The Bitcoin Game: Ethno-Resonance as Method

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Abstract

The global financial crisis and the contemporaneous emergence of the digital currency Bitcoin invite us to think about money and how it often functions almost imperceptibly in society. In this article, we show that Bitcoin is a 'new object of concern' that also compels us to reimagine ethnography in a digital age. We present a method, which we term ethno-resonance, that is both a reaction to the conditions presented by the Bitcoin phenomenon and a way of maintaining critical distance from its cyberlibertarian politics. We explicate six aspects of the method, framed around answers to what, why, how, who, when and where questions. Applied to cryptocurrencies, the method leads us to depict Bitcoin as a game, and we analyse the game's dynamics through mapping the interplay between four foundational myths that animate, complicate and sustain the game. More broadly, this contributes to our understanding of the nature of money and alternative currencies.

Keywords Bitcoin, cryptocurrencies, ethnography, ethnomethodology, ethno-resonance, games, money

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Introduction

Ethnomethodologists routinely seek to understand social order by deliberately breaching it through, for example, jumping a bus queue or behaving like a guest while at home. This is not feasible at the macro-level (one cannot break the financial system to see how it works). Yet, macro-level events do sometimes occur, and when they do they provide unique opportunities to study social order, similar to micro-level breaching experiments. One such event happened around 2008 when a global financial crisis threatened both the existence of the euro and the European Union, provoking a new interest in money and its role in constructing and maintaining social order (or disorder). This prompted a range of inter-related questions. What is money? Who creates it? How are powerful institutions tied together through money? Not by coincidence, Bitcoin emerged in the middle of this crisis, adding another set of questions centred on digital money, or cryptocurrencies.[1] What is digital money? How is it implicated in new (and old) modes of organising? How will it affect institutions and how will these institutions respond? Thus, Bitcoin is our "new object of concern," and part of our argument is that it and cryptocurrencies more generally warrant substantive study. Not least, attempts to create new forms of money are uncommon, and only rarely do such attempts reach a critical mass where they are potentially viable and sustaining. Local currencies like the Brixton pound and the WIR Franc have been created, but Bitcoin is quite different in that it is not confined to a community or territory and does not have an issuer of reference. Even if Bitcoin fails, it is still a fascinating "breaching experiment" that, *inter alia*, helps reveal how money is implicated in the social order and how particular values and practices come to emerge.

Cryptocurrencies are, for many, strange and alien—even exotic—which suggests that anthropology provides an appropriate set of methods given its long tradition of writing about the alien Other.[2] However, that tradition is also contested, diverse, and full of debate about what anthropology is, how it should be conducted, and the relative merits and failings of different approaches that might be considered anthropological. Hence, one thread of our paper is methodological, engaging with the field's ongoing reflexive conversation about ethnography as method, situated

within a long tradition of ethnographic practice. Hence, our paper includes methodological cogitations, conceptual contributions, and short vignettes from our deep immersion in the field of study. We have packaged the latter in a series of boxes interspersed within the text.[3]

So, is this ethnography? Certainly, our research practice is heavily indebted to ethnography and especially to new modes of doing ethnography. However, we are also influenced by other traditions, particularly ethnomethodology, even though we are not engaged in a micro study of situated practice. We believe that our method is sufficiently distinctive to warrant a different name. Genres evolve and new traditions come to be. Hence, this paper presents a new method of inquiry that we are calling "ethno-resonance". We have structured the paper primarily to explain what ethno-resonance is and to discuss the method in the context of studying Bitcoin. Answering basic questions promises to be helpful in this exercise, and so we have organised the paper around six sections, each of which addresses a WH question: what, why, how, who, when, and where? The first section, after this introduction, addresses the "what" question, introducing the phenomenon of study (Bitcoin), explaining why it is an important object of concern as well as characterising its features. The "how" section maps out the mechanics of ethno-resonance; what we actually did in this study as well as our justification for the decisions taken. Our methodological concern was that our inquiry should *resonate* with the phenomenon of study, and this led us away from an ethnographer-centred study to one that sought to develop a collaborative and heterogeneous research praxis. In the next section, which has the title "why", we explain how ethno-resonance is focused on presenting *explanations*, rather than, for instance, the native's view of the world. Our approach is abductive, and we discuss how this sits within and without ethnography, noting how it is different from other methods such as action research, para-ethnography, and collaborative inquiry. In the "who" section, we consider who the Other is in this case, and the nature of the "community", if any, being studied. The "when" section presents a brief history of Bitcoin and maps out the chronology of our own engagement with the phenomenon. In contrast to anthropology, which has been criticised for backgrounding history and for presenting rather static depictions of the world, ethno-resonance, as an abductive mode of inquiry, foregrounds time and dynamics. Finally, the "where" section considers spatial issues. Location has

always mattered in anthropology, but what does "being there" mean if we are studying digital money? We summarise the key elements of ethno-resonance, and then conclude the paper by demonstrating how the method has helped present a novel understanding of money, and cryptocurrencies in particular, as a dynamic interplay between four foundational myths.

What? Digital Money

Even though Bitcoin's legal status is ambiguous and varies across jurisdictions, we consider it a form of money because people call it so, many use it as such, and it is at least potentially money.[4] Hence, to address the question, "What is Bitcoin", we must first ask, "What is money?" The standard answer to this question is that money is (a) a medium of exchange; (b) a store of value; and (c) a unit of account (Tucker, 2015, p. 399). It would be beyond the scope of this paper to review the large literature on money, so we limit ourselves to seeing it as *social*, *performative*, and an *information infrastructure*.[5] Money is *social*, in that it is "a claim upon society" (Simmel 1900/2004, p. 176). It is *performative* in that our collective belief that precious metals, pieces of paper, or digital numbers are "money" is sustained and validated by the practices that inform that belief, while, at the same time, the belief self-referentially enables and sustains these practices. It is an *information infrastructure* (Star and Ruhleder, 1996) in that, like other infrastructures, it is widespread and pervasive, yet invisible while working. We only perceive infrastructures, and our dependence on them, when they break down, or when they are being created. In the case of money, the invisible infrastructure includes the legal, tax and banking systems, an elaborate system of regulatory practices, the state control of the police, military and prison systems, and the soft infrastructure of norms and values. Together, invisibility and performativity remind us that while we may believe that money makes the world go round, few of us think about how it actually works or understand its role in constituting social order. And once we start picking at it, it turns out to be practically incomprehensible.

Digital money is thus money, plus some. The idea of digital money has existed since at least the 1980s, but nobody could figure out how to create the information infrastructure (the money system) that would securely prohibit forgery (or double-spending a digital coin) and not require a trusted third party, equivalent to a central bank, to govern the system and manage the money supply. The seminal

contribution came in 2008 when the mysterious individual or group known as Satoshi Nakamoto published a whitepaper that set out the basis for a fully-functional digital currency, a so-called cryptocurrency since it relies on cryptographic techniques for its security (Nakamoto, 2008). We will not describe the technical details further as more detail is readily available on the Internet.[6] Although Bitcoin is now a household topic, it is still struggling to become accepted as a payment method, or as a currency, as opposed to a speculative investment. Luther (2016) argues that network effects and switching costs have dissuaded individuals from adopting this alternative currency. We take a broader ethnographic view to account for the different form of sociality associated with Bitcoin, and how this relates to contemporary society.

