

Crypto/Space

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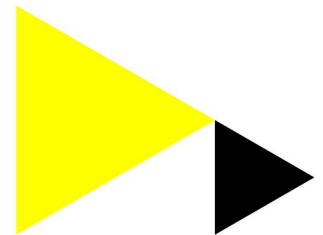
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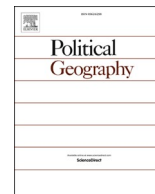


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Full Length Article

Crypto/Space: Computational parasitism, virtual land grabs, and the production of Web3 Exit zones

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A B S T R A C T

This paper explores how so-called ‘Web3’ blockchain projects are materially and socially constituted. A blockchain is an append-only distributed database. The technology is being hyped as applicable for a whole range of industries, social service provisions, and as a fix for economic disparities in communities left behind by mainstream financial systems. Drawing on case studies from our ongoing research we explain how, despite being virtual, Web3 projects are dependent on clearly defined spaces of production from which they derive their speculative value. We conceptualise this relationship as Crypto/Space, where space and blockchain software are mutually constituted. We consider how Crypto/Spaces are produced in three ways: 1) how project developers are adopting a parasitic relationship with host locations to appropriate energy, infrastructure, and local resources; 2) how projects enable ‘virtual land grabs’ where developers are engaging in land acquisitions, and associated displacement of local people, with no real intention to use the land for the declared purpose; and 3) how blockchain technology and speculative finance imaginaries are inspiring new anarcho-capitalist crypto-utopian ‘Exit zones’, often in the Global South. Far from being a zero-sum virtual game world, we argue that cryptocurrency projects are parasitic, often requiring predation on poor and otherwise marginalised communities to appropriate resources, onboard new users and enable favourable regulation.

1. Introduction

A blockchain is an append-only distributed database. Unlike a shared spreadsheet, hosted for example by a trusted third-party, like Google or Microsoft, data on a blockchain is structured as a series of time-stamped blocks strung together in a cryptographically secured chain. The database is maintained and hosted by multiple users incentivised to participate with rewards of cryptocurrency.¹ Bitcoin was the first experiment in blockchain, originally intended by its libertarian architects as a peer-to-peer (P2P) system of digital cash without the need for trusted intermediaries, such as central banks or government regulators. Blockchains are a central attribute of so-called ‘Web3’ platforms. In their *A Simple Guide to the Web3 Stack* (2022 p1), the crypto exchange Coinbase coined the now standard definition of Web3 as “a trustless,

permissionless, and decentralised internet that leverages blockchain technology.” This umbrella definition encourages people to buy into a series of epochs for the internet itself (Sadowski & Beegle, 2023), as the Coinbase (2022) guide explains:

Whereas the first iteration of the commercial internet (Web1) was read-only for most users, and Web2 allowed users to both read & write on centralized platforms, Web3 gives users full ownership over their content, data, and assets via blockchains. It empowers users to *read-write-own*.

Web3 projects built on general purpose blockchains like Ethereum, use algorithms to facilitate automated stored procedures (or ‘smart contracts’) and Distributed Autonomous Organisations (DAOs) (Howson et al., 2019). Among many other use cases, the technology is being

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¹ Some companies have experimented with building ‘closed’ or ‘permissioned’ blockchains without a reward structure, but these have a very niche set of uses, such as facilitating interbank lending transactions.

promoted for alternative community currencies, distributed energy micro-grids, food sharing platforms, and the decentralised administration of smart cities (Howson, 2021; Gloerich, & De WaalFerriCila-Karpinski, 2020). Optimistic reviewers have suggested that these Web3 fixes can enable strong, transparent political institutions, provide clear property rights, and tackle corruption whilst promoting entrepreneurialism and equal opportunities (Barinaga, 2020; Kshetri, 2017). Others argue that Web3 is an industry built on boosterism and buzzwords, dominated by disingenuous claims of ‘decentralization’ and dynamics of fictitious capital (Morozov, 2022; Sadowski & Beegle, 2023). We argue that Web3 projects have not been used to develop or repair weak institutions. But rather, weak regulatory frameworks, poverty, and corruption, are attracting Web3 entrepreneurs exploring opportunities to extract economic and other benefits from vulnerable communities. These benefits include land, labour, data, and financial liquidity from new investors. Drawing on Lefebvre’s (1974) ideas concerning *The Production of Space*, this paper considers how Web3 is materially and socially constituted.

For Lefebvre, space is never a natural, pre-existing, or unchanging container that people move around in, but rather, space is always produced by people. Every mode of production, even digital production, produces space in terms of both its material and social relations. Lally et al. (2019) have highlighted the parasitic material and social relations perpetuated by the Bitcoin mining industry in the United States. Smith and Burrows (2021) and Lynch and Muñoz-Viso (2023) consider the ways Bitcoin plays into existing libertarian ‘Exit’ imaginaries. Crandall (2019), Howson (2020), and Jutel (2023) have considered how cryptocurrency projects enable colonial land-grabs in the Global South. By considering these processes together, this paper aims to consolidate them into a coherent framework for understanding the material and social relations that Web3 projects tend to produce. Developing Kitchin and Dodge’s (2011) concept of ‘Code/Space’, we conceptualise the relations between blockchain projects and their sites of production as ‘Crypto/Space’ – where space and blockchain software are mutually constituted.

The paper is informed by our long-term ethnographic fieldwork, including interviews with project implementers, policy makers and investors. This primary evidence is supplemented by reviews of relevant blockchain project technical documents (or White Papers) as well as peer-reviewed literature and secondary sources concerning other locations (see Table 1).

The following section explains our conceptual approach before reflecting on findings from our field research. We consider Web3’s actually existing materialities and patterns of extractivism from poor and otherwise marginalised communities in three ways: 1) how Web3 projects parasitically appropriate local resources; 2) how Web3 is enabling ‘virtual land grabs’; and 3) how speculative Web3 imaginaries are inspiring anarcho-capitalist crypto-utopian ‘Exit zones’, often in the Global South. We conclude by considering if decentralised software

have, or could ever produce a-political, decentralised, and emancipatory outcomes in spaces where they are deployed.

2. Crypto/Space

Blockchain proponents tend to tout the technology as encoded with features enabling its decentralised and a-political qualities (Dixon, 2024). Yet, Web3 is characterised by a multiplicity of highly-centralised aspects – including token exchanges, miners, validators, and token holders – far more consolidated than exist in traditional financial networks (Sadowski & Beegle, 2023). All virtual networks have materiality, both in terms of their more perceptible physical infrastructures (for example, server rooms, overhead and undersea-cables, and data centres), as well as what Amore (2016, p.12) describes as the “bundle of experimental algorithmic techniques acting upon the threshold of perceptibility itself”. There is a growing body of geographical literature concerned with blockchain technology across a wide range of potential use cases (de Waal et al., 2024; Howson, 2019, 2020; Zook & Grote, 2022). Yet, most of these use cases constitute hypothetical proof-of-concept ideas, designed only to attract investors. Many have proved intentionally fraudulent (Howson, 2023; Swartz, 2022).

