned antiquity of credit (that can be seen as a typical Keynesian *fallacy of composition* since what is good for one actor is detrimental for the others) emerges when the global impact of these investments is assessed: to deliver expected or required results, social and ecological crises are continually produced. At the same time, productive equipment has to be abandoned. Loans must be settled, and interests must be paid even if that means unemployment and environmental degradation, undermining the conditions for economic production and the reproduction of capital. The relationship implied by credit does not necessarily mean equality between different actors. Cryptocurrencies were conceived against credit money to avoid any hierarchy, yet they produced a way more hierarchical system social system.

Marcell Mauss (2002) can explain these paradoxes. One of the great merits of *The Gift* was showing how gift exchanges have many forms, both agonistic and non-agonistic; the primary purpose of such practices is establishing new social relations or challenging current ones because they rest on the obligations to give, receive, and reciprocate the gifts. This is self-evident in the case of the *potlatch*, a Chinook term meaning "to feed" (ivi: 7) and used to indicate the rituals during which native north-west Pacific noblemen fought for power through gift-giving: the impossibility of reciprocating the gifts meant losing their prestige, their *mana* and thus their power and their roles in the community. After the arrival of the Europeans, such rituals "degenerated" (Wolf 1999) into competitive *destruction* of objects. What seemed to be a mere religious ceremony was a totalizing phenomenon.

Due to its influence spanning way wider than the economic realm, and the creative

and destructive bicephalous role it has assumed, money plays in our cultures the same function as the *potlatch* did among the Kwakiutl and other North American populations at the end of the XIX century. It is hard to not see, again, a correspondence with the Klima token, given the quantity of wealth destroyed in the name of its opposite, value creation.

The *potlatch* metaphor acquires a more profound meaning when we conjugate this concept through the lenses of environmentalism. According to the Schumpeterian notion of “creative destruction”, the crisis in capitalism is cyclical and almost inevitable. Still, the abandoned equipment or production is replaced by a more efficient business cycle, and so on. Like the Kwakiutl ritual, the destruction and the waste of commodities are necessary for the reproduction of the system as a whole during times of crises, while guaranteeing the emergence of new leaders at the same time. Similarly, in the cryptospace, monetary losses are justified in the name of decentralization principles, crucial for the ideological justification of these communities.

However, we now live in totally different conditions from the Kwakiutl at the end of the XIX century, where a population decimated by wars and diseases had to manage a sudden surplus of industrial commodities. Our crisis emerges in a context of scarcity³⁸⁴: falling profits, monetary restrictions (bank runs), ecological decay, and so on. If we look at how crises have been managed in the last decades by national and supranational entities (Stiglitz 2002; Klein 2007), we find proposals and policies to expand the role of money and markets, thus reproducing the system which caused and will inevitably cause other crises³⁸⁵. The expansion, then, doesn't necessarily mean more production or more productivity: the deindustrialization (and the subsequent abandonment of infrastructures, building, and machinery) of Western (and former Soviet) countries was followed by the rapid rise of “bullshit jobs” (Graeber 2019) and/or precarious, low-added value jobs in the logistic and in

³⁸⁴ The concepts of scarcity and surplus along with their subjective or objective are heavily debated in economy and anthropology. For a discussion, see (Cesaratto and Di Bucchianico 2020; Cesaratto 2019). However, due to the rapid depletion of carbon sinks and, in general, the impossibility for current ecosystem to absorb all the CO2 emitted, we can objectively point the *scarcity* of natural resources in this historical period.

³⁸⁵ Again, a striking similarity with what happened in the blockchain communities can be drawn

personal services³⁸⁶. Of course, this means that production has to be moved somewhere else, stretching supply chains and deepening the dependency on fossil fuels. The economic slumps after COVID-19 and the current inflationary forecast show this system's inner fragility and economic irrationality.

The limits of SPM and LCs in a credit-money world

Proposals and attempts that don't consider money a global, "total" fact, strictly linked to the needs of the economy, are doomed to fail. The lack of a proper central banking with its powers is what created the fall of Terra/Luna and Klima; similar conclusions can be drawn while studying other forms of alternative currencies.

