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'LIFEWORLD' ON LEDGER: A 'SCENIC' VIEW

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ABSTRACT

This paper explores the sociological and cultural implications of blockchain technology, specifically focusing on three prominent blockchain ecosystems: Bitcoin, Ethereum, and Algorand. The study utilizes the concept of the lifeworld, which encompasses collective human perceptions and everyday communicative social interaction, to analyze the formation and perpetuation of lifeworlds within these ecosystems. By employing scene theory as an analytical framework, the research identifies structural and thematic aspects of the lifeworlds represented in the discourse on Reddit and Twitter. The analysis reveals how these virtual spaces shape the unique social orderings, normative politics, and cultural identities associated with each blockchain. The study emphasizes the role of identity expression, cultural attitudes towards money, and the dynamics of boundary work within these scenes. Overall, the paper provides insights into the distinct lifeworlds and dynamics of Bitcoin, Ethereum, and Algorand, showcasing the significance of sociocultural factors in blockchain ecosystems and illustrating how a scenes lens offers insights into dynamics at the ecosystem level that may not be visible in an exploration of blockchain technology at the level of technological category.

Keywords: blockchain technology, distributed ledgers, lifeworlds, scene theory

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1 INTRODUCTION

Blockchain technology - which has been defined as a distributed ledger in which confirmed blocks of transactions are organized in a sequential, append-only chain (ISO, 2020) - and its first application, Bitcoin, a system for making payments using a digital token representing a unit of value (i.e., bitcoin), were created simultaneously by the pseudonymous Satoshi Nakamoto in 2008 (Nakamoto, 2008). Given the simultaneous invention of Bitcoin and its underlying technology, it is no wonder that early discourse on blockchains was dominated by considerations of their relationship to economic value, money and payments.

The very earliest discourse on this new technology (or, arguably, novel assemblage of pre-existing technologies [Clark, 2016]), focused on its underlying computational primitives of cryptography and distributed computing. Discussions soon turned to focusing on its sociological aspects, for example, in studies of the social aspects of money (e.g., Dodd, 2017), and blockchains' reputed "trustless" *modus operandi*[1] (e.g., Lustig and Nardi, 2015). These studies drew attention to examples of blockchain technology's continuing need for human intervention and trust in a central authority under special circumstances, such as in the case of the Decentralized Autonomous Organization [DAO] exploit of 2016 on Ethereum (Dupont, 2017]), as well as under 'normal' operating conditions, (see, e.g.,Walch, 2015; Nelms et. al, 2018).

Beyond acknowledgements in the discourse on blockchain technology of the social aspects of money or the social-embeddedness of IT systems, scholarly treatments of blockchain technology have also highlighted the ways in which a technology *configures* social existence and experience. Nelms et. al (2018) citing Dodd (2014), for example, note: 'change the money, change the world', arguing that Bitcoin offers an example of the formation of a 'just us' – closed and closely guarded - platform community. Dupont (2017, p. 173) suggests that blockchain-based decentralized autonomous organizations 'introduced an interesting, relatively small-scale technology for experimenting with governance issues and new models of society.' Leaning into the idea of the socially configurative power of technology and drawing upon the ideas of social, documentation and archival theorists (for example, Austin, Searle, Habermas, Shera, Yeo), Lemieux (2022) argues that blockchains both construct and, recursively, are the product of a 'lifeworld' unfolding on, around, and by means of a communicative technology, the distributed ledger.

The concept of the lifeworld is most associated with the work of the German mathematician, philosopher and originator of phenomenology, Edmund Husserl. For Husserl (1910/1965), who was concerned in his philosophical writings with the

[1] This refers to the idea that transacting parties no longer need to place their trust in a centralized intermediating authority, such as a bank or a state (i.e., *lex juris*), but could rely on the (assumed) dispassionate and disinterested operation of algorithmic code (i.e., *lex cryptographia* [Wright and De Filippi, 2015]). Critical studies have highlighted a continued reliance on trust relations.

problem of human consciousness, the lifeworld was a collectivity of human perceptions which formed at one and the same time the objective and pre-existing background to human perception as well as being an outcome of the inter-subjective adaptation of individual human perceptions. The concept has been elaborated upon by many philosophers and social theorists since then, including Habermas (1984 & 1987) whose "Theory of Communicative Action" sees the lifeworld as a field of everyday communicative social interaction which gradually differentiates into different spheres of cultural validity. It is a concept encompassing diverse forms of social existence and experience, including, we argue, 'scenes'.

Habermas' ideas shared common ground with, and were influenced by, a number of philosophers and social theorists of the late eighteenth, nineteenth and early twentieth centuries, many of whom were trained in philology. Philology focused attention on understanding the logic by which language reproduced and generated human behaviour and social institutions (Kelly, 2012 cited in MacNeil, 2016, p. 163). Among these social theorists, the 'speech act' theory of Austin and Searle argued that communicative acts brought society into existence (Austin, 1975, Searle, 1985). Thus, through speech acts, expressed and represented in, for example, different types of records - which we argue, include distributed ledgers as records produced from a unique assemblage of computational technologies – agents inter-subjectively construct and reproduce a lifeworld.

Although it could be argued that discourse on the Bitcoin, Ethereum and Algorand subreddits and Twitter hashtags offers *prima facie* evidence that these ecosystems are communicative configurations of social and cultural lifeworlds, as well as being technical systems, pinning down exactly what kind of worlds they are — the depth of social ties, the sense of holding specific values in common, the mechanisms that propagate and sustain these spaces — is far from straightforward. Thus, in this paper we aim to explore the lifeworlds of our three focal ecosystems as distinct cultural spaces in order to gain a deeper understanding of them.

In contrast to many other studies exploring the sociological aspects of blockchains, which focus on single blockchain protocols or on blockchains as a category, we have chosen to use a 'scenes' lens to comparatively examine blockchains as distinct socio-cultural spaces. We see scene theory as giving us the analytical tools needed to tease out subtle differences among distinct blockchain protocols that, we argue, are often elided by other approaches, such as, Actor-Network Theory (ANT) (Latour, 2005), with its emphasis on network fluidity and connection over unpacking what distinguishes unique socio-cultural identities.

To begin the discussion, we provide an overview of scene theory as our orienting perspective. Next, we discuss our methodology, which relies upon a hermeneutic phenomenological analysis of discursive texts, and we contribute a novel application of 'distant reading' of such texts to the study of scenes. We then turn to presentation and discussion of our findings before concluding our analysis.

2 SCENE THEORY AS AN ORIENTATING PERSPECTIVE

To explain our choice of scenes theory as a lens through which to explore our ideas about blockchains, it is first useful to present some ideas about this theory. There seems to be general agreement that the first academic formalization of the notion of scenes can be found in Will Straw's 1991 article 'Systems of Articulation, Logics of Change: Communities and Scenes in Popular Music', which was published in the journal *Cultural Studies* (Bennett and Rogers 2016, pp. 11-12). At the time, Straw's piece marked a move away from structuralism in cultural studies, focused on notions of subcultures and communities, towards the greater flexibility of the spatially oriented concept of scenes (Bennett and Rogers 2016, pp. 14-15). Indeed, some would argue that it is the very flexibility of the notion of scenes that has made it such an analytic critical success (Drysdale 2019).

Straw's 2015 paper, 'Some Things Scenes Might Be' best articulates what he sees as characterizing scenes. He writes (2015, p. 477):

> Scenes, I suggest, might be seen as all of the following: as collectivities marked by some form of proximity; as spaces of assembly engaged in pulling together the varieties of cultural phenomena; as workplaces engaged (explicitly or implicitly) in the transformation of materials; as ethical worlds shaped by the working out and maintenance of behavioural protocols; as spaces of traversal and preservation through which cultural energies and practices pass at particular speeds and as spaces of mediation which regulate the visibility and invisibility of cultural life and the extent of its intelligibility to others.

Since Straw's formalization of the notion, scene thinking has been applied to analyse a number of cultural collectivities, most notably music scenes. including Straw's own work (1991; 2002; 2004; 2015) and his work with Casemajor (Casemajor and Straw 2016), but also the experiences of collectivities of marginalized peoples wherein scenes become spaces of identification and affiliation (for example, Ridge, Minichiello and Plummer 1997; Pritchard, Morgan and Sedgley 2002; Valentine and Skelton, 2003; Casey 2004; Caluya 2006; Ridge, Plummer and Peasley 2006; Taylor 2007; and Caluya 2008), and also virtual spaces of assembly (for example, Williams and Copes, 2005, Grimes, 2015; Drysdale, 2019).