In his ethnography of cryptocurrency marketplaces, Mackenzie (2022) describes blockchain’s primary use case as that of facilitating a ‘grey economy’ – an illicit, unregulated online marketplace where every participant is both a potential perpetrator and a victim of illegitimate hyper-capitalist activities. Swartz (2022) similarly refers to the virtual game world of cryptocurrency markets as a ‘network scam’: a massively multiplayer game without a clear set of perpetrators or victims. Within these marketplaces, what distinguishes the mark from the con is who walks away with the winnings. Mackenzie (2022 p.1545) described the Web3 playing field like this:

This is a space where FOMO [fear of missing out] can really kick off, where people lust after Lambos on the moon, and where chat rooms are full of overheated bluster about ‘pumpamentals’ and getting in quick, so you don’t get left behind. You could hardly ask for a better socio-economic structure within which to propagate scams. To cap it all off you have the anonymity and reach of the internet which makes it possible for scammers to talk simultaneously via chatrooms to hundreds – and in some cases thousands – of marks wherever they are in the world, receive their money through instantaneous transfers and leave without anyone ever knowing who or where they are.

Crypto game worlds appear bounded in ‘coded space’ (Kitchin & Dodge, 2011). Like in a metaverse-style game,² software enables a virtual experience of space with limited direct or discernible impacts beyond that virtual world. Yet there is a growing body of literature suggesting that Web3’s broad range of social and environmental impacts tend to be felt in a direct sense, among the poorest and most vulnerable communities that care little for crypto (Atilés, 2022; Howson & de Vries, 2022).

Like any technology, software is never neutral (Golumbia, 2016; Hare, 2022). Software is the digital embodiment of the developers’ politics and priorities (Husain et al., 2020; O’Neil, 2017). Sometimes software and spatiality are mutually constituted. Kitchin and Dodge (2011, p. 71) describe the many ways in which space is “essential to the form, function and meaning” of code, referring to this cyclical arrangement as Code/Space. For example, a self-scan supermarket check-out, or an automated airport check-in area, are spaces dependent on software code and vice-versa. If the associated software were to become compromised and collapse, the associated spaces themselves become functionally disabled and chaotic. In this paper, we suggest that

² The metaverse is loosely defined as an interoperable network of real-time rendered, 3D virtual worlds that persist through time and across platforms and devices (Howson, 2023).

Table 1
Fieldwork locations and associated Web3 projects.

Location	Project(s)/Theme(s)	Fieldwork period (s)
Buenos Aires, Argentina	Cryptocurrencies	2023
New Brunswick, Canada	Bitcoin mining	2022
San Salvador & La Libertad, El Salvador	Bitcoin as legal tender & Bitcoin Beach	2022
Republic of Palau	Palau Coin & Root Name System	2016–2017
Cuzco & Lima, Peru	Bitcoin mining & ‘circular economies’	2023–2024
Puerto Rico	Cryptocurrencies	2018–2019
Texas & New York, USA	Bitcoin mining	2019–2024
Caracas, Venezuela	Bitcoin mining & Petro cryptocurrency	2019

space and the software that facilitate blockchains are similarly constituted. We explain how such projects produce social and environmental conditions that are essential to the workings of the digital ecosystem, and vice-versa – Crypto/Space.

The mutually constituted nature of cryptocurrency software and unjust grabs for land and other resources, takes multiple forms. We discuss three here. Firstly, we argue that the deceptive and/or clandestine appropriations of energy, water, and land (and excretions of noise, heat, electronic and other wastes) by crypto ‘miners’, creates a parasitic relationship between the cryptocurrency software and local communities. In parasitology ‘crypto’ refers to pathogens whose life-cycle depends on concealment within the host’s body. We see a similar strategy adopted by Bitcoin miners concealed, yet active within existing energy circuits for as long as local political and economic conditions allow. Bitcoin mining machines are often hidden among other computational infrastructure enabling the global digital economy, like co-location and cloud data centres – generally considered more socially and politically acceptable or legitimate – in order to evade regulation and scrutiny whilst sometimes benefiting from state subsidies designed to attract data centres (Davoll et al., 2023).

Secondly, land grabs are often required to facilitate fraudulent investment scams. McCarthy et al. (2012) coin the term ‘virtual land grabbing’ to explain that, regardless of legal provisions to the contrary, developers often engage in land acquisitions, and associated displacement of local people, with no real intention to use the land for the declared purpose. Using false promises of development, land is acquired to access subsidies or obtain bank loans using land permits as collateral. In the case of cryptocurrency projects, land is being used to enable token sales in a network scam. Only a few initial stages of land acquisition or enclosure occur; just sufficient to enable specific actors to pursue their own interests, which may or may not depend upon land use changes actually taking place.

Finally, we consider the disingenuous development credentials used by blockchain projects to colonise places and displace the locals, usually in the Global South. These ‘crypto-colonial’ displacements are often labelled as blockchain innovation hubs, start-up company towns, or crypto charter cities (Crandall, 2019; Howson, 2020a; Jutel, 2023; Simpson & Sheller, 2022). Drawing on Smith and Burrows (2021), we refer to these spaces as ‘Exit zones’. Whether they succeed or fail in building anything, within these zones, blockchain developers lobby for regulatory frameworks to enable cryptocurrency network-scams. With promises of economic development, Web3 projects are expropriating land and resources from local communities. In doing so, communities suffering social deprivation and environmental disasters are packaged up as in need of a blank slate. With pre-existing claims seemingly ignored by developers, these spaces are then transformed into experimental crypto-economic sandboxes. At their most radical the crypto sandboxes are produced as *Terra nullius* – a dominant view in the ‘Network State’ ideology (Srinivasan, 2022), a movement growing in popularity, which aligns anarcho-capitalist governance and self-sovereignty with blockchain financialization and dreams of empty yet fecund spaces for crypto-nomads (Srinivasan, 2022). Though we look at these processes separately here, they often overlap, and Crypto/Spaces are all produced through a parasitic relationship between software and space.

3. Crypto-parasitism

Proof of Work (PoW) cryptocurrencies, like Bitcoin, deploy a global network of competing specialist ‘mining’ machines. PoW mining is effectively a controlled way of wasting energy (Howson & de Vries, 2022). Bitcoin miners repeatedly guess the combination to a digital lock (or ‘hash’, a long string of ones and zeros) with the computer guessing the correct combination winning an ever-decreasing number of new Bitcoins. The combination changes as miners successfully create new blocks, every 10 minutes on average. The number of Bitcoins released

with each new block halves every four years, from 50 in 2009, to just over three in 2024. The contest can theoretically continue up until the year 2140. From then on, miners will theoretically compete only for network user transaction fees. Though the cap can be removed or adjusted, the planned cut-off gives Bitcoins their theoretical scarcity. PoW cryptocurrencies use significant material resources.³ As of February 2024, the Bitcoin network was using between 142 and 172 TWh of electricity per year,⁴ the majority of which was being generated from fossil fuels, emitting approximately 60 Mt CO₂e (CCAF, 2024; Digiconomist, 2024). Based on demand calculations for Quarter 1, Bitcoin’s carbon emissions are likely to reach a record high of at least 80–87 Mt CO₂e per year in 2024 (CCAF, 2024).

