Automating Trust with the Blockchain? A Critical Investigation of ~~"~~"Blockchain 2.0"~~"~~ Cultures

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Abstract

~~The~~ This article discusses the cultural conceptions of trust underpinning the experimentation of blockchain startup applications beyond the financial sector. Based on qualitative research undertaken in the context of the so-called ~~"~~"B~~b~~lockchain 2.0"~~"~~ scene, we show how a peculiar conception of trust, which blends the libertarian views of blockchain inventors with the neoliberal culture of competition and meritocracy that is typical of the startup world, underpins these implementations. As a result, we argue that ~~"~~"Blockchain 2.0"~~"~~ entrepreneurs ultimately fail to recognize the eminently social nature of the trust-building process. They emerge from our observation as unable to comprehend the extent to which the implementation of blockchain in a societal (i.e., not purely financial) context cannot do away with considerations about what kind of ~~"~~"social"~~"~~ the technology intervenes within, and ~~unable~~find difficult to effectively conceive of how this technology embeds in existing social relations and power structures.

Keywords: blockchain, neoliberal culture, social relations, technology, trust

The question of trust has become ever more~~ever more~~ central in the global debate on digital platforms in recent years. Scandals such as Cambridge Analytica (Cadwalladr and Graham-Harrison~~,~~ 2018) have generated fresh concerns about data ownership and security, evidencing huge power imbalances and raising questions about personal data monetization by private corporations (Zuboff~~,~~ 2019). Concomitantly, a technology developed in the hacker world has emerged as a potential solution to

issues of trust and data transparency: blockchain. Most commonly known as the infrastructure that underpins the functioning of the cryptocurrency Bitcoin, blockchain has recently gained attention also beyond the domain of finance—what is often referred to as "Blockchain 2.0" (Swan, 2015; Scott, 2015; Hosp, 2019)—whereby it has been deemed to have the potential to reshape existing social and economic relations. Applications of blockchain outside the financial sector have been experimented with in contexts such as governance, music, art, and more (e.g., O'Dair, 2018; Swan, 2015; Catlow, 2018); unsurprisingly, the startup world has also turned its attention to blockchain as a potentially revolutionary entrepreneurial tool and thus contributed to amplify the hype surrounding it. Blockchain enthusiasts in this context envisage that its implementation across various sectors of society will give individuals greater control of their personal data and online transactions, thus offering a technological fix to issues of "dataveillance" and algorithmalgorithmic-based power imbalances (Tapscott and Tapscott, 2016).

While critical academic readings of the "blockchain hype" do exist (e.g., Golumbia, 2016; Husain et al., 2020; Crandall, 2019; Herian, 2018), more research is needed about blockchain from a sociological perspective as applications of this technology move away from the main context of finance, to further investigate the relationship between blockchain as a technology and "the social" (Marres, 2017), broadly intended, whereby it is envisaged to intervene. This article aims to contribute to this emergent body of knowledge by exploring the cultural conceptions of trust underpinning entrepreneurial implementations of the blockchain technology outside the financial sector. Blockchain is often described as a "trustlesstrust-less infrastructure," meaning a technology that breaks with the centralization of authority, thus avoiding the concentration of data in the hands of a single proprietary entity. Conceived of as suchAccordingly, blockchain is understood by its proponents as a technology that enables to the undertaking of undertake transactions which that do not need intermediaries as a guarantee for trust, since they are validated from by all participants in the ecosystem (Casey and Vigna, 2018). Yet, we contend that this view does not take into adequately adequate consider consideration how trust-building processes articulate and unfold in the societal context in which blockchain is envisaged to intervene. There is a necessity toneed for more in-depth investigation of investigate more in-depth the cultural understandings of trust that entrepreneurs and start-uppers startuppers promoting blockchain-based business ventures outside of finance uphold and seek to embed in their applications, in order to adequately appraise these experimentsexperimentations.