Although members of a scene do interact in specific physical or virtual spaces, scenes are as much about a cultural space as they are about a specific place, whether physical or virtual, as expressed in Straw's definition of a music scene as a 'cultural space in which a range of musical practices coexist, interacting with each other within a variety of processes of differentiation, and according to widely varying trajectories of change and cross-fertilization' (Straw 1991, p. 373). Thus, to be in the same physical proximity as members of a scene (for example, a music venue) is not necessarily to be a part of the scene as cultural space. The same idea can be extended to notions of the virtual scene.

In relation to processes of scene articulation, Bennett and Rogers (2016, p. 163) observe, 'even at their most fluid and virtual', scenes involve 'boundary work' characterized by four key ideas: isolation, deficit, appropriation and re-visioning. Isolation represents a sense of separateness, even remoteness, of the scene from other spaces that communicate an 'otherness' about it in relation to some perceived 'centre' in geolocational or cultural terms, or both. Hence the common characterization of scenes as 'fringe'. Deficits invoke the idea that scenes form around, and in reaction to, something perceived to be lacking or absent which become 'markers of distinction, substance and collective determination' for the scene (Bennett and Rogers 2016, p. 182). Appropriation refers to a sense of encroachment by 'mainstream' or non-scene actors as perceived by those identifying with and co-constituting the scene as a cultural space. Re-visioning serves as a form of resistance against mainstream co-optation of scene culture in order to provide scenesters with a continuing sense of having a place of their own.

In addition to boundary work, processes of collective memory formation occur over time, thereby attaching to scenes a temporal, in addition to a spatial, character. Scenes take shape in a space in part through 'a complex interplay between individuals and everyday consumption of objects, images and text that serve to present ideas about the past and its bearing on the present, as in the creation of online music 'archives' observed on Web 2.0 social media platforms' (Bennett and Rogers 2016, p. 2 and pp.141-2).

With this brief overview of some of the ideas emerging from the scholarly literature on scenes, we argue that a scenic view of blockchains can provide great richness as a complementary lens to other analytic approaches used to explore the sociological aspects of the lifeworld on and surrounding, distributed ledgers. For example, while ANT has been employed to analyse blockchains (see, e.g., Allen, Berg, and Novak, 2018; Islam, Mäntymäki, and Turenen, 2019) we argue that its flat, networked ontology does not lend itself as well as scenes theory does to understanding the unique identity of each networked blockchain space.

To the best of our knowledge, our study represents the first use of scenes theory to explore the social aspects of blockchains. In relying upon scene theory for our analysis, we do not wish to assert that we think blockchains are, *per se*, scenes. Rather, we see value in scene theory as offering a perspective, or lens, on blockchains capable of generating insights into their social aspects without the need to essentialize.

3 METHODOLOGY

For this study, we rely upon hermeneutic phenomenological analysis of texts inspired by van Manen (1990) to gain an understanding of our three focal blockchains through the lens of scene theory. In this context, we understand the archival texts we extracted for analysis from Reddit and Twitter as transformations of lived experience into textual expressions of that lived experience. Our focus on

analysis of the texts links back to the theoretical ideas of Austen and Searle, which inform our view of blockchains that, as they record and preserve 'speech acts' in the form of distributed ledgers, constitute lifeworlds. The texts we analyze 'speak' to the structural or thematic aspects of the experiences of the lifeworld around our three focal distributed ledgers, seeking the 'essences' of those experiences and using categories suggested by our understanding of scenes theory as discussed above – viz., territoriality, politics and normativity, cultural space (identity formation, memes, etc), and boundary articulation – to guide our structural and thematic analysis much in the same way, and inspired by, van Manen's use of the basic structures of lifeworld existentials (e.g., temporality, spatiality, corporeality, and relationality).

We chose to focus on three particular blockchain ecosystems - Bitcoin, Ethereum and Algorand - because they are consistently ranked in the top 10 of all blockchain ecosystems, and also because they have unique differentiating features. In the case of Bitcoin, it stands as the original, generative ecosystem. Bitcoin uses a Proof of Work consensus mechanism that, while attracting negative attention for its excessive energy consumption, delivers the pre-eminent blockchain, with over 15,000 reachable nodes worldwide as of 2022 (Bitnodes 2022), many of these operated by large mining pools, and a market capitalization of approximately USD 330 billion (CoinMarketCap 2022) at time of writing. Ethereum, which runs over 3,000 full nodes globally (Etherscan 2022) and had a market capitalization of USD156 billion in 2022 (CoinMarketCap 2022) was conceived by programmer Vitalik Buterin in 2013 and went live in 2015. In its original form, Ethereum bore many similarities to Bitcoin, but has recently switched to the less energy consuming Proof of Stake consensus mechanism, in which consensus on the blocks to be added to the ledger is not reached by means of solving a computational puzzle, as in Bitcoin, but by participating nodes that are elected to propose and vote on adding blocks in proportion to their stake of the native cryptocurrency (i.e., Ether). Ethereum also offers decentralized programs, called smart contracts, that encode business logic. Algorand is a relative newcomer, introduced in 2017 by Massachusetts Institute of Technology (MIT) professor Silvio Micali. At time of writing, Algorand also uses a Proof of Stake consensus mechanism. Algorand has two types of nodes: relay nodes, which sit at a count of 120 at time of writing (Algorand Foundation 2022) and participating nodes, for which no exact number is available from the Algorand Foundation. Alogorand's 2022 market cap was USD 1.7 billion (CoinMarketCap 2022).

In our analysis, we have focused first on a close reading of the subreddits devoted to our three focal ecosystems: r/Bitcoin, r/Ethereum and r/Algorand. As Dupont (2017, p. 167) observes, the Reddit community constitutes a very particular part of the wider cryptocurrency discourse. It is worth noting at the outset of this discussion that 'boundary work', one of our analytical themes, is to some extent built

right into to the three subreddits we have explored for this paper.[2] Within these forums we have selected threads from the last six months that attracted a reasonably high level of engagement, as indicated by the number of comments made to an original post. In a manner similar to Dupont (2017), our choice of time period was not guided by any particular event or phenomenon; rather, we simply sought to gather text to provide us with a snapshot of the lived experience on and around our focal blockchains over a long enough period of time to observe any patterns of change or stability. Our analysis has sought mainly to deepen our understanding of how active participants within these forums — who tend to be active participants within the ecosystems themselves — understand key properties of the ecosystem in question, how they differentiate it from other ecosystems, what motivates them to participate, and how they relate to each other as fellow travellers or peers. As such, we have framed our analysis by considering some exploratory questions, much as we would if we were conducting more traditional forms of qualitative research such as observations and interviews (see Dupont, 2017 for a similar approach), including: 'Is crypto "money"?', 'Does it have political ideals?', 'Is crypto inherently right wing?', 'Does the ecosystem have a leader?', 'Is it hierarchical?', and 'Is the ecosystem a community?'. Following identification and extraction of relevant Reddit texts using this strategy, we then undertook detailed line by line analysis, or 'close reading', of the essence of these texts in order explore and manually sort them according to our main structural themes. We met bi-weekly during our close reading of the subreddit texts (over roughly 12 weeks) to discuss our emerging findings. This discursive process provided a form of cross-validation of the analysis of the texts as our study progressed.

In an effort to tap into a wider discourse, we decided to undertake analysis of Twitter posts. Reliance on tweets as expressions of lived experience follows the same logic as our use of the texts extracted from Reddit, even though our method of extraction and analysis was aided by computational techniques in the case of the use of the tweets. We first harvested all Twitter posts appearing on February 17, 2022, under the hashtags for Bitcoin, Ethereum and Algorand. Our Twitter harvest captured tweets made up not only by individuals who identified as participants in the ecosystems but also those who were commenting upon those ecosystems, offering both in-group and out-group perspectives that contrasted with our close reading of the heavily in-group Reddit channels. The harvest resulted in three corpora that comprised 14,572, 1,296, and 1,858 tweets respectively. With a 'distant snapshot' of tweets on a single day, we have been able to counterpose our close reading analysis without becoming overwhelmed by the volume of tweets under analysis. The short duration of our Twitter harvest naturally limited the

[2] The Bitcoin subreddit guidelines, for example, state that, 'News articles that do not contain the word 'Bitcoin' are usually off-topic. This subreddit is not about general financial news'. And more bluntly: 'This subreddit is exclusive to Bitcoin'.
In the same vein, the Algorand subreddit guidelines[2] state 'Only things that are related to the Algorand ecosystem should be posted here'.

extent to which we might have been able to detect patterns over a longer time horizon. This shortcoming could be addressed by a future project with a longer Twitter harvest.