Bristol's Pound is exemplary (Marshall and O'Neill 2018): most of the businesses in Avon County simply processed and sold commodities produced abroad, thus not benefitting from local currencies. Even if it didn't fail, the convertibility into general-purpose pounds means that such currency could eventually contribute to the broader banks' reserves mechanism and interbank credit system. In fact, the Bristol Pound (BP) was fully backed by sterling locked up in a trust account, a requirement to let people trust it³⁸⁷. One way to acquire BPs was as a salary: public sector employers could choose to receive partial or complete compensation as BP. This meant having accredited a sum on a bank account, a sum that could be spent both via cash and electronic payments.

Special purpose money (SPM) and local currencies (LCs) are usually issued on a 1:1 convertibility ratio, meaning that holders of an account denominated in general-purpose money can convert their funds and receive SPM and LCs. Therefore, such currencies rely on traditional banking to exist, fueling the problem they aimed to solve. If it's true that globalization processes are built upon the unrestricted circulation of capital, and the latter rests on the current banking system (especially after the abolition of the Glass-Steagall Act in 1997), to deposit fully fungible assets in a bank account will end up in providing liquidity to the banking system itself and cannot be otherwise.

³⁸⁶ The rise of gig workers and the shift toward unproductive works are deeply interconnected with the rise of inequalities <https://americanaffairsjournal.org/2021/05/the-brazilianization-of-the-world>

³⁸⁷ <https://bristolpound.org/the-story-of-the-bristol-pound/>

Providing full convertibility without slippage or fees is an obligatory feature of any SPM system. Otherwise, market actors could exploit endless arbitrage opportunities or could not trust the SPM itself. As mentioned above, contemporary money is credit-based: its value doesn't come from an underlying commodity it represents but rather from the trust in the whole socio-economic system. It is the result of a long historical process because trust itself stems from everyday relationships and is constantly endangered by the market mechanisms it has enabled. Therefore, any SPM, at the very beginning, should be fully backed by a standard currency³⁸⁸, resembling thus a more "archaic" commodity money. But it is hard to imagine how an SPM could reach a more "advanced" credit money phase: because of their narrowness, their *limited* circulation and/or use by design, whenever their possessors need to travel abroad or acquire commodities produced abroad, they must be able to exchange them for standard currency, thus imposing stricter reserves' criteria to a potential SPM credit system. This is the main paradox faced by LP currencies and cryptocurrencies. Because of their design, they cannot but occupy the "intermundia" of the economy, failing thus to become a total social fact capable of influencing society. Klima, as we saw, equally presented a design that paradoxically impedes its general adoption: once all carbon credits are retired on the blockchain, Klima would simply cease to have an intrinsic value. What is needed, then, is a reform of contemporary general-purpose money, which means, first and foremost, a deep fiscal and financial reform.

Modern fetishes

Any attempt to reshape the economy towards a more sustainable model must consider the production too, not merely the distribution: medium of exchange is only one of the functions it performs. Once a local farmer receives payment in local currencies, these must be converted into national currencies to buy fertilizers and gasoline, for example. The monetary conundrum reflects the complexity and intricacy of the current economic system.

³⁸⁸ Bristol Pound's proponents explicitly stated that: "From the earliest phase we recognised that our crucial challenge was to attend to public confidence in the system [...] we committed ourselves to backing every paper Bristol Pound with a pound sterling"
<https://bristolpound.org/the-story-of-the-bristol-pound/>

As mentioned by K. Marx, due to its constant use as a medium of exchange, money “spontaneously” (Marx 2004, 224) assumed the form of “money as money”. The relevant role played by credit institutions and central banks allows this new form of capitalistic money to “distance itself from the narrow exchange of commodities and confront the latter as a social force” (227).

In our market society, this social, political, and immaterial force drives labor forces that create commodities, services, and so on; however, intangible forces have always driven human decisions. Pyramids were built against promises of prosperity for Egypt, and Cusco’s marvels were made possible thanks to the divinity attributed to the Inca: as already noted by many (Hornborg 2016; Gell 1992), magic, religion, and technology are strictly related. In every human society, interventions toward the environment are driven by immaterial and material forces.