Building on these considerations, the article interrogates what ~~is~~ trust is for participants in the ~~‘b~~Blockchain 2.0~~’~~ startup scene. This is a heterogeneous group ~~participated by~~comprising a variety of subjects with different backgrounds, who hold a plurality of sometimes conflicting political sensibilities and have developed a shared interest in blockchain as a result of its capacity to be a ~~“‘~~floating signifier~~”~~ (author quote removed) that can be molded to fulfill ~~fulfil~~ a variety of goals. To this end, we ask: ~~what~~ What conceptions of trust ~~do~~ inform the views of ~~‘b~~Blockchain 2.0~~’~~ start-uppers ~~startuppers~~ in their experiments ~~experimentations of~~with blockchain applications beyond the financial sector? Which trust-building processes is the implementation of blockchain in contexts that are not finance envisaged to generate? Based on qualitative research consisting ~~in~~ of participant observation at blockchain conferences in London and Milan, together with informal conversations and a set of interviews with blockchain start-uppers ~~startuppers~~ and other key informants in the same geographical areas, we show that participants in the ~~‘b~~Blockchain 2.0~~’~~ scene ~~bear~~ have a peculiar conception of trust ~~which~~ that blends the libertarian views of blockchain inventors (Sakamoto~~,~~ 2008) with the culture of competition and meritocracy that is typical of neoliberal entrepreneurial cultures (Herian~~,~~ 2018). As a result, we argue that ~~‘~~Blockchain 2.0~~’~~ entrepreneurs ultimately fail to recognize the eminently social nature of the trust-building process; while advocating for decentralization, ~~‘b~~Blockchain 2.0~~’~~ entrepreneurs emerge~~,~~ ~~from~~ in our observation~~,~~ as unable to comprehend the extent to which the implementation of blockchain in a societal (i.e., not purely financial) context cannot do away with considerations about what kind of ~~“‘~~social~~”~~ the technology intervenes within, and ~~unable~~find difficult to effectively conceive of how this technology embeds in existing social relations and power structures.

The article is structured as follows. In the next section~~,~~ we look at existing research on blockchain and ~~‘b~~Blockchain 2.0~~’~~ from a sociocultural ~~socio-cultural~~ standpoint, highlighting the nature of our contribution in the existing scholarly debate. Subsequently, following a methodological note~~,~~ we present and critically discuss our empirical findings. In the conclusion, ~~conclusive section~~ we reflect on the broader significance of our research and reiterate the call for fresh empirical studies on ~~‘b~~Blockchain 2.0~~’~~ applications and culture.

New K~~k~~ids on the B~~b~~lock(chain): A~~a~~n O~~o~~verview of the B~~b~~lockchain D~~d~~ebate

In October 2008~~,~~ a white paper ~~whitepaper~~ authored by someone going by the name of Satoshi Nakamoto (presumably a pseudonym for a hacker or a hacker collective) described the functioning of a new digital currency, called Bitcoin, running on a decentralized, peer-to-peer infrastructure. Bitcoin

Commentato [EO1]: Should there be a citation here? Or should this parenthetical phrase be removed?

allows individuals to engage in economic transactions with others in a pseudonymous~~pseudo-anonymous~~ environment via a technologically enabled~~technologically-enabled~~ process of validation of each transaction sustained by participants in the system and supported by a new form of cryptography, which ensures pseudonymity~~pseudo-anonymity~~ and does not require the intermediation of a central authority (Huckle and White~~,~~ 2016; Nakamoto~~,~~ 2008). Throughout 2013~~,~~ the popularity of Bitcoin skyrocketed in parallel with its economic value relative to standard currencies, in particular the US dollar (Golumbia~~,~~ 2016). Yet, ~~beside~~ besides the financial innovativeness of the cryptocurrency as such, tech experts and other observers soon realized that what was truly innovative about Bitcoin was its underlying infrastructure: the blockchain.