Given the volume of tweets we harvested, in an effort to make our analysis more tractable, we decided to employ techniques inspired by digital ethnography; namely, 'distant reading' (Moretti 2005 & 2013; Jänicke et al. 2017; Bode 2017). Similar to our analysis of the Reddit forums, we framed our analysis by considering the same exploratory questions, with the difference being that we used computational techniques to help us identify and extract relevant text. This involved using Latent Dirichlet Semantic Analysis (LDSA) and opinion mining (Pak and Paroubek 2010), combined with data visualisation and analysis of competing hypotheses. The approach was inspired by the methodology developed in Calderon et al. (2015) and also was used to further explore, validate and complement our initial assumptions developed during the close reading of archival texts, thus also addressing some of the limitations of the distant reading approach (see, e.g., Bode 2017 who suggests that distant reading on its own can be limited, abstract, and often ahistorical).

To begin our distant reading, we undertook visual exploratory data analysis (EDA) (Tukey 1977) of each corpus. This entailed using statistical analysis, LDSA and sentiment classification using SentiStrength[3] to generate visual representations using Voyant Tools version 2.5.4 (Sinclair and Rockwell 2022) and Tableau Online to provide initial overviews of the corpus of tweets followed by zooming in, filtering and representing details on demand (Shneiderman, 2003) for each of our focal blockchain ecosystems in order to detect the expected and discover the unexpected (Thomas and Cook 2005). The reason for the heavy reliance on visualisation is that, by its very nature, the main role of EDA is to open-mindedly explore a large data space. Using visualisation can reveal the structural patterns in a corpus of data, often leading to some new, unsuspected, insight into the data. In combination with the natural pattern-recognition capabilities that humans possess, data visualisation provides unparalleled power to carry out EDA. For this paper, insights drawn from the visual EDA were then used to perform a structured analysis (i.e., Analysis of Competing Hypotheses) designed to reduce confirmation basis relating to conclusions drawn from our initial close reading of Reddit posts.

It is important to emphasise that we are not using Reddit or Twitter to undertake social network analysis. For the purpose of this paper, we are not investigating the depth of social ties within each ecosystem – whether they are strong or weak, for example. Nor are we seeking to generate statistically verifiable hypotheses about a population as a whole. Our main purpose here is to interrogate social meaning, i.e., to look for shared understandings and representations of the ecosystem in question. To that extent, we have viewed participants within these forums in a similar way to interviewees or members of an observed group. Ideally,

[3] http://sentistrength.wlv.ac.uk/

they are 'informants' who may have been members of a group for a period of time or are in any case sufficiently committed to possess knowledge that offers insight into what other members of the group might think, feel and believe, or they are commentators upon the group that can shed outsider insights into the group. While it would be unwise to treat these discussions as fully representative of each ecosystem, we believe that it is reasonable to expect to gain some insights about how these ecosystems are understood and maintained by their participants, and the boundary work that takes place through such discussions. Likewise, claims that a specific blockchain ecosystem is decentralized or flat, or that its design is informed by a given set of normative principles, can be scrutinised against discussions taking place 'on the ground', among their users, whether 'observed' up close or from a distance. If a 'community' or 'scene' has built up around a particular ecosystem, Reddit forums and Twitter are arguably places where evidence of this is most likely to be found. We now turn to a discussion of our findings.

4 FINDINGS

We organize our discussion according to some of the primary existential themes that characterize scenes (as discussed in the previous section). First, we explore territoriality conceived of as collectivities of proximity, spaces of assembly, cultural spaces of collective participation and belonging, and workplaces engaged in the transformation of material. Next, we turn to politics and identity, touching upon notions of ethical worlds shaped by behavioural protocols. After that, we dive into our three focal blockchains as cultural spaces of traversal and preservation, spaces of mediation which regulate the visibility and invisibility of cultural life and spaces of collective memory formation. Finally, we explore these spaces in terms of processes of boundary articulation.

4.1 Spatiality and Territoriality

Above all else, the scenes lens offers a spatial perspective that is less evident in other approaches to the analysis of the social aspects of blockchains. Turning to our analysis of the Twitter corpora, the very fact that we were able to harvest tweets around hashtags for the three focal ecosystems conveys a sense of their 'placeness' or virtual territoriality. Each protocol — Bitcoin, Ethereum, and Algorand — is seen as a distinct space forming around the distributed ledgers of these ecosystems as part of a larger crypto, blockchain, NFT or Metaverse space in the 'Twittersphere', as in this retweet at foxriverdevops: 'ICYMI | it was literally publicly announced that #Algorand $ALGO is going to take over the L1 #blockchain *space* [emphasis added]…'.

Uniquely, we found that discourse taking place in and about the Bitcoin space most often focused on its relationship with the currencies, policies and sovereignty of geophysical state spaces, as opposed to commenting solely upon its own space or

other blockchain spaces. In the Bitcoin subreddit, we found a juxtaposition between 'conventional' currencies, which are a symbol of territorial sovereignty, and cryptocurrencies, which allegedly transcend geophysical state spaces. As far as Bitcoin users are concerned, the primary focus here seems to be on the personal freedoms that are enabled by using cryptocurrency as opposed to state-backed fiat money. Thus, bitrequest opens up a long discussion by stating: 'Reminder, we don't have to wait for permission from anyone. We can start using an alternative, non fiat financial system right now. It's here already. What are you waiting for?' and goes on to describe Bitcoin itself as 'Fuck you money'.

Inevitably, the problem of taxation comes up, too. WTFOMGBBQ_ comments succinctly, 'Dealing with taxes, mostly'. The sentiment is echoed by Sea_Conversation2799, who remarks, 'You still have to buy dollars to pay taxes', to which the OP (bitrequest) responds 'This post is about "Fuck it"'. There are clear tensions here, regarding Bitcoin's use as an everyday currency as opposed to a financial asset — enoigi remarks that 'it is indeed sad that most people here see Bitcoin as a mere speculative asset. Bitcoin was created as an alternative to our current inflationary financial system' — as well as the fundamental problem that you cannot pay your tax bill with cryptocurrency: 'I'm not anti tax, but when it gets ridiculous, i would say fuck it', insists bitrequest.

Unsurprisingly, these self-same tensions between bitcoin as a (usable) currency versus a financial asset emerge in other threads discussing bitcoin's adoption as legal tender in El Salvador in September of 2021 (Lopez and Livni, 2021). While some participants in this subreddit frame the issue in terms of weak currencies and the problem of dollarization — 'Small countries with weak currencies stand to benefit greatly from adopting Bitcoin as legal tender … Bitcoin may be much more stable than even the national currencies in some of these little countries', comments Extremely-Bad-Idea, while In_vict_Us responds, 'The financial liberation of Africa begins' — others reiterate the practical difficulties of using cryptocurrency for day-to-day transactions. Hence FoXtroT_ZA remarks, '99% of the population won't even know what Bitcoin is, let alone afford a device they could use to store and transact with it', while Daniel-PIainview pours more cold water on this development, 'Bitcoin can only process 7 transactions a second. VISA processes 1500. It will never be used as an everyday currency'. Despite these views, in the Bitcoin discourse we observed tweets that derided jurisdictions that failed to adhere to the ideals and norms of bitcoin 'maxis' - those who believe that bitcoin is the only currency needed for the future. Rilva_rusty, for example, whose tweet is the most negative in the #Bitcoin harvest (-4 on a scale of –4 to +4), and whose geographic location in Twitter indicates that they are tweeting from a 'world w/o borders', tweets: 'Matter of time before U.S claims that El Salvador holds weapons of mass [destruction] and starts another fucking war'.

In contrast to Bitcoin, harvests of tweets on #Ethereum suggest that those involved in and discussing this ecosystem are much less concerned with geophysical state spaces and much more concerned with other virtual spaces. In the #Ethereum

harvest, for example, the relative frequency of the term Bitcoin indicates this it is an important referent space or comparator for the Ethereum community (see Appendix, Figure A-1).

Harvested tweets on #Algorand, on the other hand, appear to be much more concerned with looking inward to the Algorand space than looking outward to other blockchain or state spaces (see Appendix, Figure A-2), and is comparatively technocratic in focus. The point is made succinctly by lapurita, who writes that, 'People here are always claiming this, almost always it comes from someone who is not well informed about the technology at hand. It then spreads to the next guy who shouts "algorand has the superior tech!" and then it just keeps going. When asking what's so good about it, these people often point to Silvio and say "look, we have a turing award winner as a founder therefore we have the best tech!" without really knowing what's so special about "the tech". It's not serious to say something has the best tech if the only reason you have for it is the team behind it.' So where does 'territoriality' fit in here? The subreddit discussions suggest that the Algorand space, unlike Bitcoin and Ethereum, is connected with a highly conventional centre of academic excellence, namely MIT. Arguably, territory is not being 'transcended' here as Bitcoiners and Ethereum might claim. Rather, it is being re-framed as a technological infrastructure that has somewhat little to do with politics and freedom, and much more to do with technical competence and good design.