Bitcoin’s network infrastructure was designed to require more energy over time. In 2009, competing miners could successfully win blocks with an average laptop. But mining Bitcoin was designed to grow more wasteful as its popularity increased. Minimum viable mining operations today require several hundred tailored computers in the form of Application Specific Integrated Circuit (ASIC) units. The Bitcoin network’s hash-rate⁵ has grown from around 90 exa-hashes per second (EH/s) in 2021, to around 600 EH/s – 600 quintillion operations (600 followed by 18 zeros) by quarter 1 of 2024. For comparison, the world’s most powerful supercomputer, the HP Enterprise Frontier is capable of completing just over one-quintillion operations per second. A Bitcoin miner is likely to deploy energy and computer power up to the value of one Bitcoin at any particular moment (around 65,000 USD for Q1 of 2024), in order to produce one bitcoin. This theoretically allows tokens to embody the economic value from the resources used in its production (see Fig. 1).

ASIC units usually need to be replaced for more efficient models every one to two years (de Vries & Stoll, 2021). The global network of tailored Bitcoin ASIC units, more powerful than all the world’s super-computers put together hundreds of times over, cannot easily be repurposed to do anything else, besides running the SHA-256 hash function used to mine Bitcoin. Globally, redundant units create around 30,400 tonnes of e-waste each year (de Vries & Stoll, 2021), much of which is disposed of in the Global South (Furlong, 2020). Bitcoin miners tend to rely on large quantities of fresh water for cooling. In 2022, Bitcoin’s annual potable water footprint was roughly 2237 billion litres (de Vries, 2024).

Bitcoin is an open and permissionless blockchain network, meaning that anyone willing to invest in the necessary resources and infrastructure can become a miner. Energy costs constitute the largest expense for most miners. For that reason, most site themselves close to sources of cheap energy. Exploring Chelan County, Washington USA, as a case study, Lally et al. (2019) argue that Bitcoin miners are materially dependent on their hosts for survival while providing little in return. The parasitism relies on promises of increasing local prosperity and employment opportunities, to legitimise the externalising of significant negative impacts.

In Dresden, New York, the Greenidge coal-fired power plant was closed in 2011. It was later converted to a gas-fired plant and in 2021 became an exclusive 85-MW power station for Bitcoin miners. Despite the State of New York’s plans to slash its greenhouse gas emissions by 85

³ Not all blockchain consensus protocols are as energy intensive as Bitcoin’s. For example, ‘Proof of Stake’ (PoS) protocols require less than 1% of the energy consumption needed for ‘Proof of Work’ (PoW), as used by Bitcoin, Monero and Dash among others. ‘Delegated proof of stake’ (DPoS) and the ‘delegated Byzantine fault tolerance’ (DBFT) models use negligible amounts of energy to grant validating power to stake-holding nodes.

⁴ For comparison, the UK’s entire electricity demand was 320 TWh in 2022.

⁵ Similar to how computer performance is measured in floating point operations per second (or FLOPS), Bitcoin’s network performance is calculated based on the number of hash guesses that all miners on the network are making per second.

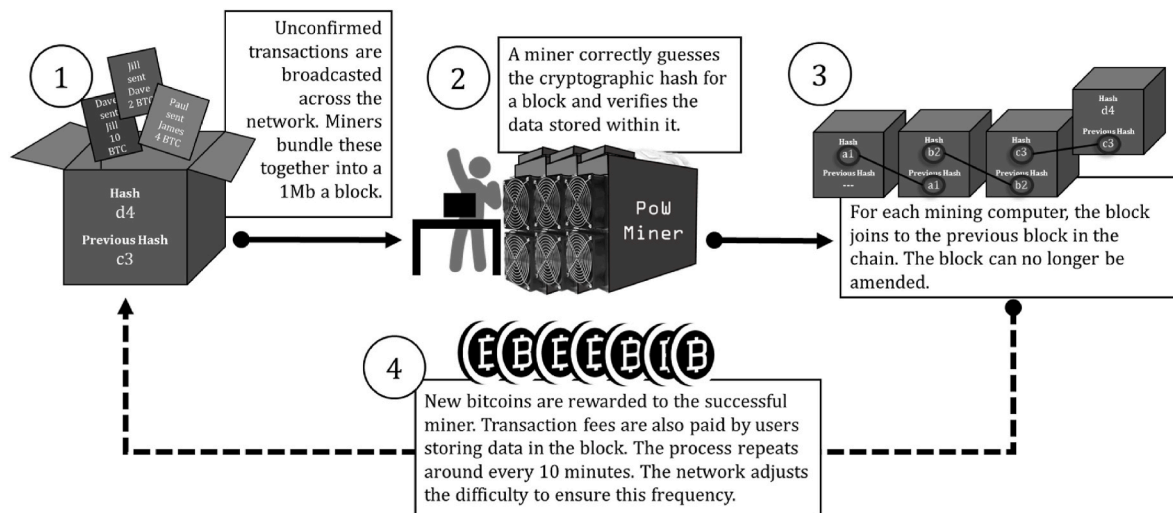


Fig. 1. Bitcoin's Proof of Work consensus protocol (Source: Howson)⁶¹.

per cent before 2050, the Greenidge Bitcoin revival was partly enabled by a local government 'upstate revitalisation grant' worth 2 million USD. The grant was meant to stimulate the region's economy and create jobs (NY Gov, 2023).⁷ While typical company headquarters can have between 200 and 1000 jobs on site, the number of jobs at a typical energy-intensive data centre is usually between 5 and 30 (Lenio, 2015). Similarly, in New Brunswick, Canada the country's largest bitcoin mining facility was built near the border with Québec with the goal of bypassing a moratorium imposed by Québec's government, while taking advantage of its electricity, which New Brunswick buys (Rosales et al., 2024; Atkins et al., 2021). New Brunswick's Miners have directly created only 19 jobs, while extracting between 50 and 80 MW of electricity (Rosales et al., 2024).

As well as increasing carbon emissions and local air pollution, noise pollution is a standard biproduct borne by locals. In Granbury, Texas, residents described suffering sleep disturbance and deteriorating mental health due to crypto mining operations carried out by Marathon Digital at their Wolf Hollow centre. Despite living a few miles from Wolf Hollow, one family showed us their bedrooms with mattresses stacked against external walls – futile attempts to shield their young children from the noise outside, registering over 90 dB. The children's mother in her mid-twenties told us:

Me and my husband argue more since Marathon came. We're irritated all the time. Sometimes we laugh and we're happy, then we realise it's because [the noise] has stopped for half-hour, for whatever reason. Then it starts again. [...] I cry a lot. My son cries. He holds and rubs his ears. [...] I'm not sure we can take it for much longer. We pray they'll be gone soon, but now they're telling us they plan to get bigger. It's hell. And for Bitcoin? (Author correspondence, 2024).

Another resident living closer to the plant's perimeter wall explained in an interview:

I can't even sit outside anymore. I get migraines daily. My doctor says I need to walk for the exercise. How? I have a choice between dying from diabetes, or from insomnia and stress. [Marathon] put up this "soundproof" wall. It does nothing. I think it's actually got worse since they did that. [...] I feel terrible for the Mexican families who live right next to [the wall]. Can you imagine? Going out into the yard, having to shout at the guy next to you to be heard. [...] There's

no kids, not even dogs can play outside here (Author correspondence, 2024).

Activist groups were mobilising in Granbury (see Fig. 2), and nearby Corsicana, where the group known as Concerned Citizens of Navarro County had been established in opposition to mining centres operated by Riot Platforms. One activist associated with the group told us:

We've been arranging town hall meetings and block walking every weekend. Residents of Navarro County are sceptical of the grandiose claims made by Riot – about jobs and development. They're also deeply concerned with the water and electricity prices and the total lack of transparency about their operations (Author correspondence, 2024).