Blockchain can be thought of as a permanent, distributed digital ledger that ~~it~~ is visible and verifiable to everyone in the system, as opposed to centrally managed~~centrally-managed~~ ledgers such as those of banks (De Filippi and Loveluck~~,~~ 2016). In this sense, the terms ~~'~~*blockchain*~~'~~ and ~~'~~*distributed ledger technology*~~'~~ are often used interchangeably, despite some terminological controversy (Hileman and Rausch~~,~~ 2017). To provide a brief description of how this technology works, essentially the blockchain ledger is composed ~~by~~ of "a chain of cryptographically linked ~~'"~~blocks~~'"~~" (Hileman and Rausch~~,~~ 2017~~,~~ ~~:~~11) whereby every block is dependent on the information stored on the previous one. Because of this architecture, the blockchain is carried out collectively by all the nodes of the system and is highly resistant to tampering (Atzori~~,~~ 2017); if someone tampers with a block on their own version of the blockchain and changes the cryptographic hash function, the successive blocks' hash functions will also change (De Filippi and Loveluck~~,~~ 2016). This process is also known as "~~'~~proof of work~~proof-of-work'~~." In other words, the blockchain technology is conceived of as an open network where participants do not need to know each other to engage in transactions. For this reason, blockchain is also claimed to be a peer-to-peer "~~'~~trustless~~trust-less"'~~ technology (Atzori~~,~~ 2017; Gerard~~,~~ 2017~~;~~ O'Dwyer~~,~~ 2015; Tapscott and Tapscott~~,~~ 2016). Using cryptographic algorithms, electronic transactions are automatically verified and recorded on the ledger by the nodes of the networks; no intervention is needed from any other third parties to make the transaction happen. This has been described by Antonopoulous (2014~~,~~~~:~~ n.p.) as "a shift from trusting people to trusting math." This process is also outlined in the Bitcoin white paper~~whitepaper~~, where proof of work~~proof-of-work~~ is ~~not~~ described not as a new form of trust~~,~~ but rather as the abandoning of trust altogether as social confidence, in favor of algorithmic autoregulation ~~auto-regulation~~ (Nakamoto~~,~~ 2008).

Commentato [EO2]: Edits OK? (I'm using the form of the word that appears in https://www.forbes.com/sites/jamiemoy/2018/02/22/forget-bitcoin-its-all-about-the-blockchain/?sh=13c610705f6b and other online sources.)

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While it is not the purpose of this article to delve in depth into the technical functioning of blockchain, this brief overview ~~was~~ nevertheless has been necessary as a starting point for its comprehensive understanding as a social object. In fact, albeit initially obscured, so to speak, by the hype around Bitcoin, the popularization ~~popularisation~~ of blockchain soon generated a hype of its own. In particular, the diffusion of blockchain attracted substantial interest from the start-up ~~startup~~ world, where a plethora of conferences, events, and symposia ~~has~~ have been held on the subject, leading to the emergence of a "~~'~~blockchain scene"~~'~~ populated by tech entrepreneurs, experts, and other stakeholders, all interested in the understanding of the "~~'~~disruptive"~~'~~ potential of this new technology. Within this context, blockchain has been portrayed as a pseudorevolutionary~~pseudo-revolutionary~~ device, destined to impactfully intervene in society at large (Tapscott and Tapscott~~,~~ 2016). While largely dominated by finance, in fact the conversations around blockchain in the start-up ~~startup~~ world have extended to the assessment of its potential application in a variety of contexts beyond currency transactions~~—~~what is often referred to as ~~'~~Blockchain 2.0~~'~~ (Swan~~,~~ 2015~~;~~ Scott~~,~~ 2015; Hosp~~,~~ 2019). The most known ~~'b~~Blockchain 2.0~~'~~ infrastructure is probably Ethereum, an open-source distributed computing platform that popularized the use of decentralized autonomous organizations (DAOs) and peer-to-peer smart contracts[1] as key components of how blockchain experimentations outside finance might work and that is used by a variety of applications. With the popularization of Blockchain 2.0, the implementation of this technology in different social fields is expanding. According to a dossier compiled by the Stanford Graduate School of Business Center for ~~the~~ Social Innovation (Galen et al.~~,~~ 2018), blockchain applications today exist in different contexts beyond finance, such as governance, e-voting, philanthropy and social aid, digital identities, the digitization ~~digitalization~~ of patients'~~patient's~~ medical history, and the creation of distributed energy utilities systems~~system~~, just to name a few. For blockchain enthusiasts, the fields of application ~~applications~~ of this technology are potentially countless, since blockchain would enable the disintermediation of *any* digital transaction at global level (Atzori~~,~~ 2017).

Commentato [EO3]: I've corrected the name per https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/study-blockchain-impact-moving-beyond-hype_0.pdf.

Blockchain and "~~'~~the Ssocial"~~'~~: Aa~~a~~ Cc~~e~~ritical Rr~~e~~ading

Existing research has approached blockchain as an object of study from a variety of perspectives, including law, social and cultural research, and philosophy, among others. Generally speaking, many of

[1] ~~Decentralized Autonomous Organizations (~~DAOs~~)~~ are organizations that use blockchain technology to give ~~its~~ their members specific rights within the organization itself. These rights are managed and guaranteed by the blockchain (see Bollier~~,~~ 2015). Smart contracts are a kind of legal agreement between individuals, in the form of a computer program that triggers when particular conditions are met, and which cannot be changed once deployed (Gerard~~,~~ 2017).