4.2 Politics and Normativity

Just as Straw suggests of scenes, blockchain ecosystems present 'ethical worlds' shaped by behavioural protocols (2015, p. 477) — their consensus mechanisms and governance processes — which set out the '*lex cryptographia*', or cryptographic law (Wright and De Filippi, 2015) of the space. Just as the '*lex juris*', or the rule of law, would do in geopolitical spaces, these 'laws of code' express and embed distinct ideals and norms in novel virtual blockchain spaces.

The Bitcoin subreddit, for instance, contains many examples of an ideal that has underpinned this ecosystem from the start, namely, that cryptocurrency is primarily a means for wresting control of the monetary system away from states and banks. References to the 'sovereign individual' are frequent: 'West will fight for dollar and euro. East will fight for Yuan. Sovereign individuals will fight for Bitcoin. Interesting decade ahead', states fplfreakaaro. HungryLikeTheWolf99 agrees, writing, 'with cryptocurrency, you just own it, meaning without your cooperation or lapse in security, no one can take it away from you by reassigning its ownership to general government'. 'Bitcoin is personal sovereignty', remarks btc_has_no_king.

Discussions of sovereignty also appear among the Bitcoin tweets. There were 59 tweets that included the word sovereign*; 54 that included the word sovereignty; four that included the word sovereign; and one that used the word sovereignsoljer. Occurrences of sovereign and sovereignty were mostly collocated with references to El Salvador and other jurisdictions (e.g., Colorado, Portugal and Canada). In our

analysis of the Bitcoin tweets, we found that not all states were viewed negatively. There were positive tweets about states that adopted bitcoin, or were at least friendly to its adoption, as in this tweet from @CoinerElectra that '#Portugal slowly becoming 'haven' for European Bitcoiners. The small, sunny country recently welcomed the Bitcoin Family to its shores, growing #Bitcoin community basking in a zero-tax glow' (see Figure A-3). States seen as restricting the freedoms of sovereign individuals, on the other hand, received opprobrium, as in this retweet from an account that is no longer active made against the background of the 'Freedom Convoy' taking place in Canada in February 2022, '@balajis: Bitcoin's fundamental value proposition is seizure resistance. As important in Canada as it is in Venezuela.' The vast majority of the more negative tweets in the corpus (-3 on a scale from -4 to +4) were of a similar ilk.

In the Ethereum subreddit there are overlaps with the Bitcoin subreddit themes, but also some subtle differences. While in the Bitcoin subreddit libertarianism features strongly, there is evidence of greater political diversity in Ethereum threads, in which commitment to personal sovereignty as an overriding value is less straightforward. When Vitalik Buterin was reported as saying in a recent interview with Time magazine[4] that the cryptocurrency scene in general is becoming too 'right-leaning', the response in the Ethereum subreddit was partly to distinguish between Bitcoin and Ethereum along exactly these lines — 'BTC maxis on Twitter dabble in some of the weirdest conspiracy shit. Sometimes I wonder if they're sock puppet accounts run by a nation state', writes cosmic-comedy — and partly to underscore the collectivist ideals that, for some at least, characterize the Ethereum ecosystem. This comment by ireland1988 is a case in point: 'I gravitated toward ETH due to the collective sounding nature of it that Vitalik envisioned early in it's [sic] development. The ideal of collective ownership and a better democracy. A lot of these ideals are influenced by leftist schools of thought. ETH has always been more than a hedge against the US dollar. The cheerleading that happens in the crypto community for state currencies to fail is delusional and toxic and scares away mass adoption'. CyberneticJim echoes this while trying to draw out the potential appeal of cryptocurrency to the Left: 'The space for crypto to move left is where things are to be built on environments that allow for building and innovation that can benefit all instead of just individuals, and well-funded venture capital'.

The general view of the Ethereum ecosystem as being less concerned with individual sovereignty than the Bitcoin ecosystem was confirmed by analysis of the Twitter harvest on #Ethereum in which we found no references in the corpus to the word sovereign or its variants. We also found no references to geopolitical states in the collection, in contrast to tweets found in the Bitcoin corpus, save for one mention of the Bulgarian stock exchange now allowing Bitcoin and Ethereum exchange-traded-product (ETP) trading. Overall, the discourse was mainly apolitical and focused almost entirely on decentralized finance (DeFi), as evidenced

[4] See https://time.com/6158182/vitalik-buterin-ethereum-profile/

by the relative number of tweets and retweets focused on such topics as non-fungible tokens (NFTs) (145), the Metaverse (46), decentralized finance (44) and similar terms (see, for example, Figure A-4). LDSA topic modelling confirmed the focus on DeFi, with negative aspects of the space, such as scams and cybersecurity breaches, receiving a great deal of attention (see Figure A-5). Sentiment classification suggested that a majority of tweets were neutral in tone, with more or less equal numbers of tweets skewing negative or positive (see Figure A-6). Of those that were the most positive (classified as +4 on a scale from –4 to +4), the focus was, once again, entirely on DeFi topics (e.g., beatsmebydre states, 'Beatsmebydre found #ethereum in a User vault at this location! Join me playing #coinhuntworld, It's awesome! https://t.co/qrVbVnjdjZ #cryptocurrency #8980 https://t.co/owFPobk0e1').

There is rather less political discussion — and fewer overtly political comments — in the Algorand subreddit. Perhaps mab336 offers an implicit answer to why this might be when they state, 'To me the whole idea of crypto is financial libertarianism'. This echoes a more general sense that participants in the Algorand ecosystem are primarily motivated by its financial architecture rather than broader-based political ideals. When WorldSilver responds that 'I would generally consider libertarianism to be socially liberal and fiscally conservative. Basically they just want the government to leave people alone. Individual trumps all' the use of 'they' rather than 'I' or 'we' seems telling. In this particular thread[5], under the heading 'Political leanings in the Crypto?', the tone of the discussion seems mainly to be philosophical — almost as if those commenting do not regard themselves as part of the group being discussed and prefer to intellectualise the question rather than dealing with it as a question about their own political leanings. When BanMagnet5000 suggests that anyone interested in the evolution of the concept of individual liberty should consult the writings of Aristotle, Frederic Bastiat, John Locke, F.A. Hayek and Ludwig Von Mises, HammersGhost responds 'Great reading list' while MeantForMushrooms simply says 'My Austrian economic boys!'

The impression of the Algorand space formed on close reading of its subreddit is that its participants were primarily concerned with building, innovation and DeFi, also evident in the distant reading of #Algorand corpus of tweets. Very similar to the #Ethereum corpus, there was no mention of the word sovereign or its variants, nor of geopolitical states. The discourse was universally apolitical and oriented toward DeFi, which is not surprising given that a move into DeFi was reported in 2020 to be a key strategy for Algorand (Baker, 2020). Illustrating this focus, the top 10 terms in the corpus, excluding the term Algorand itself and individual letters or symbols, were: algo, Algorand's native token (351); axelstake, a company devoted to helping investors to earn yield on Algorand without operating a node on the network or taking custody of their crypto (227); community, a concept in this context entirely connected with the notion of a

[5] https://www.reddit.com/r/algorand/comments/rc1o8l/political_leanings_in_the_crypto/

community of investors (187); non-fungible token, or NFT, which is a tradeable digital asset (186); algofam, said to be the official community token airdropped to the pioneers of the Algorand 'family' to, as the home page of the FAME website[6] states, 'promote friendship, knowledge, charities and arts' (158); Binance, a large cryptocurrency exchange (158); Amp, a rival token (155); and airdrop, a strategy that crypto projects use to attract users by sending out free tokens *en masse* (125).

There was evidence of some orientation within the Algorand space toward projects with social purposes or impact, as illustrated by quantum_temple's tweet, 'How can #NFTs make the world a better place? #nft #nftart #nftphotography #nftproject #nftcommunity #Algorand #AlgoFam $algo #socialimpact https://t.co/dUKwQ3sG1t'. Many of this type of tweet were connected with the AlgoFam hashtag (see Figure A-7). An examination of the most negative tweets (-4 on a scale from –4 to +4), however, revealed a tweet by Zoomer Populist (@illepopularis) whose by-line reads, 'I just want the government and multinational corporations to leave me alone. Reject all CBDCs', indicating that, although the Twitter discourse on #Algorand is mainly focused on DeFi there are some individuals participating in the space who hold more libertarian political views.