The local electricity regulator, Electric Reliability Council of Texas (ERCOT) turned to Bitcoin mining in 2022 as an energy management strategy known as 'load balancing'. Bitcoin miners promising to stabilise the Texas grid could negotiate ten-year fixed supply agreements, paying around 2.5 cents per kilowatt hour. The going residential rate is 18.5 cents. A 'demand-response program' enables power suppliers to ask miners to shut down their operations when necessary. If they do so voluntarily, ERCOT pays the company as credits towards future power. As of late 2023, the state is home to around 10 per cent of all the world's Bitcoin miners, who together have added 20,000 MW of demand to the Texas grid, roughly equal to the amount of electricity used by the whole of Houston (Khalili, 2024). Credits are paid to miners from the bills of residential customers who would in turn see their rates rise by 5 per cent. In doing so, residential customers are directly subsidising the profits of Texan Bitcoin miners by 1.8 billion USD every year (Khalili, 2024). Part of the reason for the influx of miners to Texas is pro-environmental cryptocurrency policies implemented in China.

In China, Bitcoin mining was banned in 2021. However, this has had adverse impacts across neighbouring low-income countries in Eastern Europe and Central Asia, including coal rich areas of Kazakhstan. Here, many new purpose-built coal-fired power plants have been developed catering for Chinese mining companies at the expense of local energy needs (Howson & de Vries, 2022). Following the Chinese government's crackdown, the increasing presence of Bitcoin miners in the Black Sea territory of Abkhazia has been blamed for overloaded electricity lines and power station fires, leaving some areas with disrupted power supplies (Bacchi, 2021). Miners have been attracted to the disputed territory due to the state's energy subsidies originally designed to reduce local fuel poverty (Sabadus, 2021).

Benefiting from a vague geopolitical status, the Transnistrian Republic has become a regional centre for Chinese Bitcoin miners moving

⁷ By November 2022, New York State had banned the use of 'behind-the-meter' fossil fuels for new Bitcoin mining operations.

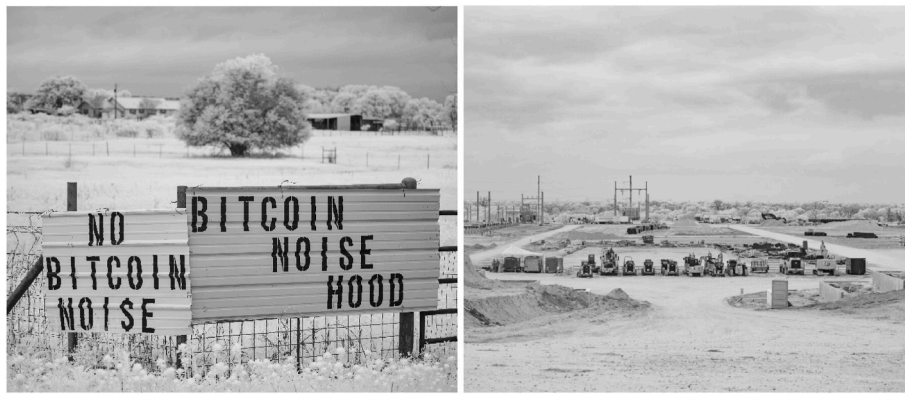


Fig. 2. Signs of protest in Hood County TX (Left) and, under construction, Riot Platforms' 2nd Bitcoin mining centre in Corsicana TX (Right) (Source: Paul Dolan).

into Europe (Necsutu, 2018). Situated between the ex-soviet Republics of Moldova and Ukraine, Transnistria remains the most socially deprived area of Europe (Necsutu, 2018). Shortly after Moldova declared sovereignty of the territory in 1990, pro-Russian interests established the breakaway Soviet Republic. An armed conflict continued till 1992, ending with a political agreement leaving the territory as an awkward appendage to Moldova, but with continuing alignment towards Russia (Piras, 2019). Transnistria controls the biggest power facilities in the region, with the Moldovan government forced to buy 80% of its electricity from an unrecognised country that has split from it (Plesinger, 2017). Moldova's hydroelectric dams on the Dniester River remain under the control of Transnistria's capital Tirasapol, as does Moldova's Kuchurgan electricity plant, on the lake that forms its border with Ukraine. Around Kuchurgan, Russian and Chinese Bitcoin miners have moved in, attracted by subsidised electricity, leading to energy shortages, price increases and escalating geopolitical tensions in the wider region (Smith, 2019).

Similarly, since September 2020, French Company, Bigblock Data have operated Bitcoin mining operations around Virunga National Park, Democratic Republic of Congo (DRC). Funded by the European Union, the hydroelectric powerplant feeding the operations was constructed to support local jobs and provide low-carbon electricity to the towns of Rutshuru and Goma, including surrounding villages. Local residents were considered to be illegally-sourcing charcoal from the Virunga park (Marijnen & Schouten, 2019). The hydro-electricity project was designed to help prevent this forest degradation whilst improving local livelihoods (EC-EC DEVCO, 2017: p1). According to park director Emmanuel de Merode:

Every MW of electricity generated empowers the community, by creating thousands of jobs, 5–10% of which go to ex-combatants. When people are empowered, they have the choice to control their future and move into productive society, away from armed groups.

But with Bitcoin mining crowding out other industrial buyers of electricity, alternative livelihood options remain unclear, and forests remain degraded (Howson, 2023). But while these Bitcoin miners depend on highly mobile plug-and-play devices to chase down the worlds cheapest sources of energy and other resources, some Web3 projects are grabbing land to produce spaces with a more permanent appearance.

4. Virtual land grabs

Exploring large-scale land acquisitions in Indonesia, McCarthy et al.

⁶ Running a node to validate Bitcoin transactions is trivial, as Bitcoin miners run their own validators. There is no external entity providing the reward, rather, as part of the protocol definition, successful miners reward themselves

(2012) suggest that the existence of realistic business plans, well-managed logistics and coherent marketing often have little bearing on whether or not an associated business is legitimate or profitable. Acquisitions of land for plantations for example, often do not involve planting anything, but rather involve speculative activities such as acquiring permits that enable the investors' real intentions – acquiring loans, inflating share prices, etc. – to be realised. The same counter-intuitive logic often plays out with Web3 projects (see Table 2).

For example, a project known as the Free Republic of Liberland recruits crypto-investors by offering them a space to call home without paying tax, or ever having to set foot in their new home (Liberland, 2023). The Republic was originally meant to lie on a parcel of swamp forest on the western bank of the Danube, a buffer zone between Croatia and Serbia. Despite frosty relations between the two real nations, following the Yugoslav wars, both Serbia and Croatia had agreed that the territory, locally known as Gornja Siga, was not worth fighting over, but nor was it *Terra nullius*. In 2015, police stations and patrol boats were set up on both sides of Gornja Siga to secure the borders and prevent Liberlanders, including Czech politician and Liberland's self-appointed president, Vit Jedlička from entering without permission.