One of the distinguishing features of Bitcoin is that it is infused with many of the principles of game design and game playing (Schell, 2008; Kane, 2005). Like most other games, Bitcoin was *designed*, mostly by Nakamoto (2008) who mapped it out in the seminal white paper, wrote the original code, released the first version in 2009, and was one of the first players. Game theory was central to Nakamoto's paper, which, for example, includes a simulated attack on his proposed system/game by a "dishonest" player, which he framed as a variation on the Gambler's Ruin problem, a well-known problem in game theory. His ingenious design meant that a dishonest player would be incentivized to "play by the rules" (Nakamoto, 2008, p. 4).

The mining part of Bitcoin is a competitive game based on a series of "rounds" in which miners compete with one another to find a "proof-of-work," with the winner obtaining a prize (a bitcoin). This is very much a game of chance, as it is akin to throwing a pair of dice repeatedly until a highly unlikely series of numbers appears. From the miners' perspective, Bitcoin is essentially a reward scheme for the computing power they provide to those who trade in or with bitcoin. The blockchain, then, is just the record of past rounds and continually lengthens as the game progresses, akin to an ever-growing chain of domino tiles. It is a *cooperative* game as well as a competitive one, in that, while the miners compete with one another, they also cooperate and indeed they are incentivized, through the game's design, to work together to ensure that the "game" is not hijacked by a greedy attacker—akin to the monsters that suddenly and randomly appear in some board games—who may subvert the rules and double-spend their money. Bitcoin is also a form of betting

game, in that many purchases of bitcoin are essentially speculative gambles that the currency's value will increase over time.

Bitcoin feeds into a wider ludic shift in the zeitgeist and the emergence, since 2000, of a distinctive academic field of ludology. Not surprisingly, some of the important figures in the Bitcoin story were deeply interested in games. For instance, Jed McCaleb, a designer of online games and an enthusiast of the card game, Magic, set up the infamous Mt. Gox (see box below) bitcoin exchange in 2010 "on a lark" according to himself (McCaleb, 2011) (mtgox is short for Magic: The Gathering Online eXchange). Eric Voorhees, another prominent figure in the Bitcoin community, set up a gambling website in 2012 that uses bitcoin, called SatoshiDice (after Satoshi Nakamoto). This was a game of odds based on the same hash functions and mathematics as Bitcoin. He sold the site a year later for over $12 million. And the ludic theme continues in spin-off Bitcoin board games, such as Bitcoin Empire.[7]

In some ways the game that is Bitcoin is an experiment in playing out cyberlibertarian ideology and analysing its development on colliding with broader society (Castronova, 2005). In this regard, it has parallels with the board game *Monopoly* which was invented by Elizabeth Magie in 1903 as a "practical demonstration of the present system of land grabbing with all its usual outcomes and consequences" (quoted in Pilon, 2015, p. 31).

Mt. Gox

If Bitcoin is a game, it is a very particular sort of game. One where the distinction between the actual and virtual is constantly blurred. Nowhere was this made clearer than in the case of Mt. Gox, which was one of the earliest Bitcoin exchanges and was responsible for most Bitcoin transactions until its spectacular collapse in 2014. The origin of Mt. Gox is traced to the *ad hoc* construction of a Bitcoin exchange by Jed McCaleb in 2010. McCaleb had a domain name, mtgox.com, that he had intended to use for the online multi-player videogame *Magic: The Gathering*, but decided to use it for his exchange (an illustration of how arbitrary early Bitcoin ventures could be). McCaleb tired of running the exchange, in the early days routed through his personal PayPal account, and sold it in 2011 to a young Frenchman named Mark Karpeles. Like everyone else involved, Karpeles had no experience in running such an operation, though he ran it almost single-handedly. While in charge, Karpeles was responsible for ensuring Bitcoin did not collapse along with his exchange, leading him to

become increasingly private and insular, and ever-more isolated from the community he served. Responsible for security, to the point of handwriting Bitcoin private keys and storing them, Karpeles was unaware that Mt. Gox was being systematically drained as early as 2011. By 2014, Mt. Gox was forced to suspend withdrawals, ending the magic blend of the actual and the virtual for thousands of account holders.

Karpeles attributed the problems at Mt. Gox, in what was a curious decision given the community in question, to a bug in the Bitcoin software that was roundly dismissed as spurious. When the dust settled, it emerged that Mt. Gox had lost around 800,000 bitcoin, worth $450 million at the time, although 100,000 bitcoin were later discovered. Wild accusations about Mt. Gox continue to this day, and as always in Bitcoin the truth about what occurred remains murky. Karpeles was the first, and by no means the last, Bitcoin entrepreneur making up the process as he went along, hoping that his adventure would simply never end. Staking out unchartered territory he kept Bitcoin afloat at a time when accessing it was a complicated affair. Unable to keep his head above water he ended up in unenviable circumstances, watching on the side-lines as his case played out, and as more sophisticated players built on his early model.

Prior to joining the project, I (third author) had experienced the mismanagement of Mt. Gox directly. In Bitcoin's earliest days, each individual user was entirely responsible for their bitcoins, having to ensure they did not lose (or delete) them or have them stolen. The process was complex, involving numerous backups, both online and offline and forced each owner to become highly literate in current security practises. I went from an experience of online security that was broadly passive to oftentimes excessive complexity, a common experience among users at that time. Like many users, I decided to outsource this process to an exchange, with Mt. Gox being the most well-known and respected. By placing my bitcoins on the exchange I was aware that putting my trust in a centralized exchange was deeply ironic given Bitcoin's aspiration to be a purely peer-to-peer (P2P) decentralized currency. The collapse of Mt. Gox was a catastrophe for Bitcoin, spreading distrust throughout the ecosystem and forcing me to reflect on the future of the currency. However, the event had a paradoxical effect on many members, when they realized that despite such a major event occurring, the community remained relatively stable, even as the price suffered. The Mt. Gox story would later resonate strongly with the DAO hack in Ethereum, where a similarly large-scale hack threatened to upend that community.

How? Resonance

The concept of resonance has been particularly useful as a way of framing and orienting our study. We identify four different dimensions to the concept. First,

resonance brings with it the idea of systems *in tune* with one another. This builds on the anthropological principle that long stays in the field enable the ethnographer to *tune in* with the studied community. (Likewise, anthropologists sometimes say that you're done with fieldwork when you laugh at the locals' jokes). In addition, the good ethnographic account should *resonate* with the academic community and its conversations.

Yet the traditional image of an individual anthropologist living with natives is problematic when applied to a phenomenon like Bitcoin. Thus, instead of one individual (the anthropologist) resonating with an alien community, we prefer the language of systems, where the objective is to create one *system* that resonates with another, larger, system, much like a tuning fork resonates with a (tuned) guitar. This is not to suggest that we want to create a model or smaller version of the Bitcoin system—a *bonsai* Bitcoin—instead our objective is to create a system that will help us interrogate the larger system, which, we believe, is best achieved if the two systems resonate with one another.