4.3 Cultural Space (Identity Formation, Memes, etc.)

In the Bitcoin subreddit, most uses of the term 'community' appear to refer straightforwardly to participants in the ecosystem, without carrying the sociological weight that references to group cohesion, common practices or core values would require. Those posts that seem to lean more explicitly in this direction arouse little interest. When awildzebrahappears asks, 'What are the best Bitcoin communities so I can discuss and learn about bitcoin with other people?', for example, the small number of replies range from 'theres a r/ Bitcoin Discord link right there' (PEAWK) to 'On Twitter mainly' (Leading_Zeros). Tellingly, perhaps, when PEAWK acknowledges that the Bitcoin subreddit, 'is a pretty decent place to start out with learning', they add 'personally i feel the further you reach out to discuss bitcoin with people, the deeper and more engrossed you'll become in the 'general crypto' space which is 99% just a swamp of scams, meme stock pushers and always those guys chasing 'the next bitcoin".

Our Twitter harvest uncovered more in the way of evidence that blockchain ecosystem participants did, indeed, have a sense of a community, as in this tweet from the #Algorand harvest from Meowigo: 'We are so thankful for this *community* [emphasis added] and wanted to celebrate with one of our favorite creators in the algo space!'. In this tweet and the many others referring to the Bitcoin, Ethereum or Algorand communities, we find evidence that the blockchains offer these participants more than just a virtual space of interaction; they represent places around and within which a cultural 'lifeworld' and shared cultural identity unfold and are enacted and preserved.

[6] See www.algofame.org.

We found the use of memes to be one of the most striking features of blockchain ecosystem community and cultural identity, in many cases appearing as theatrical instruments of cultural world formation. One short thread in the Bitcoin subreddit offers a list of popular Bitcoin memes, which include 'To the Moon', 'Number Go Up', 'Bitcoin Fixes This', 'Run the Numbers', 'Do the Math', 'Don't Trust, Verify', 'Not Your Keys, Not Your Bitcoin', 'Have Fun Staying Poor', 'Few Understand This', 'In Bitcoin for the Tech', and 'Stack Sats'. In response, AmberSam adds two more: 'I like Bitcoin, buy my shitcoin' and 'I just heard about Bitcoin and I'm here to fix it'. But the fact that this thread only attracted six comments suggests there is not a great deal of interest in such a discussion. By contrast, there is more engagement with the notion of 'meme coins'. Our harvest of #Bitcoin tweets from February 17, 2022, for example, indicates that there was a strong association between Bitcoin and the memecoin, Dogecoin[7] at the time of the harvest, with a total of 1,245 tweets (approximately 8% of all tweets) in the corpora mentioning Dogecoin or its variants. Interestingly, a similar percentage of tweets in the #Ethereum corpora also referenced Dogecoin or variant terms (n=116), The tone of the tweets in the Ethereum harvest was quite different from Bitcoin, however. Rather than being of a playful tone, these tweets warned of crypto scammers as in this tweet from Genusland 'The strongest predators of nature are wolves. This is because of their unity and team. With each other's help; All crypto market scammers will be hunted.@SpyWolfNetwork #spywolf #bitcoin #ethereum #Doge #binance #bscgem' (see Figure A-9). There were far fewer mentions of Dogecoin or its variants in the #Algorand Twitter harvest, with only 1.6% of tweets mentioning the meme coin (n=30), and of these tweets, those mentioning Dogecoin were overwhelmingly connected to DeFi themes such as coinbase, NFTs and the metaverse (see Figure A-10).

Memes feature in the blockchain space not simply as references to a particular blockchain but also as rallying cries for the blockchain space as a whole. For example, the expression 'To the moon!'[8] — referring to the potential for a coin to spike upwards in price and volume — has been commonplace as a 'jokey-but-serious' way of promoting that coin. Our harvest of Twitter yielded fewer uses of the actual phrase 'To the moon' in the text of the tweets than might have been expected for such a ubiquitous meme (i.e., 26 instances for the #Bitcoin corpus, two

[7] Dogecoin was based on the image of the Shiba Inu and launched in 2013. According to its creators – software developers Billy Markus and Jackson Palmer – it was always intended to be a 'joke' that was more 'fun' and 'friendly' than existing coins and thus more likely to appeal to a broader demographic than Bitcoin. In late 2021, billionaire tech investor Elon Musk used Twitter to pump both Bitcoin and Dogecoin, leading to price rises in these cryptocurrencies (Lock, 2022). The Musk-inspired coupling of Bitcoin and Dogecoin was perfectly captured in an NFT entitled 'BITCOIN&DOGE=TESLA' (see Figure A-8), ironically trading on the NFT platform Rarible for $1,000 ETH (the Ethereum cryptocurrency).

[8] The phrase seems to have originated in the 1950s US sitcom *The Honeymooners:* 'To the moon Alice, to the moon!' became the catchphrase of Ralph Kramden, played by Jackie Gleason. The phrase was widely used in relation to Dogecoin. Indeed, it played an important role in its identity as a 'fun' ecosystem — in contrast to the more earnest Bitcoin scene.

in the #Ethereum corpus, and one in the #Algorand corpus), but this is explained by the fact that participants in these ecosystems now simply use the rocket icon 🚀 rather than writing out the meme in full. Everyone in the space now fully understands what the rocket icon signifies, whether represented in digital or physical form (see Figure A-11).

While 'To the moon!' is often used as a rallying cry, participants also sometimes used it to distinguish themselves from short-term investors. In a discussion in the Ethereum subreddit, another more generic subreddit — r/cryptocurrency — receives criticism for being dominated by 'people … that are just there to try and farm 'moons', as space_cadet844 puts it. MeowMeNot agrees: 'Moons were the worst thing to happen to that sub. Ever since they came out the quality of posts there has gone down steadily'. In the Algorand subreddit, CryptoFarmer1020 used the 'moon' metaphor to draw a distinction between thinking of the ecosystem merely as an investment opportunity versus a technology that will have genuine functionality: 'Algorand is designed to be used, not for being a crypto moonshot.'

The Bitcoin, Ethereum and Algorand subreddits suggest that memes tend to be regarded mainly in terms of what they can add or detract from the value and — significantly for our analysis here — the reputation of these blockchain ecosystems. Overall, we found that the discourse in all three focal blockchains collectively expressed a certain ambivalence towards memes and meme coins — as at best irrelevant to their ecosystems but at worst capable of doing some reputational damage. For example, when Artistic_Dwilko opens a thread by posting a straw poll with the question 'Do Meme Coins Help or Hurt Cryptocurrency?', 279 responders vote 'help', 473 opt for 'hurt', while a further 474 say 'who knows'. Perhaps d_Rome offers some insight into what these answers might mean when they say: 'I think it hurts the perception of cryptocurrencies by people on the outside but it doesn't hurt the actual space'. But Cosmic_Wolverine disagrees by countering that 'I think it attracts a lot of new people. Some may get burned and leave but I think the majority will stay. Some people like the rush of a gamble, nothing wrong with that', a point that receives support from Aggressive_Safe_4644: 'I say help, because it brings awareness to cryptocurrency in general! My first coin was Dogecoin, which paved the way for me buying into other coins, including ETH!!'. These responses — as well as the straw poll numbers — suggest that there is no clear majority view on this question within users of the Ethereum subreddit. One question they do raise — which would be for further investigation – is whether memes and meme coins are of more interest to 'newcomers' within these spaces, having at least some significance as a vehicle for attracting interest and new participants. As UnrulySasquatch1 suggests: '[Memes] definitely hit the reputation of crypto as a whole, but they bring new people to crypto. The hit to reputation is temporary, but those who are not familiar with crypto are forever.'

4.4 Boundary Articulation

In the 'about community' section on the front page, the Bitcoin subreddit contains a lengthy and celebratory description of Bitcoin itself as the 'currency of the internet' which is 'managed without any central authority whatsoever'. 'With Bitcoin, you can be your own bank', it concludes. The Algorand 'about community' is rather more succinct, but similarly reflects what its designers consider to be the most important features of this particular ecosystem: 'The community controlled subreddit for the carbon-negative Algorand blockchain and cryptocurrency'. The claim that Algorand is 'carbon-negative' seems crucial to its unique selling proposition, just as the promise of a decentralised currency that enables its users to 'be their own bank' is at the core of Bitcoin's philosophy. The Ethereum subreddit, by contrast, describes this ecosystem as a 'Next-generation platform for decentralised applications'.

So, from the front pages of these subreddits alone, we can see boundary work taking place: all three contain significant 'hooks' for understanding what distinguishes this particular ecosystem from others: decentralized currency and self-sovereign banking (Bitcoin); decentralized applications (Ethereum); and carbon negativity (Algorand). These 'headline' examples of boundary work are reflected at least to some extent in these subreddits whenever the discussion focuses on what users see as distinctive — and of most value to them — about each ecosystem.

In contrast to the subreddits for our focal ecosystems, our Twitter harvest revealed significant cross-pollination of hashtags; that is to say, tweets that tagged one ecosystem quite often tagged the others as well. In respect of our three ecosystems, then, Twitter served as much as an indexical space of traversal as a space of border definition and maintenance. — a sort of 'grand bazaar', or as it is sometimes referred to 'public square', filled with news, ads and proclamations to not only 'expel from' particular blockchain spaces, but to expand the overall blockchain and crypto space (Gieryn, 1999).