these works focus on blockchain as a technical object, highlighting its key features as well as its critical dimensions (e.g. De Filippi~~,~~ 2018) and maintaining a peculiar attention toward ~~towards~~ the domain of economics and governance (Davidson et al.~~,~~ 2016; Berg et al.~~,~~ 2019; Potts~~,~~ 2019). Contextually, however, a lively debate has also unfolded around the question of how blockchain relates to existing political cultures and social imaginaries. Within this context, some maintain an enthusiastic view about the social and economic innovation blockchain is foreseen to generate (Werbach~~,~~ 2018; Tapscott and Tapscott~~,~~ 2016); others, instead, offer a more critical interpretation of blockchain cultures and their contiguity with neoliberal capitalism (Crandall~~,~~ 2019; Herian~~,~~ 2018; Faria~~,~~ 2018; Golumbia~~,~~ 2016). Some have also highlighted how blockchain might support distributed forms of networked cooperation on a global scale (Bollier~~,~~ 2015) and ultimately promote an alternative to the official venture capital system, in the form of "a non-capitalist market for capital" (Arvidsson~~,~~ 2020~~,:~~ 23) that "could bring forth a new money of the commons, divorced from capitalist forms" (Srnicek and Williams~~,~~ 2015~~,:~~ 182). On the whole, as noted by Rozas et al. (2018), a technodeterminist ~~techno-determinist~~ and market-driven view, ~~that~~ which sees blockchain as a technology deemed to ~~"~~"revolutionize~~revolutionise~~"~~"~~ a given domain but also underestimates implications concerning social organization, is juxtaposed ~~juxtaposes~~ within this debate ~~to~~ with a more critical interpretation, which emphasizes ~~emphasises~~ the limitations and issues that are inherent to blockchain as an example of algorithmic governance.

Accordingly, taken together, these works largely concur in describing the blockchain scene as a highly heterogeneous social context inhabited by a plurality of stakeholders with sometimes opposing worldviews; these include libertarian, anarchist, and ~~"~~"commonist"~~"~~ but also more ~~"~~"institutionalist"~~"~~ positions (Husain et al.~~,~~ 2020). While a majority of stakeholders come from the domain of finance and entrepreneurship, a small but tightly connected~~tightly-connected~~ set of actors interested in socioeconomic~~socio-economic~~ models that are alternatives ~~alternative~~ to traditional forms of capital accumulation has also been attracted to blockchain. These are researchers, artists, hackers, and other intellectuals or practitioners who see blockchain as a tool that has the potential to enable the development of more egalitarian social and economic relationships (e.g., Catlow et al.~~,~~ 2017; Rozas et al.~~,~~ 2018; O'Dwyer~~,~~ 2015; Kostakis and~~&~~ Bauwens~~,~~ 2014). Research in the area of culture and creativity, in particular, has underscored this potential, as blockchain is foreseen to enable alternative licensing and distribution models of artworks and other intellectual property, thus paving the way for a fairer distribution of revenue deriving from collaborative projects, ~~but~~ and also to rebuild the economic

fabric of domains—such as the music industry—that experienced significant economic shrinking in the digital era (see O'Dair, 2017; O'Dwyer, 2018).

However, the debate on blockchain technology reflects the "interpretative flexibility" that characterizes blockchain as a technological object (Pinch and Bijker, 1984). This means that the observation of the technical workings of blockchain frequently pairs up with an idealization of the potential of this technology, revealing the lack of a homogeneous interpretation of its social significance. As argued by Reijers and Coeckelbergh (2018), blockchain remains a "narrative technology" whose meanings contribute to configure social reality. Furthermore, much of this body of work relates to applications of blockchain in the domain of finance. Research on blockchain applications outside the financial sector—so-called "Blockchain 2.0"—actually remains in its infancy. While blockchain "social" applications are often advocated as revolutionary, the question of *how* these integrate with existing social relations and power structures in a given domain has remained somewhat unchallenged.