Second, the concept of resonance reminds us of that money operates in—and somehow connects—quite different dimensions. For Keith Hart (1986), the well-known anthropologist of money, money has two sides: it is at once a product of social organisation from the top down (i.e. by the state) and from the bottom up (i.e. through markets). It is "both a token of authority and a commodity with a price" (p. 637), symbolically represented by a coin's head and tail. The two positions cannot be conflated as they are dimensionally distinct; instead they can only—and perhaps must—*resonate* with one another. We see this when we recognise that money is an aspect of relations between individuals and simultaneously detached from individuals; it is personal, interpersonal, and impersonal, all at once. To this we further emphasise the multiplicity of material and mental constructions through which money is instantiated. The material constructions include fiat money in its physical and digital forms, credit cards, payment systems, cheques, barter, local exchange currencies, over a thousand cryptocurrencies, all of which are deeply implicated in complex networks of public and private institutions and organisations. The mental constructions refer to the variety of theories of what money really "is", which are in play, or resonate, in any study of what a particular form of money, such as Bitcoin,

might be. In turn, this opens space for more comparative research of other forms of non-fiat money.

Third, the metaphor of resonance is helpful in that it evokes the idea of movement and change: resonance is easily observed in musical instruments when strings start to vibrate, apparently on their own, when certain notes are played. This is important not least because a criticism of anthropology is that the discipline does not adequately represent change and tends to present a static view of societies, both abroad and at home (Grimshaw and Hart, 1994, p. 233). Moreover, if writing is a mode of ordering, then a written ethnography is a good instance of the modern phenomenon of *ordering through inscription* (Goody, 1977; Tyler, 1986; Tyler, 1987); it is through *writing* ethnographies that the unruly and discordant (the Other) are suppressed and disciplined (Foucault, 1977). Ethno-resonance seeks to subvert this tradition through employing an abductive mode of reasoning that deliberately seeks out *surprises* and new information that are likely to clash with the favoured theoretical frame. Continuing the metaphor, it is through the *dissonance* of different views and voices that ethno-resonance works to engage with the dynamics of change. Hence, a guiding principle of ethno-resonance is to be opportunistic and open to surprises. One example was our decision to invest in the DAO initiative in 2016 (see box below).

Fourth, we draw on the ideas of the German sociologist, Hartmut Rosa, who has helped popularise the concept of resonance in recent years (Rosa, 2016; Rosa et al., 2016). For Rosa, modern societies are extremely dynamic—in terms of perceived innovation and change—and yet relatively stable in terms of basic socioeconomic structures. This "dynamic stabilization" brings with it a logic of incessant increase and acceleration, which in turn leads to a process of *destabilization*, as instantiated in contemporary political, financial, ecological and psychosocial crises. To counter the alienation that accompanies this social acceleration, Rosa (2016, p. 67) argues for "moments of resonance" and for "resonating relationships" with other human beings and with nature. Rosa has a strong political message that targets the neoliberal hegemony—where economic and social rights and responsibilities are individualised—which he sees as fuelling late-capitalism's growth engine. His notion of "resonance" is consistent with the idea of the "*buen vivir*" or ways of living that are community-centric, ecologically-balanced and culturally-sensitive (Walsh, 2010).

This seems particularly appropriate to a study of Bitcoin since Bitcoin can easily be seen as an instance of his social acceleration thesis. For instance, Bitcoin is *not* community-centric (promoting, broadly, an individualist perspective), *nor* ecologically-balanced (bitcoin mining is incredibly wasteful and now consumes as much electricity as Ireland (O'Dwyer and Malone, 2014)), *nor* culturally-sensitive (in the sense that Bitcoin is designed to be indifferent to specific cultural distances, even if, as we will see with mining, the reality is much different). Thus, the idea of resonance acts as an antidote that enables an important critical stance *vis-à-vis* our phenomenon of study.

'Shadowing' the DAO

In spring 2016, some key developers of the Ethereum cryptocurrency proposed the DAO, or Decentralized Autonomous Organization, which created a flurry of interest in a new, allegedly radical, frontier of online organizing. One where human actors are not needed because "smart-contracts" regulate self-executing actions. Following the normal pattern of crypto-currencies and Free and Open Source Software more generally, anyone could participate in this new platform for so-called "smart contracts". On our research project mailing list, two ethnographers from North American universities proposed the idea of getting our hands dirty by joining this venture to add a first-hand component with group participant observation. We agreed to join for two main reasons: to gain a better hands-on knowledge and to form a group of researchers who could better sense what was going on. This latter point refers both to the need to rely on different disciplines and to go beyond the outreach of individual ethnographers. So, we bought a little amount of Ether (the equivalent of less than 100 Euros) and a discussion started about how to use it. Shortly after that, only half jokingly, one of the two initiators proposed a smart-contract to save the whales. Basically, when something threatened the whales, the smart-contract would release funds to help them. In a very apt crypto fashion, intermediaries would have been removed from the loop and a decentralized organization would act without people making decisions in the here-and-now.

In a—typical for crypto—rapid succession of events, the DAO was affected by a major hack that drained about one third of the over $150 million previously collected via crowdfunding. This proved a major *dissonance* event in understanding actual opportunities and risks of crypto-currencies, and also nullified our attempt at participant observation. The DAO simply disappeared and the smart-contract to save the whales with it. This is where our loosely coupled research network was helpful. Even if we could not participate directly anymore in the DAO, the problems originated by the hack became widely discussed and investigated by

online crowds of all sorts, not only by those who invested money in the scheme. This allowed constant triangulation of data from fora, blogs, social media and specialised news, and proved effective for our research group to *resonate* with what was going on and the difficulties of having a moving target as a research focus. Rather than a humble return to more passive observation, this turn of events *tuned* us *in* as stakeholders, and literally shareholders, of a failed investment.

Why? Beyond Epistemic Two-timing

Here, we set out where ethno-resonance sits epistemologically. At heart, it resists being positioned on one of the common dichotomies such as "positivism/anti-positivism", "quantitative/qualitative", "realist/relativist" on which much epistemological debate is grounded. In many ways, ethno-resonance is a mode of inference, in that it seeks to address the question of "why" we should believe something, rather than "how" we should conduct an inquiry. Briefly, ethno-resonance advocates *abduction* rather than either deduction or induction as its favoured mode of reasoning (Dubois and Gadde, 2002; Kovács and Spens, 2005; Swedberg, 2016).

The first formulation of *abductive* reasoning is usually attributed to the American logician Charles Peirce though he himself traces it back to Aristotle (Peirce et al., 1931, page 28, paragraph 65). For Pierce, and for many others, neither deduction nor induction provides an appropriate model for how science is conducted. Instead, he argues that one starts with some prior theoretical knowledge or way of interpreting the world, and then one uses this frame to observe the world until one is surprised, which may be understood as a clash between the theoretical frame and the empirical world. This clash requires a reorientation of the research question and theoretical frame so that they *resonate* better with the empirical world. In their formulation of abductive inquiry, Dubois and Gadde (2002) note the importance of going back and forth between framework, data sources and analysis, and refer to this as "matching", though we prefer the idea of *resonance* because it speaks to the harmony that one seeks to achieve between the different domains and because it depicts abduction as a continuous, dynamic process.