Yet, there was evidence of hard, non-inclusive boundary work in Twitter as well. Some of the boundary work was around defining the crypto space in general as against traditional finance, as in this retweet by @Blockworks, 'Charlie Munger: I'm proud for not investing in crypto Berkshire Hathaway stock (5y): 87% Ethereum (5y): 23,847% Bitcoin …', or as in a tweet from a Cardano ecosystem news site, ADAApe.com, calling for the top protocols not to forget their common enemy, the banks (see Figure A-12). Cross-boundary 'diplomacy' was also in evidence, such as provided by this tweet: '@AlgoDojo @brave @EthereumDenver @NEARProtocol @Algorand @solana Multichain wallet support means not playing favorites, and providing options. Fwiw, personally met with Algorand team yesterday in Denver, and are exploring integration options. Nothing formalized, but exploration underway.'

While general crypto space boundary work was in evidence, there were also pointers to boundary work at the level of the individual protocols as well. In the

#Bitcoin harvest, for example, this tweeter declared (without any apparent irony) that 'RT @BitcoinMagazine: 💥 Banking giant Morgan Stanley report: #Bitcoin 'more decentralized' than Ethereum 🙌', while scary monstrs called out '@RossBlankenship @timevalueofbtc Bitcoin. Has. No. Competitors. We have bitcoin and the rest are shitcoins. ETH may not be a shitcoin like the rest, but its nothing more than a shitcoin factory'. Similarly, this tweet from the #Algorand harvest triumphantly declared, 'RT @Algorand: ICYMI: #WizKey announced it will migrate its financial asset tokenization tools from Ethereum to #Algorand …'

Similar to statements in the subreddits, there was also evidence of boundary work in relation to how the different ecosystems engage with current social issues, such as energy usage, as in this tweet found in the #Algorand harvest: '@laughingblade @alastairmci That depends on which blockchain you are using. Third generation blockchains like Algorand use hardly any energy (0.008 Watt hours per transaction). Even the dominant 2nd gen blockchain, ethereum, will decrease its energy use by 99.95% this June (ish). https://t.co/Bq04B8PoSV.'

Some tweeters took aim at other protocols, making incursions into Bitcoin and Ethereum space to make such pronouncements as retweeted @iotapromoter within the #Bitcoin harvest, 'We believe #bitcoin was the start and #Ethereum was the next step but #IOTA [another blockchain ecosystem] will be the future and one day it will be everywhere. We don't say it for the #money, we say it because we see the possibility for change. 💪#iotastrong', or this tweet from the #Ethereum harvest, 'RT @Landon702: #Hedera has officially surpassed all #Ethereum and #Bitcoin transactions combined. #HBAR > #ETH #BTC https://t.co/9dXoQKs8' The incursion of tweets from supporters of these other protocols serve as attacks on the perceived dominant position of the Bitcoin and Ethereum ecosystems in the crypto space, broadly defined.

5 DISCUSSION

Our scenic tour of Bitcoin, Ethereum and Algorand has given us insight into the manner in which the three focal blockchains and their indexical Reddit and Twitter discussions form virtual spaces of discourse about and around a territorial materiality; that is, the network-connected computer nodes operating client software that instantiate the blockchain ledgers (see Figure A-13). What emerges from our analysis is just how significant the discourse in these indexical spaces is in terms of their contribution to the formation and perpetuation of the lifeworlds of these three distributed ledgers. It is within these communicative spaces that the lifeworlds on ledger take shape, at least in part. Each interlocutor on these sites intersubjectively contributes to the unique and novel social orderings of our three focal blockchains characterized by distinctive normative politics and cultural identities. Through these discursive expressions, as Woo et al. (2015, p. 288) observe of scenes, we can observe that these blockchain spaces '… provide systems of identification and connection, while simultaneously inviting acts of novelty,

invention, and innovation. Scenes are set within the fabric of everyday life but also function as an imagined alternative to the ordinary, 'work-a-day world' in which the scene 'works' to produce a sense of community as an ideological by-product of the interaction of actors involved with the scenic space (Bennett and Janssen 2016, p. 373). The scenes lens, then, gives us access to understanding the social world of blockchains beyond the game theoretic tokenomics of notions of 'trustless trust' (Werbach, 2019) enacted by means of on-ledger interactions between peers to something more akin to Habermas' notion of 'strong communicative action' -- wherein social actors mobilize their capacity for rationality by communicatively developing a shared consensus that their actions or shared goals merit cooperative behaviour (Bohman and Rehg, 2014) -- inclusive of manifestations of Herbermas' notion of pathological 'colonization of the lifeworld' in the discursive preoccupations with financial scams, hacks and 'meme coin pushers'.

Thus, we see in the scenic view of the three focal blockchains that the decision to invest in and use a specific coin is for many participants as much an expression of identity as it is a financial decision. This point is given nuance in a piece by Christopher Beam (2021) published in *Bloomberg Business Week*, 'A Field Guide to the Crypto Faithful'. Beam portrays cryptocurrency users as 'tribes' whose identities are quite distinct, not least to each other: 'Which one you own says a lot about who you are', Beam argues, 'your philosophy, your friend circle, even your fashion sense. Each cryptocurrency represents an entire culture, with its own memes, aesthetic, language, trusted voices, and power structure. Buying one is not only an investment; it's a declaration of identity'. Supporting this view, our scenic tour of the three blockchains spaces of discourse point to distinct cultural attitudes towards money, specifically money, as Georg Simmel describes it, as a form of personal liberation (i.e., because it replaces payment in kind with a depersonalized and fungible form of payment that increases individual choice [Simmel, 2004, p. 285-6]. In this sense, Bitcoiners tend to be individuals who view personal sovereignty as a form of what Simmel in *The Philosophy of Money* characterises as 'freedom *to'* (2004, p. 435) — the freedom to move money wherever they want to, even to override the constraints of state monetary boundaries, for example, whereas, the Ethereum subreddit tends to characterize this more as a form of what Simmel calls 'freedom *from*' or the absence of obstacles (ibid.). This is intriguing given Simmel's thesis that being 'liberated' in the sense of freedom *from* something does not really constitute a liberty, but merely shifts the individual's obligation to a new sphere (2004, p. 403). In stark contrast to Bitcoin and Ethereum, the cultures of which engage with questions of freedom, the Algorand subreddit contains what could be described as a largely technocratic interpretation of its ecosystem which barely looks beyond the technical infrastructure to 'bigger questions' about freedom. That is to say, the Algorand culture appears to be largely unconcerned with considerations of personal freedom, while Ethereum users are just as committed as Bitcoiners to wresting their financial and legal affairs away from centralized organizations associated with state territorial sovereignty, Ethereum discussions

seem rarely to go much further than this. One simplistic and possibly extreme way of expressing the difference would be to say: for Bitcoiners, individual freedom promises a form of sovereignty that is potentially every bit as powerful as state sovereignty, while for Ethereum users, cryptocurrency helps us to evade this broad-based state/society sovereignty without necessarily replacing it. This would be consistent with the idea that Bitcoiners tend to be 'maximalist' in their fundamental outlook, whereas Ethereum users are somewhat more pragmatic and willing to see new spatio-political forms overlayed onto existing ones.

From the scenes perspective we also gain a sense of the boundedness of blockchains in a way that the ANT perspective, in which blockchains are viewed as fluid and dynamic networks of actors, does not emphasize. The idea of scenes as distinct spaces implies a certain definition and dimensionality, which means that scene thinking offers a pathway to understanding the processes by which networked interactions and assemblages of forces form into dynamic and creatively charged collectivities around specific blockchain identities. These collectivities, marked by specific political norms, cultural identities and social practices materialize into bounded social formations (i.e., as blockchain ecosystems). Consequently, through a scenes lens, we are also able to access the dynamics of boundary work as virtual border patrol (e.g., in denunciations of a 'common enemy' such as banks or governments) or boundary expansion efforts (e.g., call outs to the crypto, DeFi, NFT, Metaverse, and other defined spaces). Scenes thinking, thus, offers a way to uncover how 'otherness', as an important sociological concept, takes shape in the context of blockchains, which contrasts with the fluid and boundless irreducibility actor-network approaches to the study of blockchains. The particularly spatially bounded perspective of scenes leads to a novel insight: contrary to the proposition that blockchain 'enables non-territorial 'crypto-secession' … associated with … radically revising and deconcentrating data-conditioned networks to fundamentally challenge the economic positions of legacy firms and governments' (Allen, Berg and Novak 2018, p. 1), the entangled social, cultural, political and economic processes (Woo et al. 2015; Allen, Berg and Novak 2018) of blockchains materialize new territories that to a greater (e.g., Bitcoin) or lesser (e.g., Ethereum) extent challenge the territorial pre-eminence of legacy territories and their associated institutions; that is to say, scene thinking helps us understand that it is not the *absence* of territory that makes blockchains potential challengers to existing states and institutions, but the *existence* of it in a *novel virtual form*.