The arguments at stake here are fetichism and false consciousness, two heavily debated themes in anthropology and philosophy and that we have already encountered. Now, it is suffice to say that such mechanisms make non-commodity money work. Modern states issue and enforce the circulation of money that is (almost) unbacked by gold or any other commodity; what makes people act in the world and what deploys labor are essentially CBs’ promises and liabilities. Immaterial objects, backed by the trust in the institutions³⁸⁹ that issue them, make the material expenditures of energy and resources happen (Graeber 2001). This gave a discretionary and political dimension to monetary policies. Contrary to mainstream monetarist theories, this arbitrariness and dependency on political bodies do not necessarily lead to ominous consequences like hyperinflation (the rapid devaluation of money-symbols), because various historical elements influence economic factors. For example, money is constantly removed from circulation through taxes, debt setting³⁹⁰, or through a transformation in commodities and services: money regularly consumes and changes shape.

In capitalistic accumulation, money is seen as an end in itself; this autotelic process has two main consequences. First, one of the functions of money is a store of value, which can be seen as a way for possessors to store and have power (or *mana*, as Mauss noted) at their disposal. This collected power can be easily moved or passed

³⁸⁹ On the recursive aspects of financial markets there is a vast bibliography. Part of it is explored in the chapter *Carbon markets and anthropology*).

³⁹⁰ See the Fullarton’s *law of reflux*.

by, like industrial machinery, and contrary to magic (Hornborg 2016), it is easily detachable and does not depend upon any particular person, time, or place. This inevitably leads to that type of social amnesia called by Marx “commodity fetishism”, through which we forget that commodities are made by human intervention.

The second consequence derives from the role played by current hoards of value. It reinforces capitalism's circularity: the banking system's expansion and the continuous circulation of stored values to produce profits.

Another element of archaicness emerges. In the course of history, objects that could be used as adornment or that were pleasant to look at performed the function of money: gold itself shines and can be melted and worn as jewelry. In a classical fetishist process, the property of the objects is translated to their owners. On the other hand, immaterial forms of power, like modern money, imply that power has to be shown differently through tangible commodities: fast cars, private yachts, private space travel, and so on. And this *depense* is among the reasons for climate change (Oxfam 2020). The amount of money in circulation then has to shrink to reduce the wealth that can be stored as luxuries, thus reducing carbon emissions; at the same time, human creativity has to be mobilized towards projects to save the environment. New currencies should then be conceived as a vehicle capable of simultaneously tackling these two different themes.

How do we remove the archaic and irrational elements from money without limiting the transformative and creative power such an object has?

Slowing down the circulation of capital and reducing the total amount of circulating money should then be seen as a priority for climate change politics. This can be done in two steps: first, de-monetize and de-commodify the basic needs of an individual (healthcare, education, housing). Second, reducing the general profitability of capital leaves less power in the hands of financial firms and people whose wealth is defined as stocks and shares they own.

What is needed, then, is a deep socio-economic and semantic reform: the primary role assumed by the immateriality deepened climate injustice. Starting from the 2008 crisis and the subsequent monetary expansion, the money velocity has decreased in the USA³⁹¹: the monetary supply grows faster than the economic production and

³⁹¹ “The velocity of money is a measurement of the rate at which money is exchanged in an economy. It is the number of times that money moves from one entity to another. The

fewer commodities have been exchanged proportionally. This should not surprise given the abovementioned role played by the *pledged shares*; however, this also means few people benefitted from such expansionary policies: a study found a correlation between wealth disparities and the general decline in the circulation of money (Basci and Gherbi 2020).

Overall, we can infer this resulted in few more significant carbon-intense commodities production and consumption; soaring carbon inequalities (Jorgenson, Schor, and Huang 2017) seem to prove this point.

The reforms needed, however, do not necessarily entail abandoning the current market system.

As it has previously stated, through the course of history, money has changed its form and functions to adapt to actors' necessities and needs, which are socially and technologically determined: from different angles, anthropology, and the heterodox economy showed how money is endogenous to a system, and its value and meaning cannot be aprioristically determined. Bank deposits arose to reduce merchants' and firms' costs; central banks appeared to rationalize commercial banks' deposits, and banknotes replaced gold to speed up capital circulation. But such a need for a universal currency is based upon the commodification and desacralization of increasing numbers of human life aspects, and its enforceability rests on centralized power. The list could go on and on; what is essential to stress here is that the form of money (gold, paper, credit) follows its function, which is historically determined.