Since blockchain was originally presented as a financial tool and is now being introduced into different sectors, there is still no common agreement on what a blockchain technology for the "social" actually represents. On the whole, it has been noted that a common view shared by participants in the blockchain scene, and particularly in its "Blockchain 2.0" variation, is the aspiration of "changing the world," building on the assumption that existing socioeconomic arrangements are no longer sustainable and new ones must be created (author quote removed). Blockchain, in this sense, represents a tool that materializes a "change-making" ethos (Arvidsson, 2019). This is particularly true of those start-up entrepreneurs and tech experts who are interested in the innovative and impactful potential of blockchain in society. Animated by a broadly libertarian ethos, they see blockchain as a "revolution" and a tool that will radically alter societal processes; a fair degree of technosolutionism (Morozov, 2013), which understands technology as the neutral go-to solution to societal problems, characterizes their views. This translates to a variety of entrepreneurial endeavors, largely operating within the traditional framework of Silicon Valley capitalism, mostly in the form of apps, that use blockchain as the underlying technological infrastructure to pursue the goal of "disrupting" existing economic and social processes (Arvidsson, 2019). As these "social" applications of blockchain beyond the purely financial sector multiply, there emerges a need for more research on these endeavors.

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This is particularly relevant insofar as many of these initiatives build on the assumption that blockchain represents a revolutionary technology because it facilitates "trustless~~trust-less~~" exchanges (Tapscott and Tapscott~~,~~ 2016). While research exists in the context of computer science (e.g., Yang et al.~~,~~ 2018; Hawlitscheck et al. 2018) on the advantages and criticalities that concern technological systems and trust-building processes among users, as well as in the context of law, where the challenges of "ruling by code" (De Filippi~~,~~ 2018) have been observed, there remains, remarkably, a lack of studies on the social and cultural understandings of trust in the context of blockchain "~~"~~social" applications ~~remains~~. Interestingly, even some of those who criticize the "~~"~~trustless~~trust-less~~" assumption of blockchain enthusiasts ultimately reiterate the view that blockchain revolutionizes trust, such as Werbach (2018), who has argued that blockchain does not represent "~~"~~the end of trust" but rather a "~~"~~new architecture of trust~~",~~," as participants in the system cease to trust others and instead devote their trust to the technology. However, the vision of blockchain as a tool to promote technologically enabled~~technologically-enabled~~ trust and the vision of a "~~"~~trustless" society cannot be delinked from the questions ~~question~~ of what ~~is~~ trust is for those promoting this view, and how these understandings are encoded in the applications their promoters seek to popularize.

It has been argued that the tension around imaginaries that juxtaposes the different actors who inhabit the blockchain scene is also ~~reflects~~ reflected in the understanding of trust that can be observed within it, and in the operationalization of the blockchain technology from one context to another (Faria~~,~~ 2018). Nonetheless, it seems vital to further expand our knowledge of what trust actually is ~~trust~~ and what ~~are~~ trust-building processes are, ~~but also~~as well as our knowledge of social relations and society at large, for entrepreneurs seeking to implement blockchain technology in a given social context, in order to properly assess these experiments~~experimentations~~. There is a ~~necessity~~need, in other words, to move beyond the somewhat reductionist assessment of blockchain as a "~~"~~neutral" technology~~——~~an unfortunate by-product ~~byproduct~~ of its "~~"~~hype"~~——~~and to critically observe blockchain as a social technology ~~which~~ whose implementation in a given context is greatly influenced by the views that its creators hold about society, social relations, and power structures~~,~~ and that they seek to embed in their entrepreneurial ventures.

To pursue this goal, we approach blockchain as a peculiar kind of digital platform. In many ways, the blockchain infrastructure may be considered akin to a digital platform that "~~"~~remediates~~re-mediates~~"

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the social and economic relations in the context where it operates, allowing new ones to be created (van Doorn, 2017; Gandini, 2020). Like a platform, blockchain provides with a digital infrastructure to organize and coordinate social and economic interaction among users (Marres, 2017); its functioning, like the algorithms of a digital platform, are also the result of "opinions embedded in code" (O'Neil, 2016), which must be unpacked, investigated, and criticizedcriticised. Drawing We can draw on Gillespie (2010, 349) to observe that, just like the term *platform*, the term *blockchain* also "depends on a semantic richness that, though it may go unnoticed by the casual listener or even the speaker, gives the term discursive resonance." Similarly, blockchain culturally prompts a plurality of views, social standpoints, and interpretations that must be taken adequately into account. Inspired by this approach, in the next section, we delve into the 'bBlockchain 2.0' scenes of London and Milan, with the aim of showing the aspirations, beliefs, and visions of the world that underpin the design and uses of blockchain technology outside the financial sector in those contexts, as these contribute to the creation of peculiar imaginaries (Jasanoff et al., 2007) attached to the blockchain technology and its assumed intervention in "the social."