According to Jedlička, “The biggest improvement is that, in Liberland, taxes are voluntary, and people are rewarded [with voting rights] when they pay them” (Howson, 2023, p. 188). In the summer of 2022, Jedlička sold thousands of residency permits for 150 USD each. But with no legitimate claim to Gornja Siga, the only immediate benefits for a Liberland resident was the ability to evade taxes on cryptocurrency trading gains using the US crypto-exchange Kraken, and evading income tax by receiving salary payments in cryptocurrency via the US payroll service Bitwage (Liberland, 2023). Gornja Siga remains generally inaccessible and undeveloped. Yet it still remains an ongoing subject of debate among critical geographers (Riding & Dahlman, 2022). In answering the essential question, ‘Where is Liberland?’, Cattaruzza (2022, p311) suggests the geography of Gornja Siga is:

[M]ade up of computers, cables, servers, data centres, mining farms, protocols, codes, algorithms, social networks, energy networks, and a whole set of interactions and socio-technical embeddings that allow this virtual state to exist. [...] Hybridity is still there, of course, but it shifts from a ‘swampy human-nonhuman island’ to a tangle of machines and humans.

As a Crypto/Space, Liberland is produced from computational parasitism. By constructing an exclusive virtual (imagined) Web3 territory on Gornja Siga, the founders exploit a niche in the violent geopolitical history of the swampy island buffer zone, for profit.

Similarly, in early 2022, the Fijian island of Nananu-i-cake became ‘Cryptoland’. The project's promotional YouTube featurette promised investors plots of land on the island. “Most of us in the crypto space, when we turn off our screens, we still live in fiat environments,” the project's developers said. “But what if we could improve the physical

Table 2
Examples of crypto-related built-environment development projects.

Project	Location	Proposal	Stage of Completion
Satoshi Island	Lataro Island, Vanuatu	A private island development intended to attract crypto professionals and enthusiasts, with a goal to be “the crypto capital of the world.”	Unknown
Cryptoland	Nananu-i-cake, Fiji	A private island development composed of 60 land plots on the Fijian Island of Nananu-i-cake sold to “Cryptolander Kings” via Non-Fungible Tokens (NFT)	Shelved – NFT sale commenced. Yet, Nananu-i-cake was never acquired
Blockchain City	Nevada	An autonomous “smart city” (or “Innovation Zone”) succeeded from local government with decentralised blockchain-based administration.	Shelved
Liberland	Gornja Siga, Croatia	“The Free Republic of Liberland” is a crypto-friendly, tax-free micronation suggested for an uninhabited section of floodplain on the western bank of the Danube, officially controlled by Croatia.	Now planned as a metaverse destination.
Akon city	Senegal	A “smart city” using the cryptocurrency Akoin and built in the mould of Wakanda - a fictional African nation from the Marvel comic Black Panther.	Some infrastructure development
Akon city II	Uganda		Shelved
Bitcoin City	El Salvador	A Bitcoin-powered “smart city” funded by private investment in a billion dollar “Bitcoin Bond”.	Shelved
Sango	Central African Republic	A Bitcoin-powered “smart city” funded by private investment in the cryptocurrency Sango.	Shelved
Praxis	Unknown	A blockchain-powered “smart city” with a “techno-optimist regulatory environment”.	Soliciting investors

world around us to be more aligned with our passion? This is happening, it’s called Cryptoland.” The project sold NFTs,⁸ which they promised would have some associated utility on the island once the development was fully realised. But Cryptoland was a fantasy investment. Like Liberland, there was no development because Cryptoland had no legitimate claim to Nananu-i-cake (Booth, 2022).

The virtual blueprints for Liberland and Cryptoland were drawn-up despite local authorities preventing any material development. In other cases, governments have played a key role in enabling the production of Crypto/Space. Partnering with the cryptocurrency firms Ripple Labs, Binance and Cryptic Labs, the Republic of Palau operates a digital residency scheme known as the Root Name System. For 248 USD, anyone anywhere can purchase a limited edition NFT ID card enabling them to use a Palauan business address, apply for a certificate of legal name change and open online accounts to trade cryptocurrencies tax-

⁸ While cryptocurrency projects tend to issue fungible tokens that function like a currency of sorts, Non-Fungible Tokens (NFTs) are all unique, allowing them to function as collections of digital collectables or as unique digital identifiers to certify ownership.

free. Palauan president, Surangel Whipps Jr. explained in an interview: “This is all about economic freedom. Digital nomads roaming around the world. Why not come and be a [digital] resident of paradise?” (Howson & Jutel, 2022, p. 1). But NFT holders would not automatically be able to reside in Palau. They would not be able to open a local business, become a citizen, or even set foot in Palau without real travel documents and permits.

In 2018, Papua New Guinea signed an agreement with Ledger Atlas, a company backed by Silicon Valley venture capitalist and Bitcoin investor, Tim Draper. The agreement sought to establish a tax-free blockchain economic zone and sandbox obliging the government to promote crypto. Draper claimed the platform would prove a model for all future governments (Howson & Jutel, 2022). Although NFTs on their own do not allow the bearer to enter a country, by encouraging crypto projects to these spaces, international organised crime networks have proliferated. According to Palau’s police chief, the number of people arrested as part of illegal cryptocurrency and gambling operations had more than doubled the usual population of the country’s single jail. One local journalist told us:

[Palau’s] blockchain citizenship scheme was meant to be the same model that they’ve set up for Estonia. But it’s not the same. Here we have organised crime groups moving in and taking advantage of the total absence of regulation. They’re building criminal business empires, all online. And they’re laundering money for the Chinese using cryptocurrency (Author correspondence, 2022).

Elsewhere in the Pacific, the government of Vanuatu, one of the poorest in the world, was also keen to promote the country to crypto developers. The sale of passports was the government’s largest source of revenue in 2021, accounting for 42 percent of the country’s income (Ward & Lyons, 2021). In March 2022, Vanuatu’s approach to offering safe haven to illicit actors led the EU to suspend its visa waiver agreement with the country (Ward & Lyons, 2021). To maintain demand in the country’s citizenship-for-sale scheme, ten-days after the EU suspension, the country’s prime minister, Bob Loughman, officially gave the green light to Satoshi Island, a development promising to make Vanuatu the “crypto capital of the world” (Howson, 2023, p. 68).

The 3-km square Satoshi Island, or Lataro Island as it was known in Vanuatu, was 90 percent forest and home to rare giant coconut crabs. It was first developed for nature tourism in 2010 by a British couple marketing the island as a pristine nature reserve. With poor demand, by 2017 the island was put up for sale for 12 million USD. But the island was taken back off the market when a team of Bitcoin enthusiasts, including an agency selling Vanuatu passports, produced a masterplan for developing the island into a crypto city state for up to 21,000 Bitcoin investors, swapping the giant crabs for a giant Bitcoin symbol, a centerpiece that would be supposedly visible from space. “With the full endorsement from the prime minister of Vanuatu in hand, we can show everyone that Satoshi Island is as real as it gets”, the project announced in a press release (Howson, 2023, p. 69). Satoshi Island described itself as a fix for Vanuatu’s lack of tourism. But to be allowed on the private island required the purchase of a 0.012 ETH Citizenship NFT (approximately 3500 USD), 21,000 of which were minted by the project’s developers. To own land on the island would also require one of 21,000 Land NFTs (each costing 0.012 ETH). But none of these expensive pre-requisites would get the Satoshi Island citizen past Vanuatu’s immigration officers. Unless they had also splashed out 130,000 USD on a real Vanuatu passport.⁹ Prospective residents of Satoshi Island and Land NFT holders were invited to design a new modular dream home using the project’s ‘digital twin metaverse app’. But building anything on the island in real life would require lawful planning permission and

⁹ Despite recurring reports since 2017, suggesting Vanuatu accepts payments in Bitcoin for its ‘Citizenship for Sale’ scheme, Vanuatu’s official website states they do not accept payment in any cryptocurrencies.

environmental impact assessments obtained independently of any agreements between the Vanuatu government and the Satoshi Island developers. The island's crabs would be safe for the time being.