Abduction is not a licence to introduce a theoretical model that operates as a *deus ex machina*—such as explaining an anomaly by appealing to the influence of green men from Mars; rather, abduction requires that the new explanation be reasonable,

and should be supported by the empirical evidence, in its broadest sense (Argyris et al., 1985). Thus abduction—or inference to the best explanation (Harman, 1965)—is exemplified by the reasoning of Sherlock Holmes; his inferred hypothesis is *probably* true, based on the available evidence and the absence of a more compelling hypothesis, though it is never conclusively true in the way Pythagoras's theorem can be deduced to be true (Czarniawska, 1999). This exposes a significant problem with abduction in that it is formally equivalent to the logical fallacy of affirming the consequent (or *post hoc ergo propter hoc*) which is probably why it remains on the margins of organisational research. But it is well known that the alternatives—deduction and induction—are also flawed.

One issue with both deduction and induction is that both privilege "frequentism" and hence seek some form of statistical generalisation. This is explicit in "quantitative" approaches that employ hypothesis testing, confidence intervals, p-values and the like, but it is also implicit in "qualitative" approaches that are premised on the similarity of a sample and the whole population. This desire for statistical generalisation is why multiple cases are preferred by the leading and highly cited advocates of case study research, such as Yin (1989/2009, p. 60) and Eisenhardt (1989). Likewise, grounded theory requires the constant comparison of cases that are, *a priori*, similar in some significant respect. This is important because Bitcoin is not usefully understood as a case of anything, as one instance of a wider population. Rather, it is one of a kind (*sui generis*) where the notion of statistical generalisation—as distinct from theoretical generalisation—makes little sense.

In some ways, ethno-resonance is similar to action research, collaborative inquiry, and "engaged scholarship" (Van de Ven, 2007) in that these approaches also emphasize participation, action, abduction and experimentation. However, ethno-resonance differs from these approaches in that it is not a collaborative form of inquiry between academics and practitioners; it does not seek to co-produce knowledge; and it is not centred on solving problems faced by practitioners. It also differs from para-ethnography (Holmes and Marcus, 2008) in that it resists the idea of collaborating with the ethnographic subject—a central tenet of para-ethnography.

While we might engage closely with the subjects of our investigation we do not collaborate with them; the knowledge we seek *about* them is not, after all, aligned with the problems that occupy and engage them. Also, the term para-ethnography

echoes subservient terms like para-medic and para-legal, and, even though Holmes and Marcus do not say this, it implicitly constructs a hierarchy with the ethnographer *qua* consultant accorded a higher status that the subject/practitioner.

Joining the Game

Should I (first author) buy some bitcoin? I faced that decision in 2014 when I first started researching money and cryptocurrencies. My gut told me I should, because that would be consistent with the ethnographic principle of getting the native's point of view. However, I was also sensitive to the ethnographic unease about "becoming native" which was surely more likely if one had a skin in the game. And by buying bitcoin was one also, at least to some extent, buying into its hyper-individualistic, anti-state ideology? That was perhaps a bigger issue for me, as I had grown up in a community that was still in the throes of nation-building. My grandfather's second cousin and neighbour was Thomas Ashe, one of the leaders of the Irish rebellion in 1916. After he died on hunger-strike in 1917, thirty-thousand people attended his funeral, which was a significant event in the lead-up to the Irish War of Independence. Many of us proudly read his biography, *I Die in a Good Cause* (Ó Lúing, 1970), appreciating that his 'good cause' was the creation of an independent, Irish nation-state. At that time, almost every house in Ireland had a picture of John F. Kennedy and his historic words, "Ask not what your country can do for you—ask what you can do for your country" resonated with what we saw as our patriotic duty to build our own nation-state. Would my father, who had painted a portrait of JFK, turn in his grave if I gave succour to those intent on destroying the nation state?

That said, nationalism has an ugly side—Yeats wrote of its "terrible beauty"—that we saw too often during the 20th century. And the cyberlibertarians have done some service in highlighting the link between the nation-state's penchant for military adventures and its control of the money system, or, more particularly, the link between US military power and the dollar's status as the world's reserve currency. At a personal level, why was I anxious about having bitcoin and *not* having euros in my pocket?

But my ethnographic concerns were about more than buying bitcoin. Maybe buying bitcoin got me into a game—or made me think I was in a game—that was just a trivial distraction. Perhaps the real game was in mining, and maybe getting the native's point of view required me to become knowledgeable about cryptography, hash functions, complex mathematical algorithms and the nether regions of computer science. But maybe I didn't need to tinker with computer code, no more than a logistics researcher needs to know how to fix a lorry's carburettor. Or perhaps my antipathy to computer science belied my own prejudices. Maybe I was worried that engaging deeply with computer scientists—who, as a rule, don't read

journals like *Organization*—might be upsetting, frustrating, or confrontational? Or illuminating? On the other hand, I was also aware that Bitcoin consumes a large amount of energy and that this will inexorably increase if and when the cryptocurrency becomes more popular. The bitcoin game is hardly good for our planet, and so, perhaps, best stay out of it.

I never bought any bitcoin, though I was happy enough that some of my colleagues did. Indeed part of the value of ethno-resonance is that it involves an ethnographic collective rather than an individual, anxious ethnographer.

Who? Digital Money Natives

An issue that has bedevilled contemporary ethnographers is how to present the native's view of the world if the natives have PhDs in computer science or spend their time developing complex computer code. Tellingly, Jay Labinger, one of the few practising scientists to engage in a sustained dialogue with those ethnographers who studied the practice of science in laboratories during the 1980s, bluntly stated that "the bottom-line picture of how science operates almost always comes out radically different from my own interpretation" (Labinger, 1995, p. 28). Another issue is that focusing on micro situations may mean one fails to notice the influences operating behind agents' backs or phenomena beyond individual perception or experience (Knorr-Cetina, 1981, p. 28). These methodological challenges are compounded with Bitcoin which emerged out of the cypherpunk movement that was defined by issues such as privacy and anonymity (Hughes, 1993; Chaum, 1985). One manifestation of this ideology is the remarkable fact that the person or group who wrote the foundational white paper on Bitcoin, Satoshi Nakamoto, has never been identified. This emphasis on privacy and anonymity creates obvious methodological difficulties for anyone wishing to study the phenomenon. In general, participants in the world of Bitcoin have a tendency toward secrecy whether because of their anti-statist political beliefs or out of necessity, as seen quite explicitly through Bitcoin's notorious association with illegal activity online and darknet marketplaces such as Silk Road (see box and Maddox et al (2016)).