Techniques and societal needs go hand in hand: the expansion of financialization was possible thanks to the development of information technologies. Instant money transfers made it possible for capital to be profitably invested worldwide since international financial regulations allowed it. As we showed in this work, the success of KlimaDAO was possible because its continuity and proximity with standard financial world.

Like all the total social acts, such a process is not without incongruences. Can we exploit the incongruences created by financialization to tame it and reduce its impact

velocity of money also refers to how much a unit of currency is used in a given period of time. Simply put, it's the rate at which consumers and businesses in an economy collectively spend money." Definition from Investopedia.com
For data on the money velocity (MV), see <https://fred.stlouisfed.org/series/M2V>

on the environment? The limitations imposed in the design and the development of Central Bank Digital Currencies are a clear example; similarly, the technology employed for such digital currencies – namely the blockchain – is ridden as well with contradictions.

The ambiguity of cryptocurrencies

Bitcoin whitepaper was written during the Lehman Brothers crisis, and the subsequent general discredit towards banks and financial institutions proposes a way to process electronic payments *without* relying on a third party³⁹². The banking system increases transaction costs because it requires a certain level of *trust*: trusting the origin of the funds and the proper execution of the transaction. On the contrary, every blockchain transaction is public; anyone can see the addresses sending and receiving tokens, and there is no need to trust a third party to authorize an exchange. Banks usually need to approve and resolve “traditional” monetary transactions; blockchain-based solutions rely on CPUs. There is no central authority and potentially malicious participants would have more incentives participating in the network (extracting coins) instead of trying to dismantle it, to reverse the transactions. The vast social complexity of the exchange, a trope that has involved anthropology since its inception, is thus reduced to the “double-spending” and the “Byzantine generals” problems.

Despite the mathematical complexity of the algorithms and the quantity of hardware and computational power employed, we found an “immense theoretical poverty”, a scenario already noted among scholars drawn from the mathematics and physics department and sent to the business department to create “value-free” and “objective” financial model (Carchedi and Roberts 2018, 439). The fascination for abstraction and the laws of nature, embodied by numbers, led to an oversimplification of economic mechanisms. Blockchain-based transactions imply a “primitive” conception of money, which is reduced to a mere means of exchange. At the same time, social aspects of exchanges are removed or characterized negatively: there is nothing “human” in transactions between humans.

The solution proposed, then, cannot but be technological. This time, technology does

³⁹² It's interesting to note how the Nakamoto barely mentions banks and financial institutions, despite aiming to replace them

not mean an improvement but a step back. A “physical” transaction involving the exchange of goods against commodity money (es. gold) can be settled among two traders without the need for a third party: there is no “double spending” or “Byzantine problem” problem since the money physically change wallet at the exact moment. But as we already mentioned, the most advanced form of money, credit money, arose thanks to relationships of trust built by economic actors through continuous exchanges. Modern electronic transactions rely on the banking system to make fiat money working as proper money; it is the trust in the authority of this system that assigns dematerialized money, a mere entry in a bank database, the functions of unit of account, unit of exchange and reserve of value: I pay a commodity using my debit card because the transaction will be set by the banking system by 1) effectively assuring that I have adequate funds and 2) moving such funds to merchant’s account. For cryptocurrencies, the algorithm guarantees the social convention involving commodity money, the minting process. Anarcho-capitalist ideals behind Bitcoin, by posing greed and individualism as the sole values of humans, cannot allow any form of trust, especially towards the banking system. Consequently, bitcoin is built “on the basis of faith in the crudest version of the ‘monetarist’ Quantity Theory of Money (the idea that the value of money depended solely on the quantity of money supplied to the public) and, thus, aimed at creating the digital equivalent to... gold” according to Varoufakis³⁹³.

Bitcoin and almost all other cryptocurrencies were conceived bearing in mind monetarism. Only 21 million bitcoins can be mined; there is no space for (not over-collateralized) loans. The archaism of such an economic system, where there is no space for value creation and expansion and the first comers got disproportionately awarded³⁹⁴, led the former Greek finance minister and economist Yanis Varoufakis to talk openly about “techno-feudalism” as already said.