Virtual land grabs for Crypto/Space have also required government involvement in Senegal. The development of Akon City was first announced by the American musician Akon in 2018 as an Afro-futurist smart city with a purpose-built cryptocurrency, Akoin. The city was to be sited in the coastal town of Mbodiene, 100 km south of Senegal's capital Dakar. Akon City would be modelled on Wakanda – the fantasy world from Marvel's Black Panther movies and comics. In September 2020, the Senegalese government set about clearing 3000 fisher folk living within the proposed construction site (Warren, 2020). Before launching, the project's website announced an ICO called the Tokens of Appreciation (ToA) fundraising campaign, designed to cover the costs of launching Akoin at an unspecified time in the future. The pre-sale was framed as a 'donation opportunity'. Donors were advised that for every 1 USD donated they would receive four ToAs that would all later convert to Akoins, the future city's official currency. Akoin launched in September 2021 with a price of 0.35 USD. Within days, as pre-sale investors sold their holdings, the price fell sharply to 0.01 USD. Akon also promised a second crypto smart development, this time to be built on a city-sized plot given by the government of Uganda. As of January 2024, aside from a youth centre and basketball court in Senegal, both Akon City sites remained grassland (Khan, 2023).

Similar development plans were drawn up for a crypto-powered 'smart city' in El Salvador. As well as the offer of permanent residency for just three Bitcoins, foreign settlers to Bitcoin City would live free of income tax and capital gains tax (Rosales et al., 2023). Plans for the city had been recycled from a previous failed development (see Fig. 3). Earlier plans involved a deep-sea port and city made up of a series of concentric rings to be built by the Chinese government on the Gulf of Fonseca.

In early 2023, plans for Bitcoin City were quietly shelved. Producing spaces as sandboxes like this serves an important function in mobilising a socio-technical imaginary for venture capitalists around a libertarian 'Exit fantasy' (Lynch & Muñoz-Viso, 2023). In doing so, projects like Bitcoin City, Akon City, and Satoshi Island help raise the speculative value of otherwise worthless cryptocurrencies. The 'performance of freedom' through spectacles of exiting from intermediaries and regulation, drive this horizon of techno-liberty forward (Simpson, 2021; Smith & Burrows, 2021).

5. Web3 exit zones

The process of coercing communities to withdraw themselves from the mainstream economy with Web3 often involves a mix of predatory marketing and charity. In 2019, Mike Peterson a US tourist and Bitcoin enthusiast set out to turn the coastal town of El Zonte, El Salvador, into a Bitcoin utopia. El Zonte would become Bitcoin Beach: a tax-free libertarian 'circular economy' where people could pay for anything, from groceries to electricity bills, using Bitcoin. Peterson spent the next year aggressively promoting Bitcoin to the 3000 residents of El Zonte and the nearby village of Punta Mango. Buying his Bitcoin, he promised would bring local people out of poverty (Howson, 2023). But the Bitcoin payment system was unreliable due to the town's remote location and weak internet connection. Bitcoin's inherent volatility meant groceries and electricity bills still needed to be priced in dollars, the country's legal tender. The area remains largely underdeveloped.

Despite its shortcomings, Bitcoin Beach inspired a series of loosely networked Bitcoin-themed developments across Latin America and Africa with shared implementation principles, popularly known as the 'Basis Underlying Bitcoin Beach-Like Efforts' (or BUBBLES). Within these spaces, poor or otherwise marginalised communities are encouraged to exit the mainstream economy – swapping their real money for Bitcoins or other cryptocurrencies – to enable what was described as a circular crypto-economy. The US non-profit Motiv, stated in its social

media accounts and website that it operates active Bitcoin circular economies in primarily Quechuan villages across Peru.¹⁰ According to Motiv's founder, Richard Swisher, it all started when he and his business partner Valentin Popescu:

Came upon this village, up in the Andes, remote village. And they have a 5 percent mortality rate in their children. And the kids are dying from medical conditions related to exposure to cold, primarily through their feet. [...] We place an education hub in each community. We call it the five Es; we Educate, Equip, and Empower. That helps Emancipate them, and then Elevate their community.'

Motiv's Bitcoin fix involved convincing the rural poor to exchange what little real money they had for cryptocurrency, while encouraging vendors to accept it for payments; a fix entirely divorced from infant mortality or podiatric problems. Moreover, none of their so-called 'programs' fit the usual definition of a circular economy, or even that of a circular crypto-economy in which Bitcoins are used to sell and purchase goods locally and for connecting these towns with global markets. Their educational programmes involved teaching people to download and use Motiv's preferred crypto wallet application on their phones. In 2023–2024, following a seven-month investigation in and around the provinces where Motiv claim to operate, we found no evidence of any operational or previously existing Bitcoin circular economies. And yet, these hubs exist virtually as representations, suspended in time and space, always active and open for international donations.

BUBBLES projects like this are a global phenomenon. The South African BUBBLES project and Bitcoin education charity Ekasi, has established a surf school that opened its doors in 2021. The project was funded by the charitable arm of US crypto-exchange Paxful and claimed to support children from the nearby township of Mossel Bay, Cape Town. Ekasi's surf coaches are paid in Bitcoin. The project welcomes groups of Russian Bitcoin investors and tourists whilst teaching local children how to self-custody their Bitcoin. According to the project's promotional materials, recruits are given metal stamping kits and are advised to hammer their crypto wallet seed-phrases¹¹ into steel plates. The project's goal is to fully remove local children from the traditional financial system. Internet penetration in the township is around 30 per cent. But instead of helping children access the internet, Ekasi has teamed up with a local start-up selling children access to so-called 'dumb phones', so they can buy Bitcoins without needing to go online (BitcoinEkasi, 2023).

As well as predatory marketing, some crypto projects have involved lobbying host governments to create regulatory environments favourable to incoming Exit communities. By mainstreaming cryptocurrency and other blockchain technologies these projects attempt to break away from existing financial and legal institutions enabling unfettered free-markets and new forms of jurisdictional sovereignty (Smith & Burrows, 2021). Focussing on a proposed blockchain-based smart city in Nevada, Lynch & Muñoz-Viso (2023: 3) explore the real-life impacts of urban cryptocurrency projects even when they fail or never materialise. These impacts include weakening the sovereignty of local states, reducing tax revenues and access to public services, and increasing social inequality.

Exit zones are associated primarily with anarcho-capitalism and the free-market fundamentalist ideas of the Austrian School of Economics (Lynch & Muñoz-Viso, 2023). But Web3 has also attracted communities of libertarian socialists. For example, after defrauding 39 Spanish banks, in 2014 Enric Duran bought 10 million USD-worth of the cryptocurrency FairCoins, roughly 20 per cent of the entire supply, and established a Catalan-based cooperative, FairCoop (Balaguer Rasillo, 2023). He chose

¹⁰ Motiv's website states that their programs "reach over 16 active Bitcoin circular economies". Names of actual towns and villages are omitted (<https://motiv.ngo/programs/> - last accessed 19/02/2024).

¹¹ A seed phrase is a sequence of random words that stores the data required to access or recover cryptocurrency on blockchains or crypto wallets.