A further issue revolves around the common ethnographic assumption that there is a community to be studied.[8] This relates to the fact that many early advocates of cryptocurrencies were libertarians, and this ideology is still strongly linked with Bitcoin even if the currency has also attracted its share of left-wing anarchists, money activists, geeks and criminals as well as a coterie of venture capitalists,

academics and crackpots (Popper, 2015). Libertarians advocate a form of radical individualism and reject collectivist ideas such as the notion of community-reliance, except in circumstances of necessity—for instance, groups often form within Bitcoin to defend against perceived aggression from other actors in the space (see the Scaling Wars box below). This creates an obvious challenge around how to study loosely tied, pseudonymous/anonymous individuals many of whom have a weak commitment – or even hostility – to the idea of community. If we assume that a Bitcoin community exists, in the loose sense described, how might we engage with its members given the value they place on anonymity and privacy? This is a further challenge, though it also provides unique opportunities to research how libertarian rhetoric translates into practice, how new forms of communal behaviour emerge and how old ones fade away or rejuvenate.

While the term “Bitcoin community” is relatively common, we never encountered the idea of Bitcoin as an “organisation”.

Silk Road

Silk Road was a marketplace for illicit goods, but is most famous for its sale of narcotics. It operated during the initial boom years of Bitcoin, roughly spanning 2011 until 2013, before being shut down by the FBI. For a long time the price of Bitcoin was heavily supported by this trade, earning Bitcoin an edgy reputation as digital money for criminals. The mythos around Silk Road was made all the more dramatic due to it being led by a charismatic leader known as the Dread Pirate Roberts (DPR). DPR was known for his dramatic proclamations and sincere libertarian politics. The Bitcoin community speculated endlessly on his identity: a genius hacker, Russian mafia, Satoshi Nakamoto. With quirky events such as book clubs and an on-demand addiction specialist, Silk Road distinguished itself from shadowy cybercriminals and produced a dark net culture of defiance that still exists, albeit in diluted form, to this day. Energised by the possibility of ending the war on drugs by moving the trade to the dark net, Silk Road became a raucous affair with endless drama, scams, accusations, rivalries, and even murder-for-hire. Nonetheless, the site functioned well and DPR even gave the occasional media interview espousing his political vision. What the community was not aware of was that the FBI had slowly infiltrated the site, even landing a staff position, and bit by bit they were learning more about the operations of the marketplace. However, in the end it was a simple Google search that caught DPR out. Hidden in an early advertisement for Silk Road was a name, Ross Ulbricht, and a savvy IRS agent managed to unearth it through his doggedness. Ulbricht was arrested in dramatic circumstances, FBI agents

distracting him as he performed administrative tasks in a public library and with him went this audacious experiment. And the mastermind behind all this? A young Texan idealist who would not look out of place on any campus in America. His destiny? A life sentence in a maximum security prison. Suddenly, the stakes became crystal clear: Bitcoin is a revolutionary technology, but the State will not always sit idly by as it attempts to break free of legal norms. In the face of this collapse, and fully aware how these digital spaces can disappear, authors two and three participated in a more recent dark net marketplace to help makes sense of the trades that Silk Road had made possible. Specifically, we used the 'think aloud' method, which consisted of an hour of recording the process of buying a fake passport, without getting to the actual purchase.

When?

In ethno-resonance, history matters. In this section, we outline two histories that resonate with one another: one is the story of Bitcoin as we came to know it, and the other is about how our inquiry unfolded as we took decisions and changed direction. The Bitcoin story is well-known and need not detain us unduly. It begins in the early 1980s when David Chaum (1983) first proposed the idea of digital cash. That paper, along with a later one on security without identification (Chaum, 1985), provided the technical basis for the cypherpunk movement that was particularly active in the late 1980s and 1990s. The cypherpunks articulated a "crypto-libertarian" ideology that advocated the use of cryptography to protect privacy, individual liberty and freedom of expression. Hostile to government interference in any form, they promoted new financial, economic, and money systems (May, 1988; Hughes, 1993). As May (1994) put it:

> Some of us believe various forms of strong cryptography will cause the power of the state to decline, perhaps even collapse fairly abruptly. We believe the expansion into cyberspace, with secure communications, digital money, anonymity and pseudonymity, and other crypto-mediated interactions, will profoundly change the nature of economies and social interactions (§2.13.1).

If May was talking abstractly about digital money, other cypherpunks were working to put the ideas into practice, which led to various forms of digital money: b-money in 1998, Hashcash in 2001, and Bitgold in 2008. However, these were unsatisfactory as they all required that digital signatures be held by a third party, which the cypherpunks detested, whether these third parties were governments, banks or large corporations. Nakamoto's real breakthrough in 2008 was to devise a money system without this requirement. Like other forms of money, Bitcoin is based on a promise,

but in this case the promise is underwritten by a highly robust and sophisticated algorithm guaranteed though a digital peer-to-peer network (Maurer et al., 2013).

In 2010, just over a year after the first bitcoin was issued, a bitcoin exchange, Mt. Gox, was created, and collapsed four years later with the loss of some $450 million. Bitcoin, as a digital form of cash, quickly became the currency of choice for buying and selling illegal goods on the internet, most famously in the Silk Road cryptomarket which operated from 2011 to 2013. In the same years, a sequence of Greek financial crises raised profound questions about the Euro and, more generally, the nature of money, and this sparked our own interest in cryptocurrencies.

The second history is about how our inquiry unfolded. In 2015, two of the authors formed a small research group that we decided should focus on the notion of "coding value". We initiated a mailing list and discussion group, developed an online presence including a website and public library on Zotero, and used bots to collect and publish news relating to cryptocurrencies. Already in 2014, we had started paying particular attention to publications of all sorts about cryptocurrencies, lurking and participating in online fora, making connections with those knowledgeable about cryptocurrencies, and attending conferences on new forms of money and alternative economic models. The network of relationships included academics in law, computer science, information systems, anthropology, organization studies, sociology and accounting, as well as what one might refer to as Bitcoin practitioners.[9]

In April 2015, we co-organized a workshop with UC-Irvine's Institute for Money, Technology & Financial Inclusion on cryptocurrencies, and in May we organised a "gaming money" workshop that considered the impact of cryptocurrencies on fiat money, with different groups focusing on scaling issues, alternative future scenarios for money, legal aspects, smart contracts, and auditing practices. Later that year, the third author took an appointment that enabled him to take a more active position in the research project. We also organised a one-day "translating the blockchain" for those in the business community interested in the blockchain and its applications. We invited the thirty-five individuals who attended that workshop to complete two Q-sort exercises aimed at identifying the major strands in the conversation about cryptocurrencies and the blockchain. Around the same time, we became aware of the DAO, which was an attempt to create a new decentralised, stateless business

model based on the Ethereum blockchain. In line with our abductive mode of inquiry, we invested in the fund during its crowdsale in May 2016. In spring 2017, we contracted with some researchers of computational linguistics to help identify software applications to analyse the thousands of documents collected over the years. We subsequently acquired the *Alceste* software application to facilitate analysis through automatic pattern recognition in the large datasets relating to cryptocurrencies.