Achieving economic stability by regulating the total supply of money is an old trope for liberalism, and it can be traced back to Ricardo’s quantitative theory of money and the XIX century “currency school” authors. These latter claimed that overissued

³⁹³ <https://www.yanisvaroufakis.eu/2013/04/22/bitcoin-and-the-dangerous-fantasy-of-apolitical-money/>

³⁹⁴ The algorithm makes the mining increasingly harder; as of writing, 19 millions bitcoin out of 21 millions were already mined, while the last one is programmed to be mined around 2040

national banknotes would depreciate toward the gold held by the Central Bank, leading to forced gold exports to reach a state of equilibrium again; banking institutions should then lend credit money as if it were gold (Itoh and Lapavitsas 1998, 25-26). Its influence resulted in the introduction of the Bank Act of 1844, which gave the Bank of England the privilege to issue banknotes; such limitation, however, did not avoid the subsequent monetary crisis of 1847, 1857, and 1866. The subsequent rise of the banking school, Keynesianism, and Marxism eclipsed quantitative theory of money principles until the 1970s, as did the subsequent rise of neoliberalism and its preaching of unfettered, unregulated markets. The State, now seen as a “night watcher”, should avoid any interference with the economic sector besides enforcing contractual obligations; consequently, monetary policies hinge on unceasing attention to inflation levels: an eventual rise means the government is spending too much, and it is interfering with markets’ natural laws for populist reasons. Central banks should be independent to avoid politicians cracking the economy for their electoral and personal gain. However, practice often diverges from theory; despite Ronald Reagan championing Von Hayek's ideas, the former US president raised the government budget thanks to army budget expansion, and CBs’ impartiality from political power has been proven problematic, if not impossible, to implement fully.

The contradictions embedded by Reagan’s administration serve as a reminder that societies and their artifacts are embedded with ambiguities. Blockchain, as we saw, makes no exception.

Despite the backwardness of cryptocurrencies as money, performing only the unit of account and medium of exchange functions, enthusiasts generally see these limitations as positive features of cryptos. Nakamoto’s ideas seem to hinge on a contradiction. On the one hand, they recognized the possibility for a banker to misuse clients’ funds, which is not a mere fantasy. On the other hand, since bitcoin offers a technical, individualistic solution to avoid such greedy (and illegal) behaviors, it ends up reinforcing the (neoliberal) economic ideals that it claimed to fix. The proposed solution to an economic system that rewards exactly a greedy, individualistic behavior is more individualism, and we resorted to concept of “magic” to explain this circular reasoning.

At the core of this technology, there is the idea of moving data between a network of computers safely and cheaply (since there is no need for an authority to verify

transactions); even if blockchain was initially conceived to get rid of banks, the latter are heavily investing in this technology³⁹⁵. Furthermore, along with the development of cryptocurrencies markets, recent years saw the appearance of the so-called “stablecoins”, digital currencies whose value is *pegged* to a real-world currency, where fiat deposits or algorithmically adjusted crypto-reserves act as collateral. Those instruments indicate the level of maturity reached by crypto markets and recently came under the scrutiny of central banks³⁹⁶: a digital currency, owned and operated not by a private institution but by a central bank, would allow the superseding of bank institutions and payments providers while making possible a whole new series of monetary policies and interventions.

For example, money is already digital; transfers are simply entries on a database. European banks are now obliged to hold some of their reserves within a European Central Bank account; whenever a payment between two banks is ordered through the digital TARGET2³⁹⁷ platform, an equivalent sum is moved between these reserves accounts. The main question revolves around the monopolistic nature of such a system: to access electronic money to order money transfer, you need to open a bank account. That is, you have to go through a private institution that will charge you to use its services (fees on transfers and card payments, monthly costs, markups on exchange rates) and apply a higher interest rate on credits than the one applied from central banks. But that is not the sole issue. By making anyone have a bank account, since every bank is interlinked to the others thanks to the continuous lending and borrowing interbank operations, everyone contributes to speeding up and providing liquidity to the financial market. Central banks require commercial banks to have a fraction of their deposits to be held as reserves in CBs, and pay interests on these deposits³⁹⁸ so that whenever a pension, a salary or a payment is