Arguably, the greatest contribution of the scenes lens to the study of blockchains is that it does not tend towards generalizing characteristics of blockchains as a category, in other words it does not essentialize them; rather, it is a lens that revels in exploring what makes a space, and those who consider themselves 'members' of that space, unique and distinct from others. Consequently, it has provided us with an excellent tool with which to uncover not only what unites our three focal blockchains, but also the uniqueness of each blockchain as its own

lifeworld on ledger. We summarize these insights in the table presented in Appendix B.

6 CONCLUSION

The above observations highlight how studies emphasizing the social aspects of blockchains can be brought into useful conversation with scene thinking to generate a nuanced understanding of the lifeworld on ledger. While providing a generative heuristic for understanding blockchains, the future of scenes as an analytic perspective requires ongoing application amidst theoretical and methodological development. For example, we recognize the limitations of our own impressionistic sketch constructed of close and distant readings of archival texts related to our three focal blockchain ecosystems. Specifically, limitations exist in the form of choice of methodology, diversity of archival texts analysed, scope and scale of Twitter harvest, and type of analysis (e.g., textual as opposed to social network analysis). We also recognize that we have focused only on large-scale public, permissionless blockchains in our analysis, leaving out their smaller scale private, permissioned — i.e., needing authentication and authorization for use — brethren. It remains to be seen how the scenes lens holds up for these types of blockchains, which are, arguably, much closer to legacy organizational forms. On the other hand, whereas many of the social science analyses of blockchains study them at the scale of a single, sometimes fixed, technological category, our analysis of blockchains at the scale of individual ecosystems offers new insights into dynamics not visible at a more 'macro' level of resolution.

As the blockchain space continues to innovate, the scenes perspective should also continue to evolve, providing a way to examine and gain insight into the processes that shape transformations within blockchain 'spaces' while productively resisting technological essentialist characterizations of blockchains. In this way, a scenic view of blockchains will continue to provide great richness as a lens through which to understand many of the sociological features of the lifeworld of distributed ledgers.

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Appendix A – Figures

In the #Ethereum harvest, the size of the word Bitcoin relative to other words in the corpus in the Word Cloud (see Figure A-1) indicates the relative frequency of its occurrence and its importance as a comparator. Harvested tweets on #Algorand, on the other hand, appear to be much more concerned with looking inward to the Algorand ecosystem than looking outward to other ecosystems, as indicated by the words that populate its Word Cloud (see Figure A-2). This might be explained by Algorand's newness and the need to 'get its own house in order' in relation to the other two ecosystems.

Figure A-1. Cirrus Word Cloud of #Ethereum tweets harvested on February 17, 2022, generated using Voyant 2.5.4

Figure A-2. Cirrus Word Cloud of #Algorand tweets harvested on February 17, 2022, generated using Voyant 2.5.4

Figure A-3. Tweet showing positive orientation toward state perceived to be bitcoin 'friendly', extracted from a harvest of #Bitcoin tweets on February 17, 2022

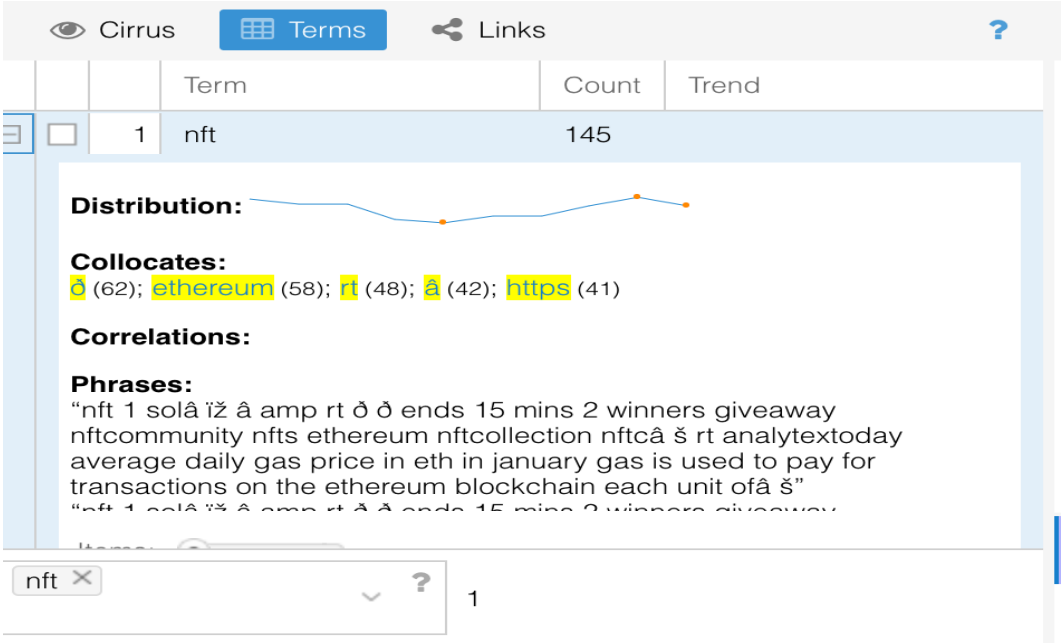

Figure A-4. Distribution and correlates of the term 'nft' in a corpus of #Ethereum tweets from February 17, 2022, rendered using Voyant 2.5.4

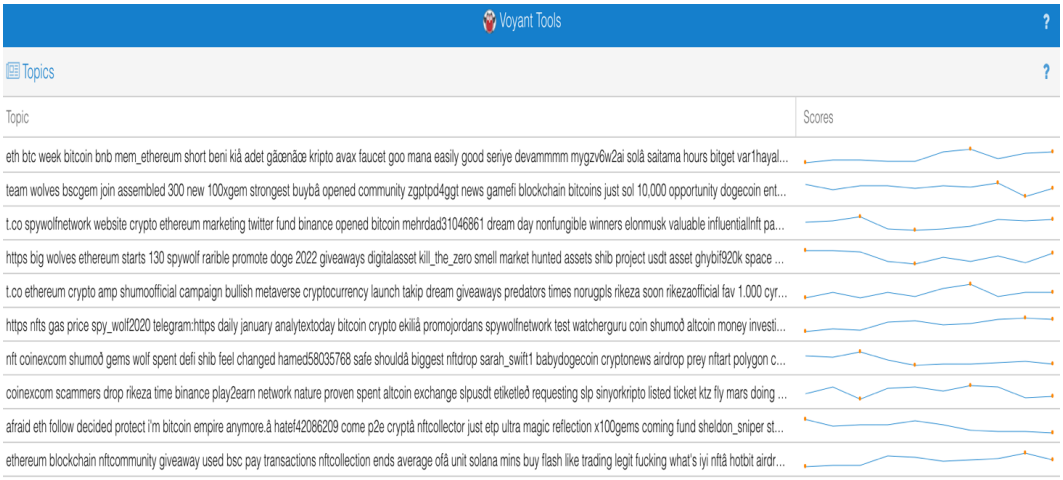

Figure A-5. Topic model for #Ethereum Twitter harvest, showing the first 42 words of the top 10 topics rendered using Voyant Tools 2.5.4. Note the reference to 'wolves', 'spywolf', 'predators', and 'prey', indicative of concerns with the predatory or negative aspects of the DeFi space

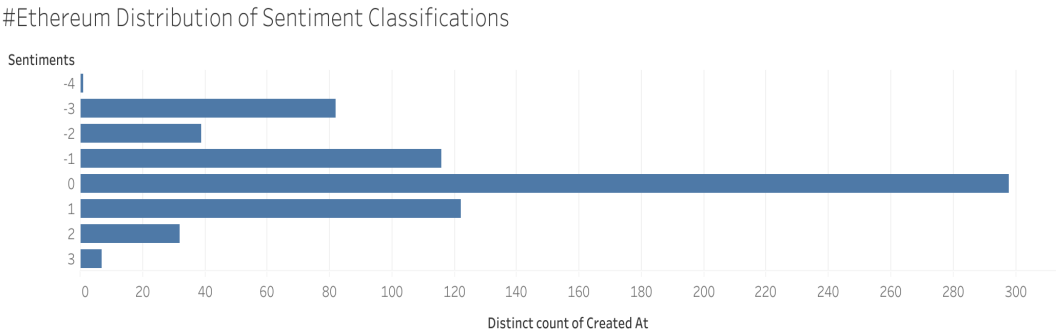

Figure A-6. #Ethereum tweets on February 17, 2022, classified by sentiment from +4 (most positive) to −4 (most negative) posts, rendered using Tableau Online