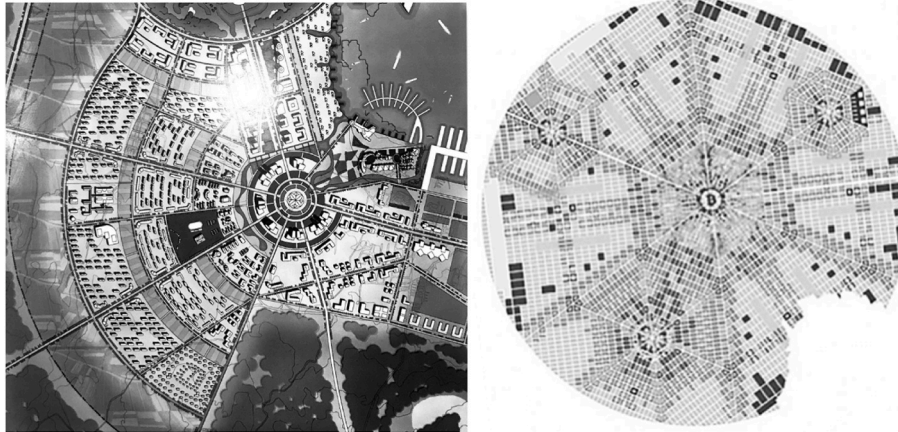


Fig. 3. Chinese charter city plan (Left), and Bitcoin City plan (Right).

the coin because he liked the name and judged it to be the most suitable for building an ethical currency system. After a few years of sales growth, the project collapsed. According to researcher Balaguer Rasillo:

The project's dynamic governance structure, articulated around recommoning and degrowth values, was just a façade for speculative investments. There was limited transparency or communication in terms of the project's internal workings and, just like many other collapsing crypto organisations, there were stark examples of strategic mismanagement (Author correspondence, 2023).

Perhaps the most extreme attempts at exiting mainstream political and financial institutions using Web3 have been in form of Seasteads – attempts to produce independent sovereign floating states in international waters. The movement pre-dates the birth of blockchain (Steinberg et al., 2012; Lynch, 2017), but according to the Seasteading Institute (2024, p1), “there is a natural affinity between cryptocurrency enthusiasts and Seasteaders. One of the biggest hurdles that Seasteading communities face is establishing a stable and secure financial system beyond the reach of traditional banking and government regulations.” Patri Friedman – grandson of Milton Friedman – and the billionaire Venture Capitalist Peter Thiel, established the Seasteading Institute in the belief that setting up tax-free libertarian countries should be as easy as setting up new companies. Thiel explained:

These countries would mean more scientific and technological progress, that is too heavily regulated by the heavy hand of our existing state. There are all these things that would be better. Different penal systems [for example] and we can do all these new biomedical things.

In 2019, inspired by Thiel and Friedman's ideas, US Bitcoin traders Chad Elwartowski and Suprahee Thepdet, constructed a floating seastead on a small concrete spar in the Andaman Sea, twelve miles off the coast of Thailand. According to Elwartowski, living on a small, lonely spa in the middle of the ocean was not the end goal. Their proposed development would encompass 20 connected floating platforms, which they called ‘XL II’. Elwartowski had a steel platform specially developed to replace the old concrete one, upon which they intended to house workmen (Simpson, 2021). Thai authorities became concerned when the Seasteaders openly solicited for prospective investors to expand the development. The spar was shortly after intercepted by three Royal Thai Navy vessels. In occupying the spa, the Seasteaders were accused of threatening the sovereignty of Thailand. While the spa was towed back to dry land, Elwartowski posted, “I was free for a moment – probably the freest person in the world”.

Lynch and Muñoz-Viso (2023) point out that Exit projects like the Seasteading spa are often performative even in their failure, helping to constitute a community of actors and propagate a libertarian ideology.

Smith and Burrows (2021 p9) explain: “On occasion, portended social imaginaries – designs, diagrams, fictions, maps, movies, plans, philosophies, prototypes, theories, dreams and more – become generative of the future.” Simpson (2021) similarly describes the Thai Seasteading experiment as a “successful failure” in that it ultimately attracted new supporters and investors and “the attention of international media by telling a story ... crafted to present its protagonists both as heroes of the blue frontier and as innocent victims of an authoritarian state” (Simpson, 2021, p. 81). Yet for many ostensibly ‘crypto-secessionist’ projects (Simpson & Sheller, 2022), including those that follow the BUBBLES principles, success is hard to measure. Failure in developing anything material does not make them unprofitable as a network scam for selling Bitcoin and other cryptocurrencies (Swartz, 2022).

The Seasteading Institute also inspired Exiteers to develop the Honduran island of Roatán (Lynch, 2019). Their exclusive crypto city called Próspera broke ground in 2020. The development embodied the same libertarian ethos as the Seasteaders, with its own laws designed to inspire tax-free, crypto-friendly innovation. International land grabs have a long, bloody history in Honduras. A series of military coups promoted and financed by US corporations led the country to implement laws disproportionately favouring foreign interests. Fighting over farmland sold to international corporations led to a series of extra-judicial killings and disappearances (Geglia, 2016; Geglia & Nuila, 2021). A move to amend the country's constitution in 2013 allowed US companies to cede Honduran territory for foreign-owned charter cities, known as ZEDEs, which escalated land conflicts further (Lynch, 2017, 2019).

Pushing out local populations to make way for new exclusive hotels and golf courses, Próspera hoped to become a mecca for medical trials that tended to be too costly to carry out in countries where more exacting regulations apply (Clarke, 2023). In December 2022, Próspera brought a claim before the International Centre for Settlement of Investment Disputes (ICSID) when incoming nominally leftist President Xiomara Castro, attempted to overturn the constitutional amendments. The request for arbitration was part of the United States Free Trade Agreement (CAFTA-DR), which was designed to protect US investments in the region. According to Brimen, “It's not just the cost [up to 10 billion USD in compensation], it's the message that the Honduran government are expropriating a US investment. I mean that's got to have a multiple of 10 billion USD in negative affect” (Weissmueller, 2023, p. 1). Próspera reportedly promised 10,000 new jobs. The project continues to provide limited opportunities for locals or tax revenues to fund the country's ailing social services (Clarke, 2023).

Like many similar projects, Próspera was financed by Venture Capital investors, including Peter Thiel, Marc Andreessen, and Bilaji Srinivasan. In Srinivasan's (2022) summoning of ‘The Network State’ crypto is merged with social networks and myriad ‘frontier technologies’ from AI

to life extension. According to Srinivasan, an influential Silicon Valley ‘angel investor’ with Venture Capital firm a16z, “What underpins the new dynamic of network states is the intrinsic lack of scarcity of digital territory, the return of unclaimed land and *Terra nullius*, the reopened frontier” (Srinivasan, 2022, p. 253). Network States promise wealthy investors and digital nomads members-only access to tropical second-homes sanitised of pre-existing claims from local communities. In October 2023, the Network State Conference, hosted by Srinivasan in Zaandam, The Netherlands, featured many projects, including Próspera, putting this philosophy into practice. What unites the quixotic start-ups that fall under the Network State umbrella is Venture Capital backing and the belief in crypto as the protocol of Exit. Exit works as a double entendre both as a libertarian fantasy and also as a mechanism for realizing investments. a16z, the Balaji Fund and Thiel’s Pronomos VC, have long bets on Web3 investments (Sadowski & Beegle, 2023). The Network State functions as a placeholder ideology for this movement of VC firms and founders (Jutel, 2023). These investments allow them to dictate the terms of Exit zones by virtue of their role as VC thought leaders.