Methodological Nnote

The This article presents findings that emerged in the context of a research project, led by the first author of this article, which studied the cultures and the social imaginaries that underpin blockchain as a social and cultural object in its experimentation experimentations outside the financial sector. The study (here denominated "Research 1") was conducted in 3 three different geographical contexts — London, Milan, and Tallinn — in the period 2018 – 20192019, and consisted in of participant observation at 10 ten international blockchain events and 31 thirty-one semistructuredsemi-structured interviews to with a variety of subjects involved in different capacities in the blockchain start-up startup scene in these different contexts.

Overall, the research was conducted according to the principles of a "multi-sited ethnography" (Marcus, 1995); while this approach was instrumental to harvestfor harvesting a number of important insights, it also bears the obvious limitation of engaging with a relatively limited number of subjects and cases of "social" implementation of blockchain across the board. As a result, findings can neither be considered representative of the entire spectrum of 'bBlockchain 2.0' experimentation experimentations nor a generalization of the whole 'bBlockchain 2.0' scene. Nonetheless, these the findings bear offer rich insights concerning the ways in which the interest around blockchain

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applications outside ~~of~~ finance has been affirmed in the context of the start-up ~~startup~~ and tech world and ~~offer~~ evidence of the ways in which it ~~got~~ came to be seamlessly integrated within the larger entrepreneurial culture that dominates this sector, which maintains a strong neoliberal ethos.

The research design followed principles of convenience and critical (or typical) case sampling, thus seeking to maximize ~~maximise~~ access to information that is otherwise difficult to collect and aiming to gather an in-depth understanding of a process and its workings (Ritchie et al.~~,~~ 2013)~~—~~—in this case, blockchain implementations outside the financial sector and ~~their~~ the underlying cultures in which the implementations occurred. The local contexts were selected ~~according to~~based on the presence of a large ~~"~~"blockchain scene"~~"~~ and ~~due~~ their ~~renown~~ renowned status ~~of~~ as European ~~'~~tech hubs~~'~~ ~~of the European area broadly intended~~. The selection of informants was intentionally heterogenous and included participants of different nationalities from a variety of social contexts and fields of work: this cross-contextual approach has been described by Mason (2002), who highlights the benefits of a heterogeneous set of interviewees to provide evidence of commonalities across a diverse group. By using this approach, we were able to recruit as informants a variety of figures, such as blockchain entrepreneurs and start-upers~~startuppers~~, ~~but~~ and also hacktivists and artists experimenting with blockchain technology, scholars, and developers.

The section that follows presents a selection of data collected in London and Milan in the context of this research, consisting ~~in~~ of excerpts of conversations around conceptions of trust in the ~~'b~~Blockchain 2.0~~'~~ start-up ~~startup~~ scene with entrepreneurs encountered at events or interviewed as key informants during the course of the project. All of the participants' names have been removed to ensure their anonymity. Due to the peculiar focus on start-up ~~startup~~ and tech entrepreneurs, informants from the third geographical context, ~~(~~Tallinn,~~)~~ are not considered in this article, as ~~these~~ almost ~~entirely consist of~~all of these participants ~~who~~ are active in the civic, institutional, and political sectors.

While the vast majority of the findings here presented come from the aforementioned research, for the purposes of this article, we also include a selection of insights that emerged in the context of ~~an~~ exploratory, small-scale research on blockchain experimentation ~~experimentations~~ in the context of the dating apps industry, led by the second author of this paper and conducted between May and December 2018 in London (here denominated ~~"~~"Research 2"~~"~~). This consisted ~~in~~ of participant observation at three~~3~~ blockchain events and a number of informal conversations with operators in the London

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blockchain scene over the same period of time. Research 2 also entailed the execution of two~~2~~ focus groups and five~~5~~ interviews ~~to~~ with users of dating ~~app~~apps ~~users~~, aimed at investigating opinions about the potential benefits of the diffusion of blockchain dating services from the consumer ~~side~~point of view; nonetheless, for purposes of empirical coherence, these focus groups and interviews are ~~also~~ not considered for this article. Research conducted in London for both projects overlapped ~~overlaps~~ chronologically. Despite the inevitable differences that mark the individual research projects~~researches~~, these ~~projects~~ share a common rationale and methodological approach, which we believe justifies the combination of their findings.