Figure A-7. Exemplar #Algorand tweet focused on the #Algofam topic, relating to a community token aimed at promoting social and cultural impact projects

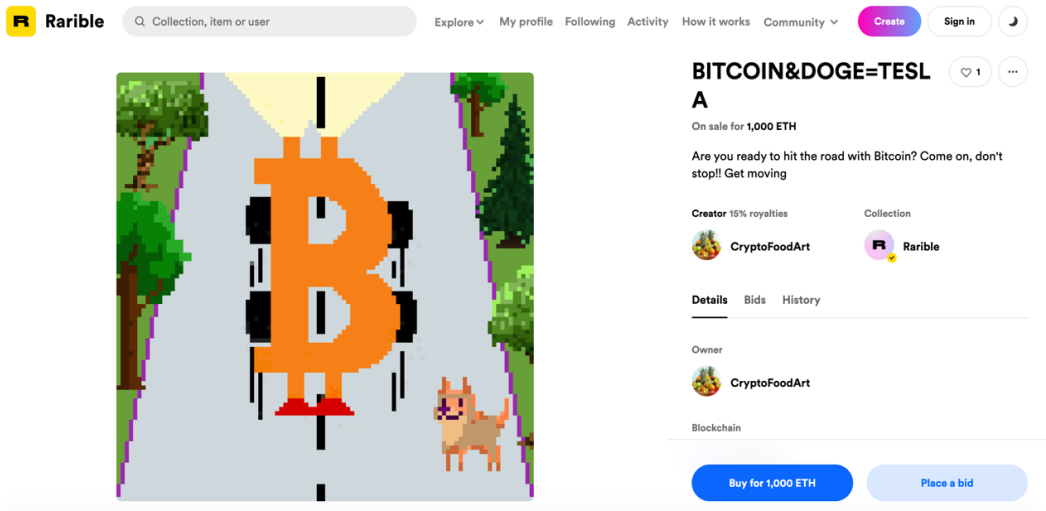

Figure A-8. BITCOIN&DOGE=TESLA NFT created by CryptoFood on January 25, 2022 Art trading on Rarible for $1,000 ETH

Figure A-9. A tweet from the #Ethereum harvest of February 17, 2022, referencing a service for hunting Bitcoin, Ethereum and Dogecoin scammers

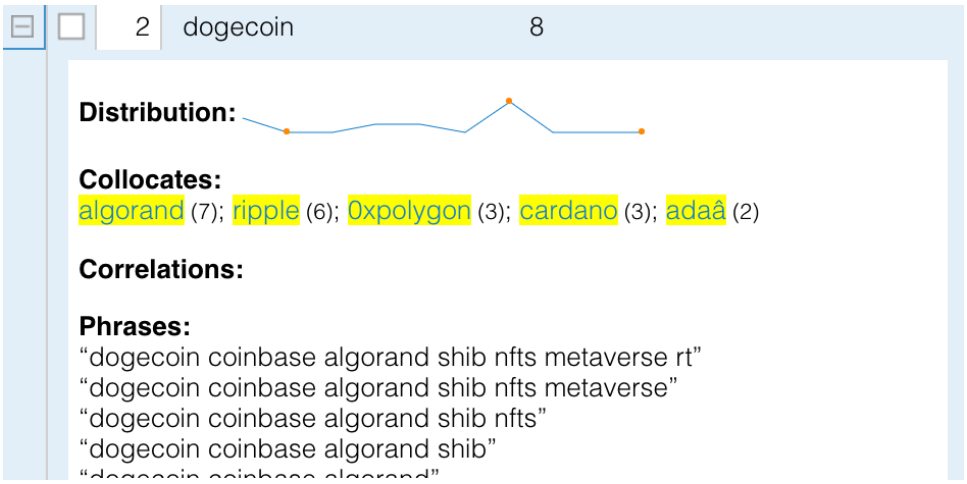

Figure A-10. An analysis of tweets from the #Algorand harvest of February 17, 2022 illustrates that references to Dogecoin and other memcoins such as Shiba Inu are most often connected with DeFi topics, such as Coinbase, NFTs and the metaverse (Visualization generated using Voyant 2.5.4)

Figure A-11. Riding a rocket 'to the moon' at a Decentralized Dance Party (Image credit: Chelsea Palmer, c. 2019)

Figure A-12. Tweet from the February 17, 2022 #Algorand harvest defining the boundary between the crypto 'space' and traditional financial 'space'

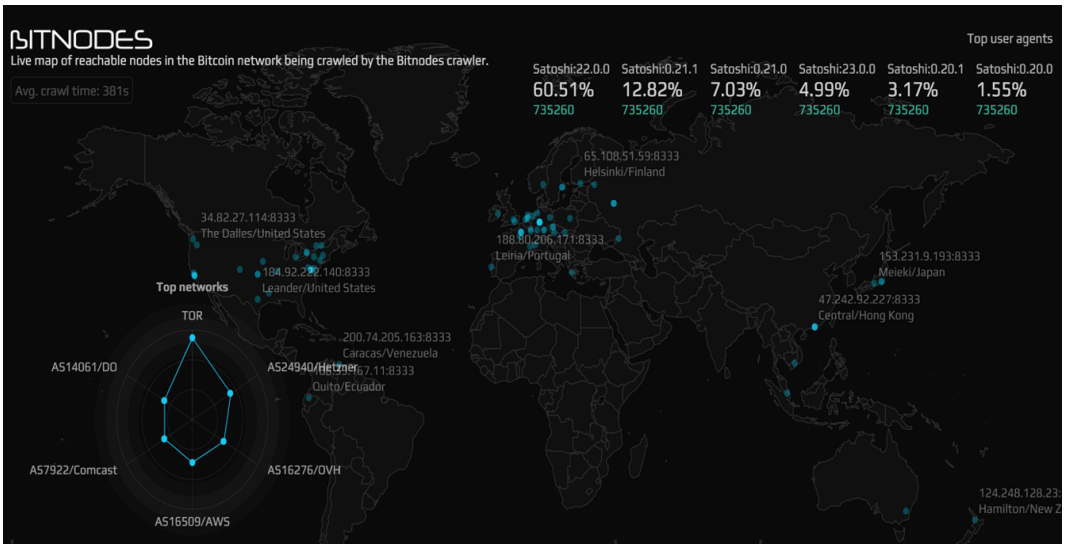

Figure A-13. Live map of reachable nodes for the Bitcoin network (Bitnodes, 2022) The 'real world' of geophysical space (e.g., meetups and conferences) and materiality (e.g., mining rigs) also becomes indexical and even, in some cases, subaltern to the blockchain virtual territories.

Appendix B – Comparative Analysis of Blockchain Ecosystems through a Scenes Lens

	Bitcoin	*Ethereum*	*Algorand*
Spatiality & Territoriality	Discourse in and about the Bitcoin space most often focused on its relationship with the currencies, policies, and sovereignty of *geophysical state spaces*, as opposed to commenting solely upon its own space or other blockchain spaces.	Those involved in and discussing this ecosystem are much less concerned with geophysical state spaces and much more concerned with other virtual spaces, especially Bitcoin as an indexical blockchain.	Appear to be much more concerned with looking inward to the Algorand space than looking outward to other blockchain or state spaces. Connected with a highly conventional centre of academic excellence, namely MIT. Arguably, territory is not being 'transcended' here as Bitcoiners and Ethereum might claim.
Politics & Normativity	Libertarianism features prominently.	Evidence of greater political diversity than in Bitcoin in Ethereum threads; commitment to personal sovereignty as an overriding value is less straightforward.	Framed as a technological infrastructure that has somewhat little to do with politics and freedom, and much more to do with technical competence and good design. The discourse was universally apolitical and oriented toward DeFi.
Cultural Space (Identity Formation, Memes, etc)	Use memes playfully in the formation and expression of unique cultural identity.	Use memes in the formation and expression of cultural identity, but less playfully in tweets that warned of crypto scammers.	Use memes in the formation and expression of cultural identity, but sometimes negatively and in opposition to how the memes are used by other blockchains.
Boundary Articulation	Used in identity formation. Bitcoin subreddit describes Bitcoin itself as the 'currency of the internet' which is 'managed without any central authority whatsoever'.	This ecosystem sets itself apart as a 'Next-generation platform for decentralised applications'.	Reflects what its designers consider to be the most important features of this particular ecosystem: 'The carbon-negative Algorand blockchain and cryptocurrency'. The claim that Algorand is 'carbon-negative' seems crucial to its unique identity.