Where? **Being everywhere**

Space is one issue that quickly emerged as we sought to use ethnography to study the (inferred) cryptocurrency form of organizing. The anthropological tradition originated —with some notable exceptions—through studying relatively closed and isolated communities. For instance Malinoswki, who established the anthropological practice of extended fieldwork, was forced on the Trobriand Islands during the First World War. But organizing today—and this is especially the case with cryptocurrencies—occurs simultaneously in many places in a heterogeneous, fragmented, dispersed, multiplicity of networks. Riles (2000, p. xv) faced this problem in her ethnography as she worried about about "how to locate myself, since there was no singular place to 'find' people and important interactions often occurred in private encounters". Likewise, John Law (1994, p. 45), in his ethnographic study of a laboratory—still a quite confined location—found that Latour's enjoinder to "follow the actors" was inadequate because "wherever I happened to be, the action was not." We faced a worse problem: even when consequences of actions became apparent, it was difficult to trace them back. Various solutions have been identified that seek to remain loyal to the ethnographic tradition. For instance, Marcus (1995, p. 96) observed that the postmodern moment required multi-sited ethnographies so that "the circulation of cultural meanings, objects and identities in diffuse time-space" might be properly studied. A year later, Burawoy convened a group in Berkeley with a shared interest in "global ethnography," which yielded a number of important publications (Burawoy et al., 2000; Gille and Riain, 2002). For this group, a global ethnography should extend in space—by studying multiple rather than single sites—and extend in time—by shifting the focus from context to history. A practical consequence of this is to employ a team of ethnographers rather than relying on a single individual (Jarzabkowski et al., 2015). However, this tradition is still concerned

with an understanding of space centred on a local—global dichotomy, as we see from Gille and Ó Riain's (2002) assertion that global ethnographies should present an "understanding of locally, socially, and culturally specific ways in which people understand the place of their locality in the global scheme of things, and the actions they take to that place" (p. 285). What becomes quickly apparent in any investigation of Bitcoin is that local context is rarely of importance since there is simply no use for bitcoins whose explanation can be exhausted in that immediate context.

Bitcoin occupies a diffuse digital space where the ethnographic preoccupation with "being there" is immediately challenged, because, to paraphrase Gertrude Stein, "there's no there there". Neither is it clear where "here" is. One implication is that the important ethnographic distinction between the *emic* (the native point of view) and the *etic* (the theorists' point of view) becomes problematised in Bitcoin as it is proves difficult to separate out these two points of view. The "native" perspective is instantiated in the blogs, posts and internet conversations, but these texts are replete with an intense level of reflexivity and theorizing on everything from the nature of money, to globalization, to the role of the state, to theories of centralization and control. For example, Vitalik Buterin—the founder of *Bitcoin Magazine* and co-creator of Ethereum, which reached $1 billion in market value in just over a year and $34 billion in two—routinely posts blogs that, without much work, could be turned into academic papers. One such post—*The Meaning of Decentralisation* (3000 words)—presents a novel taxonomy of different forms of decentralization as well as a theoretical frame for understanding why and when decentralization is useful, and how it can be operationalized (Buterin, 2017). It might not have the sophistication of a political science journal article, but it shows that distinguishing between the native and theorist point of view is neither easy nor particularly helpful. Is Buterin a "native" or a "theorist"?

2017 Scaling Wars

In 2017, Bitcoin fell into an old trap: how to implement new changes to the protocol in a fair manner? To change the protocol, a majority of miners have to agree, by signalling, that they support the change. What happens, then, when the miners simply disagree with the developers' vision and stubbornly resist innovations? At the beginning of the year the community was excited about a new upgrade of the Bitcoin Core software, known as Segregated Witness, that would allow for fast transactions to occur "off-chain," meaning that

not all transactions would have to be slowly verified by the miners. AntPool, one of the dominant Chinese mining pools, resisted and actively supported an obscure rival version of Bitcoin, known as Bitcoin Unlimited. This resulted in a quasi-religious schism in the community with both sides accusing the other of betraying Satoshi's original vision. For Unlimited supporters, Segregated Witness was an overly complex, overly technical attempt to distort Bitcoin from its original aim of electronic cash, toward frivolous adornments such as smart contracts. Supported by legendary Bitcoin angel investor, multi-millionaire and so-called "Bitcoin Jesus", Roger Ver, Bitcoin Unlimited emerged as a genuine threat to the Bitcoin Core software. Ver was aided by the often abrasive AntPool operator Jihan Wu, who blocked the adoption of an upgrade through his dominant position in the Chinese mining community. Scandals, threats and exposures appeared daily on Bitcoin social media. It looked like the only solution would be for the two parties to separate, literally to follow two entirely different blockchains and go their separate ways. Pitted directly against one another, the two factions proposed solutions and counter-solutions, locked endlessly in a war of attrition that shows no sign of immediate resolution.

For this event we were far-better prepared than before, attuned via our network to the complexities associated with such events. What was apparent to us as ethnographers was the significance of the discourse around Bitcoin: to what extent it should be a highly-adopted electronic cash (a medium of exchange) or a form of digital gold (a store of value). We recognised that the way Bitcoin – understood as money – moved between these discourses, was indicative of much deeper issues around community governance and ideology. The scaling debate was about money, even when it was disguised as a technical issue, but not just money in the blunt sense of value; rather, as our ethnographic journey had shown, the Bitcoin game is one that is still in play, an unsettled and ever-evolving terrain requiring nimble research tactics.

Ethno-resonance as Method

In this section we summarise what we mean by ethno-resonance, identifying where it builds on existing approaches, and how it offers new directions in ethnographic inquiry. We also describe the type of phenomenon to which it is particularly suited. While we believe the method is distinctive enough to warrant its own term, we also recognise that other ethnographic studies exhibit many of the features that collectively capture the idea of ethno-resonance.

First, ethno-resonance is a determined attempt to deal with large-scale and important phenomena—money in this paper—by drawing on the traditions of

ethnography while not focusing on local situated actions or experiences. This challenge of moving from the micro to the macro is one that others are also grappling with, especially in practice theory, where we would point to contributions by, in particular, Nicolini (2016) and Jarzabkowski (Jarzabkowski et al, 2015). The anthropologist Keith Hart exemplifies this ability in his book *The Memory Bank*, which examines the complex relationship between money, markets, political power and inequality (Hart, 2000). In this book, Hart moves from what he terms the "miniaturising approach" of traditional anthropological studies to broader historical inquiry into the formation and decline of "state capitalism". Riles (2000) study of international human rights networks is another good example. Thus, ethno-resonance requires a multiplicity of methods and is perhaps therefore best understood as a constellation of mini-projects, only some of which might be properly considered as ethnographic. While it is set firmly within the ethnographic tradition, the primary instrument of ethno-resonance is not the individual ethnographer, but rather the ethnographic system of inquiry that seeks to resonate with the larger phenomenon.

Second, ethno-resonance resists being positioned on the common epistemological continuum between positivism and interpretivism, not least because the multiplicity of methods makes any attempt to do so problematic, but also because a continuum with two untenable poles is never compelling.

Third, abduction is the preferred mode of reasoning rather than either induction or deduction. Consequently, ethno-resonance deliberately seeks surprises and consciously constructs breakdowns to better understand social order and disorder. It eschews deterministic narratives and instead hunts down inversions, unintended consequences, and ironic juxtapositions.