³⁹⁵ <https://www.hsbc.com/news-and-media/hsbc-news/harnessing-the-benefits-of-blockchain>

³⁹⁶ <https://www.bis.org/publ/bppdf/bispap114.pdf>

³⁹⁷ TARGET2 (Trans-European Automated Real-time Gross Settlement Express Transfer System) is a payment system provided by the Eurosystem for the settlement of large-value payments in euro. When a bank sends a payment order, the system checks if the sending bank has sufficient funds. If so, the transfer is immediately processed, and the money is deducted from the sender's account and credited to the recipient's account. If banks don't have enough liquidity they can obtain intraday, interest-free credit from their national central bank

³⁹⁸ As per 2023, the European Central Bank requires a 1% reserve ratio
https://www.ecb.europa.eu/stats/policy_and_exchange_rates/minimum_reserves/html/index.en.html

received in a bank account, almost all of it will be at disposal of a bank for its operations.

Having an account directly with the central bank grants these private institutions an “exorbitant privilege” according to Yannis Varoufakis. When a recession hits, the first economic actors receiving funds mobilized by the CB are the banks “who then exploit this to profit from arbitrage (by lending the money on to customers at a higher interest rate). Furthermore, when the recession gets even worse (as has been the case since 2008 and now with the pandemic), the central bank prints (sic) digital dollars or euros and credits them directly into the accounts the commercial banks have with the central bank. This is the definition of exorbitant privilege!”³⁹⁹. Even if these funds are usually not accessed for reputational reasons, banks have access to the so-called “marginal lending facility”, an emergency loan issued at a lower interest rate directly from the CB. Commercial banks thus benefit disproportionately from the public sector for their customers' services.

The technological development slashed the marginal cost of handling payments, securely storing deposits and providing loans. A blockchain could ensure such operations with a minimal requirement of human labour: a blockchain-based CBDC could revolutionize the monetary and financial world.

Contrary to The People's Bank of China' – which is testing and implementing on a large scale the digital renminbi - both ECB and FED seem to be reluctant to implement a digital euro or dollar: official declarations say that they do not want to compete with the banking system, nor they want CBs to play a more prominent role in the economy, being the latter better managed by market mechanisms⁴⁰⁰. The blockchain, again, shows its inherently political nature since it renders almost redundant the banking system.

A central-bank managed blockchain could reduce transaction costs while speeding up payments: in an era of recurring crises, providing immediate economic relief to the people affected without involving banks or bureaucracy can be vital. Reducing the number of intermediaries will mean applying better discount rates, and employing former intermediaries' labour force in something more productive. But more

³⁹⁹ <https://the-crypto-syllabus.com/yannis-varoufakis-on-techno-feudalism/>

⁴⁰⁰ <https://www.federalreserve.gov/newsevents/speech/brainard20200813a.htm>

important, monetary circulation will be detached from the proper banking system: moving money through a blockchain means using an entirely different circuit and establishing complete control of all the reserves. Reducing the role of banking means reducing the overall dimension of the credit system, its value and role in society and the economy.

Political institutions will have to assume a more significant role in the economic planification. This is in line with current monetary development: every dollar is backed by the *trust* put into the state by the economic actors. Loans and credit lines are terrific instruments to organize a society and deploy human labour, and they all work because of promises of future repayment, of a future reciprocity, even if mediated by contracts and enforced by law. Why should a tiny minority benefit from this social relation?

The proposal made by Omarova (2021) moves from this question. It provides a brilliant solution: let the whole population open accounts directly from the FED and “democratizing the central bank balance sheet (ivi: 1257)”, disenfranchising the bank system and restricting it to few hazardous activities, while most of the credits provided by local and community-based firms. The FED-wallets proposal then constitutes a possible design of a Special Purpose Money, showing how a CBDC (or similar technology) can be designed to curb the ecological and economic inequalities created by the current monetary system, turning upside down a technology conceived to spur individualistic ideals.

The term “technology” should be interpreted in both material and immaterial sense: we have already developed the Foucaultian *dispositif* (blockchain, quantitative easing), which can drive our labor toward more sustainable economic policies. Their implementation, however, remains first and foremost a political problem.

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