One of the starkest manifestations of colonial Exit zones is observable in the exclusive crypto-enclaves of Puerto Rico. In the aftermath of Hurricanes Irma and Maria in 2017, crypto-developers have used ‘blockchain-for-good’ narratives to acquire urban beach-front property on the cheap (Crandall, 2023). According to lead Exiteer Brock Pierce, the group was there to push a recovery plan to turn Puerto Rico into a crypto capitalist utopia, which they called ‘Puertopia’. Pierce explained in a 2019 interview (Cobb, 2019 p1):

This is how I pitch it to people though. I tell people, ‘Hey you know we have an opportunity to make the world a better place, blah blah blah blah’. And they say, ‘Well it’s cool, I love that you’re making the world a better place, but I don’t know about moving there’. And then I’m like, ‘Did I tell you about the taxes?’ They say, ‘I’m packing my bags’, because in the US if you’re a crypto trader, we have to pay taxes on every transaction, it’s a nightmare. So, if you’re into crypto, you have to live in Puerto Rico, or you have to renounce your citizenship.

Act 22, or ‘Promoting the Relocation of Investors to Puerto Rico Act’, was originally drafted in 2012 to attract US-based productive industries, bringing jobs and infrastructure development to the territory. Instead, it attracted thousands of Bitcoiners snapping up the island’s prime beachfront properties without having to pay any federal income tax or capital gains tax. With this bill, US speculators were taking advantage of the colonial status of the archipelago, where they can live as citizens and enjoy privileges local populations cannot. The influx of US crypto investors barely achieved any job creation and had only a meagre impact on the economy, except for displacing the local population (Valentin Ortiz et al., 2021). Many Puerto Ricans referred to the crypto-friendly policies as ‘tax apartheid’. Local resistance in the form of public protests during community promotional events occurred frequently in San Juan. But such contestation against the crypto-utopian mission was being viewed by Exiteers as misguided. One influential US blockchain developer told us:

This isn’t about going down [to Puerto Rico] to make money, although that’s always a primary focus to establishing a foundation and keeping things going for the long-term. It is more so about the spreading of a new religion [...] the religion of peace, of economy, of all things that are beauty and all things that we want for this world (Author correspondence, 2019).

6. Conclusions

Like all software, Web3 projects are written with a particular set of political and economic interests in mind (Columbia, 2016). Despite promises of community-building based on individual rights and

anonymity, decentralization and disruptive innovation, these projects all depend on a ‘speculative utility’. Their declared use cases must morph and evolve to ensure dollar value growth, or ‘number go up’, regardless of whether or not the stated use case could ever be realised (Gerard, 2017). Sadowski and Beegle (2023) suggest that even potentially progressive forms of Web3 development struggle for success, recognition, and attention due to the wild excesses of hype and investment devoted to much of the industry.

This paper has considered how the Web3 industry is materially and socially constituted as Crypto/Space. We have focused on the ways Crypto/Spaces are being produced in three ways, exploring: 1) how crypto project developers are adopting a parasitic relationship with host locations, particularly through the extractive use of energy, infrastructure, and other inputs like water; 2) how blockchain projects enable ‘virtual land grabs’; and 3) how blockchain technology and speculative finance imaginaries are inspiring new anarcho-capitalist ‘Exit zones’, often in the Global South. By consolidating these processes together, we have outlined the material and social relations that Web3 projects tend to produce globally. Space is never an empty vessel or thing, but always exists as a set of social relations (Lefebvre, 1974). *Terra nullius* is no different. As with all past colonial scrambles for blank slates and sandboxes, this paper has discussed how the biggest losers from attempts at repackaging space for libertarian extractivism and/or cryptocurrency experiments, are poor or otherwise vulnerable communities. But the production of Crypto/Space is a global process involving not only wealthy individuals in less developed countries, but also those in highly industrialized countries and liberal democracies.

We have argued here that beyond the enrichment of elites, and subversion of democratic institutions globally, Web3 has failed to find any reasonable use case (Sadowski & Beegle, 2023). Without crises, there are no social contexts in which cryptocurrencies are more useful than traditional means of exchange or method of payment (Brunton, 2019; Rosales et al., 2024). Uptake in the Global South has privileged a comprador class of investors. For them to extract wealth and resources from below, relies upon a liminality between financial inclusion initiatives, influencer economies and right-wing NGOs (Howson, 2021). These efforts have not brought development or financial inclusion, so much as lay the groundwork for new Exit zones, whether through charter cities or in inculcating Exit fantasies through local networks (Jutel, 2023). Despite their professed decentralised architectures, blockchain projects inevitably tend to centralise power, rather than redistribute it or bring it down.

Crypto/Spaces – where space and Web3 are mutually constituted – requires parasitism, predation and false promises to appropriate resources and onboard new users into ‘network scams’. But according to Swartz (2018: p1695), any financial scam is simply a garden weed, it is “capitalism out of place: what gets called a scam is used to perform boundary work that delegitimizes certain forms of economic activity (and exploitation) and legitimates others.” Whether Crypto/Spaces are weedy or manicured gardens, depends on regulatory interventions. Projects like the so-called Bitcoin-native ‘Draper Nation’ (Draper Startup House, 2023) – where e-citizens claim to have opted-out of local laws simply by downloading a QR code – offer regulatory ‘flags of convenience’ to individuals and organisations whose business models rely on near-lawlessness.¹² Meanwhile local regulators, if they intervene – as they have in Próspera and elsewhere – are punished with heavy fines. Compare this to the global Illegal, Unreported and Unregulated (IUU) fishing and cruise tourism industries; flags of convenience enable plunder, slavery and defilement of the environment (Howson, 2020b). Crypto/Space offers a useful framework for policy makers and

¹² Adopting a flag of convenience is a growing business practice whereby a merchant ship is registered in the open register of a country other than that which the ship’s owners reside. The ship flies the ensign of that country and is obligated to adhere to the laws of the so-called flag state.

development practitioners to understand crypto projects and implement more appropriate regulations that result in equitable development outcomes, especially in the Global South.

For traditional, so-called ‘Web2’ platforms, their legitimacy develops through their ‘network effects’ – with each new user increasing the benefits and value in and of the network for everyone. But Web3 projects are a zero-sum game at best (Diehl et al., 2022). Due to their lack of real-world utility, with each new Web3 investor, the social and material costs of the blockchain network increases, albeit for a tiny minority of early adopters. The relationships between our virtual and material lives will continue to morph in ways that are difficult to predict. But we argue that the substantial and diverse range of social and environmental externalities created by Web3 projects will continue to prevent their meaningful adoption, beyond speculation, fraud, or a blending of the two.

CRediT authorship contribution statement

Peter Howson: Writing – review & editing, Writing – original draft, Visualization, Validation, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Antulio Rosales:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Olivier Jutel:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Inte Gloerich:** Investigation, Formal analysis, Data curation. **Mariel García Llorens:** Writing – review & editing, Formal analysis. **Alex de Vries:** Writing – review & editing, Conceptualization. **Jillian Crandall:** Investigation. **Paul Dolan:** Visualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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