Fourth, ethno-resonance requires a critical stance towards the phenomenon of study, and is therefore sceptical of cultural relativism which Hart (2000) sees as the "prevailing ideology of anthropologists since the first world war … the notion that every place has a right to its own customs, however barbaric". For example, in relation to cryptocurrencies, the project's continued reliance on energy to secure the network is clearly problematic and requires sustained self-reflection on the part of the Bitcoin community, regardless of the individualist world it seeks to bring into being.

The environment cannot, simply, be excluded from that world, whether it is constituted by a community of weak or strong bonds.

Fifth, ethno-resonance is particularly suited to studying collective action on the Internet where "new objects of concern" are emerging, and where the long-standing dualisms of the social sciences are most likely to be redrawn or displaced. It is also where ethnographic concepts—such as 'emic', 'etic', 'being there', 'community', etc.—that might traditionally have been seen as foundational, are problematized, re-imagined and potentially discarded.

Sixth, ethno-resonance focuses on movement and change over time, whether this be in the here-and-now, or the medium term, or the *longue durée*. In particular, it maps out how different imaginaries have resonance and dissonance with one another and how these imaginaries evolve over time. In the next section we discuss this in relation to Bitcoin's imaginaries.

Myths of the Bitcoin game

In this section we outline how this particular exercise in ethno-resonance has contributed to our understanding of money and non-state currencies such as Bitcoin. Here, we see our contribution as building on prior work, most especially ideas developed by two anthropologists: Keith Hart, who has written extensively on money, and Alan Fiske.[10] Hart (1986) asserts that money is best understood as a form of social organisation, and he presents two opposing theories of money, which he depicts as two sides of a coin. The "head" of the coin, often depicting the sovereign or head of state, represents the idea that money is underwritten by the state and is a token of relations between citizens and the state, and between citizens of the state. In contrast, the "tail" side of the coin, for Hart, represents the commodity theory of money, based on the logic of anonymous markets wherein money is "a thing, capable of entering into definite relations with other things, as a quantitative ratio independent of the persons engaged in any particular transaction" (Hart 1986, p. 638).

These two faces of money provide the foundation for his later work, *The Memory Bank* (Hart 2000), though he reformulates the head of the coin into "state capitalism" which he depicts as a fusion of the state and big business. He also refashions the coin's tail, which originally depicted anonymous markets, to stand for the potential of

markets to enable personal relations and equal exchange (as epitomised by Local Exchange Trading Systems (LETS)). Ultimately, his coin metaphor becomes overloaded, and neither does it fit well with the empirics of Bitcoin, and, in particular, Bitcoin's emergence from a cyberlibertarian logic that emphasises privacy and anonymity. Hence, while we draw on Hart's work, we find it more fruitful to build on Alan Fiske's (1991, 1992) idea that people use four primary "relational models" to coordinate social action.

We will refer to Fiske's four "relational models", as myths, not least because of the role of myth in anthropology, but also because myths have a timeless, explanatory power: a myth, writes Lévi-Strauss (1955, p. 430), "explains the present and the past as well as the future". Myths also resonate with Hart's (2000) idea that money, like language, is a form of social memory, and indeed part of our contribution is to elaborate on this connection.

The four myths are "communal sharing", "authority ranking", "equality matching", and "market pricing". *Communal sharing* is centred on the notion of a bounded group of equivalent, undifferentiated individuals. Examples where this myth dominates include enclaves, cults, monastic communities, mobs, people intensely in love, people sharing a commons, families sharing blood ties, citizens sharing a national identity, etc. *Authority ranking* foregrounds asymmetrical relations among people aligned hierarchically along some social dimension, where subordinates defer to and respect their superiors. Examples where this myth is central include military hierarchies, ancestor worship, and social status systems based on class, inherited privilege, or ethnic rankings. The myth in *equality matching* is to maintain an even balance and one-for-one equivalence in the set of relationships. Examples include turn-taking, systems of reciprocity, tit-for-tat retaliation, equal share distributions, one-person one-vote elections, etc. *Market pricing* is centred on a myth of measurement and proportionality, with socially meaningful ratios—e.g. prices, wages, rents, etc.—foregrounded. Examples of this myth include property that can be bought or sold, prostitution, utilitarian judgements, cost-benefit analyses, etc. In practice, different myths may be invoked for different interactions between the same people, depending on the context and issue at hand.

Based on our study of Bitcoin, we can relate each of these myths to particular theories of money, while the data collected helps illuminate the tussle between these

myths over time. Market pricing is most appropriately linked to the commodity theory of money—the "tail" of the coin in Hart's 1986 paper—in which money is backed by a commodity, such as gold, that derives its value from the market. This myth is central to Bitcoin's design, as this is clearly based on the "mining" of precious metals and is linked with previous metalist currencies (Zimmer 2017; Maurer et al 2013). But this myth is a problematic basis for a money system as Keynes (1933) made clear when he criticised the "crude economic doctrine commonly known as the quantity theory of money", arguing that, "It is a most misleading thing to stress the quantity of money, which is only a limiting factor, rather than the volume of expenditure, which is the operative factor". Similarly, Polanyi (1944/2001) asserted that money in *not* a commodity and is instead "merely a token of purchasing power which, as a rule, is not produced at all, but comes into being through the mechanism of banking or state finance" (p. 75-76). Nevertheless, this commodity theory of money, realised through the metaphor and practice of mining, has persisted as Bitcoin's dominant myth, and is perhaps a good illustration of how a society can operate without fully understanding its own premises of action. It also illustrates how myths can be self-fulfilling, as bitcoin is now generally considered a financial asset or commodity rather than a currency. In short, Bitcoin is digital gold rather than digital cash.

The second myth to consider from a monetary and Bitcoin perspective is *authority ranking*. Here, the money myth is that money is a token of relations between citizens and the state, with the state playing the key and dominate role through underwriting and managing the money system. For Hart (1986) it is the coin's "head", appropriately depicting the sovereign on the sovereign. This myth is viscerally attacked by the cyberlibertarians, and Bitcoin and cryptocurrencies are best understood as attempts to destroy it and the asymmetric power relationships that it is seen as helping to produce. While this hostility has continued, the myth has been far from destroyed and instead it very much animates the world of cryptocurrencies. Tellingly, almost thirty years after May (1988) predicted that "cryptologic methods [will] fundamentally alter the nature of corporations and of government interference in economic transactions" it is still just a prediction, and indeed governments and especially large corporations are arguably stronger than ever. While governments have been tentative in seeking to regulate Bitcoin, the apparatus of the state has been quick to act when there is evidence of major fraud, as we have seen in their

prosecution of individuals behind Mt. Gox and Silk Road. For their part, larger corporations, while initially avoiding Bitcoin, are now very active in appropriating and reworking its underlying blockchain technology for their own benefit. It is also ironic, and contrary to the anti-state ideology that underpinned Nakamoto's original Bitcoin architecture, that transactions on these corporate blockchains will *not* be anonymous so as to conform with anti-money-laundering and know-your-customer regulations imposed by the state.

From the outset, the cyberlibertarians have advocated the third myth, *equality matching*, as a positive alternative to authority ranking. Here, the myth is founded on a cooperative vision, with Bitcoin designed as a peer-to-peer (P2P) network where each member holds as much power as the other and where there is no interference by either intermediaries or the state. By design, all participants run a node in a decentralised, cooperative network in which money, as a form of information, can move freely. This is the myth that most attracts Hart in *The Memory Bank* and it is also the generative myth underpinning non-state currencies like LETS. We find its roots in the "mutualist" philosophy as initially articulated by Pierre-Joseph Proudhon—who defined anarchy as "the absence of a master, of a sovereign" (Prodhoun 1876, p. 277) writing that, "As man seeks justice in equality, so society seeks order in anarchy"—and as later developed by American individualists like Josiah Warren, William B. Greene, Benjamin Tucker, and Kevin Carson. Within Bitcoin, this anarchist spirit has manifested itself in a number of ways, initially in its design as an alternative to the perceived corruption of centralised authorities, such as the state and central banking, but also, over time, in various attempts to oppose the emerging centralization of power within the Bitcoin network itself (such as the development team or mining pools). Opposition to these groupings eventually forced the community to split, weakening the already weak bonds of the community, and rendering any collective action against centralized powers even more difficult than before.

The insufficiency of the equality matching myth, as evidenced by the disconnect between the myth and reality, has provided an opening for the fourth myth, *communal sharing*, to prosper, even though one might think it at odds with the strong sense of individualism that energises cyberlibertarianism. We have seen this in the growing sense of a "Bitcoin community" that depicts itself as a much maligned and

misunderstood group, set apart from the “mainstream”. Thus, the classic in-group/out-group structure has emerged, with the Bitcoin community animated by the same myth of communal sharing that binds all enclaves, and, like other enclaves, it makes little effort to communicate its values in a language that might appeal to outsiders.

Bitcoin, in the myth of communal sharing, is a floating signifier, loose enough to mean many things to the community, but specific enough to bind that community together. It might or might not be money, but even if understood as money, money is also a floating signifier into which one can place almost any meaning or desire, but whose almost magical power lies in its ability to create a shared, communal bond.

If the communal sharing myth only developed over time in Bitcoin, it is typically a foundational myth underpinning most alternative currencies. For instance, LETS schemes are, axiomatically, *local*, and are designed to foster a local community identity. Similarly, Maurer (2005, p. 17) speaks of how he was attracted to alternative currency movements because he “was interested in efforts to remake money in the image of community”. While Bitcoin did not start from that position, a Bitcoin community has still emerged, even though, unlike the LETS schemes, it is in no sense local. It is more a GETS than a LETS, and has now become a form of *global enclave*.

Conclusion

Bitcoin is a technology that challenges one of the most fundamental phenomena of our society, money, which is invisible while it functions, but comes to be foregrounded in periods of financial crisis. This resonates with the attitude of ethnomethodologists who surface what is taken for granted in normal social life by studying—if not purposefully provoking—breakdowns. With Bitcoin we discover a new object of concern, a digital currency that untangles itself from our assumptions about what counts as money. It has proved to be too chaotic, too dispersed, and too diverse to be studied as a relatively settled group, and has forced us to engage reflexively on the limits of a “pure” ethnography. We developed and deployed ethno-resonance as a method that approached the Bitcoin phenomenon as one relying on collaborative and heterogeneous research praxis, remaining energetic and attuned to the ever-evolving dynamics. So, while maintaining roots in the ethnographic

tradition, we stretched the ethnomethodological focus on the constant performative construction of the social to this unusually dispersed phenomenon. Since it is impossible for any individual to be co-located with the phenomenon, we had to listen and resonate with what is beyond our individual experiences.

In this paper, we focused on six stages of ethno-resonance—tracing a query-path of what, why, how, who, when, and where. Our most attuned interpretation of this quite cacophonic/dissonant digital phenomenon is that it is a ludic object of concern, a game, with its own rules, in unruly relation to broader society. A principle of ethno-resonance is that ethnographic interpretation requires us to move between the micro and the macro, most especially in analysing the curious phenomenon of money. We have argued that this movement is usefully mediated through myth, and hence we have explored the nature of money, and cryptocurrencies in particular, through analysing the dynamic interplay between the four foundational myths that animate the Bitcoin game.

Notes

1. We use cryptocurrency, digital money and digital currencies as synonyms. These terms refer to native digital currencies, such as bitcoin, and not to the digital version of fiat monies, such as the euro, dollar, pound, etc. We use the term “Bitcoin” to refer to the overall Bitcoin network, while “bitcoin” refers to digital money produced by this network.

2. We use the words anthropology and ethnography interchangeably, although we have much sympathy with Ingold’s (2008) attempt to distinguish them. We are aligned with his understanding of anthropology as a practice that is not so much a study *of* people, but a study *with* people of the conditions and possibilities of life in an emergent world.

3. Our direct observations are supplemented by accounts found in popular books and cryptocurrency media; for Mt. Gox see Vigna and Casey (2015), for Silk Road see Bilton (2017), for the DAO see DuPont (2017) and on the scaling debate see Ennis (2016).

4. For details on bitcoin’s legal status see https://en.wikipedia.org/wiki/Legality_of_bitcoin_by_country.

5. There is a significant literature on money, notwithstanding the widespread confusion and misunderstanding about its nature, how it comes to be and how it is controlled. In

particular, we refer to writings by Ingham (2004; 2005), Dodd (2014), Hart (2000), Zelizer (1997), Simmel (1900/2004), Graeber (2011), Crump (1981) and Pettifor (2017).

6. The website https://historyofbitcoin.org depicts a timeline of the phenomenon; https://bitcoin.org/, originally set up by Nakamoto and Martti Malmi, is a resource that supports the development of Bitcoin; Coindesk (http://www.coindesk.com/) is a news site specializing in bitcoin and digital currencies. Blockchain.info (https://blockchain.info/) presents information from the blockchain, such as pool statistics. For a good history of Bitcoin to date, see Popper (2015), while see Antonopoulos (2014) for a detailed description of how it works.

7. The Bitcoin Empire website is https://bitcoin-empire.io/ which features well-known individuals from the world of Bitcoin: Charlie Shrem, the American entrepreneur and bitcoin advocate who spent two years in prison for his involvement in Silk Road; Roger Ver, an early investor in bitcoin startups, who spent ten months in prison for selling explosives on eBay; Mark Karpelès, CEO of the Mt Gox bitcoin exchange who was accused of embezzling $3.4m when the exchange went bankrupt; Danny Brewster, CEO of bitcoin banking startup Neo & Bee; Ross Ulbricht, who was convicted of creating and managing the darknet market, Silk Road.

8. A notable exception is Riles (2000) who notes that her subject matter "is not a society, nor is it a community" (xvi); instead she prefers the notion of "network".

9. By August 2018 the discussion group had over 200 members. Based on email addresses, it appears that half of this group are academics.

10. While we foreground Hart, his work is part of a wider conversation in economic anthropology that considers money's social roles and meanings, and, in particular, the colonial and inter-cultural context within which money, including state and non-state currencies, operates. For a useful review of this literature, see Maurer (2006).

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