"Trustless T~~t~~echnology C~~c~~reates T~~t~~rust H~~h~~ow? It's a T~~t~~ough Q~~q~~uestion…"

On the whole, participants in the ~~'b~~Blockchain 2.0~~'~~ start-up ~~startup~~ scene in London and Milan are mostly young, well-educated, middle-class~~middle class~~ adults (~~the~~ their average age is ~~30~~ thirty~~years old~~). Most of them hold a university degree, typically in the field of computer science, engineering, or business and finance. As a result, they work as developers or~~,~~ are CEOs or business experts at tech companies and start-ups~~startups~~. Many, in line with the so-called "~~'~~hacker ethic"~~'~~ (Levy~~,~~ 1984; Coleman and Golub~~,~~ 2008), affirmed that they grew up as self-taught hackers. Overall, somewhat unsurprisingly, our research informants were predominantly male: only six~~6~~ ~~over~~ of ~~31~~ thirty-one interviewees were women (one~~1~~ in Milan, five~~5~~ in London). More interestingly, only one ~~out~~ of the few interviewed women ~~holds~~ has an IT background~~;~~, ~~while~~ the others have backgrounds in ~~the context of~~ care, social work, or art.

Our participant observation took place at the many events that are regularly organized to discuss blockchain experimentation ~~experimentations~~ and innovations, and that constitute important networking occasions ~~of networking~~ for social actors in this context. These ~~were~~ are roundtables, seminars, conferences, lectures, and networking sessions, normally organized ~~inside~~ at coworking spaces or universities~~;~~, ~~but~~ the events often also ~~consisted~~ consist ~~also~~ of informal meetings, "~~'~~aperitivi~~'~~," hack meetings~~hack meetings~~, or workshops organized in bars or occupied spaces. At these events, discussions on blockchain commonly revolve around the political and economic scenarios that might result from the large-scale diffusion of distributed ledger technology in society. Although conversations are often characterized by ~~a~~ technical, computer-science jargon, social imaginaries and visions of the world regularly emerge as prominent topics ~~during the course of these events~~. The tone is generally very optimistic ~~towards~~ about a future where blockchain would "~~'~~disrupt"~~'~~ the status quo; in

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most cases, keynotes and participants concur that blockchain “will change everything forever” because “every sector in the world is being disrupted by ~~Blockchain~~blockchain.”~~.~~

The ‘‘~~‘~~magic’’~~’~~ of automating trust

In the context of these conversations, the ‘‘~~‘~~trustless~~trust-less~~’’~~’~~ nature of the blockchain technology is regularly mentioned as a key component of its disruptive potential. Many see blockchain as a ready-at-hand solution to issues of data power and ownership, sometimes echoing a sort of ‘‘~~‘~~power to the people’’~~’~~ motto, or as a means to counter online privacy concerns more generally. The underlying principle that keeps these conversations together is that distributed ledger technology allows ~~us~~ to get rid of central and intermediate authorities, ‘‘~~‘~~automating’’~~’~~ the trust-building process and thus empowering individuals by giving them more freedom of action. Put differently, the idea that blockchain revolutionizes trust-building processes is widely shared by participants of the blockchain scene ~~as a given~~. How this actually occurs in a given social (i.e., not purely financial) context is, on the contrary, much more vaguely articulated. In some cases, the automation of the trust-building process that the blockchain technology is deemed to enact is described as a kind of ‘‘~~‘~~magic’’~~’~~ that takes place ~~in~~ the moment the technology is put ~~at~~ to work. See, for instance, how this London-based founder of a start-up ~~startup~~ that seeks to foster philanthropy for social causes argues that blockchain is, in fact, ‘‘~~‘~~beautiful’’~~’~~:

> ‘‘~~‘~~Blockchain is beautiful ’~~’~~cause you don’t need to work on centralized servers, and the beauty of immutable data mitigates corruption. Imagine having a world that does not need to be retraced. All we need to do is basically apply ~~applying~~ the trustless technology, and everything rolls from that. Imagine if we do it for taxes: if we lock data on the blockchain, nobody can be fraudulent, neither [can] the government. Also for cars, you would have a key that unlocks the car. You don’t need any financial intermediate to make the transaction, you don’t need any human to intermediate. If you program your smart contract like that, it will deliver once the conditions are triggered.’’ (Informant 9, Research 1)

Blockchain, in other words, seems to be commonly understood by ~~blockchain~~ Blockchain 2.0 start-uppers ~~startuppers~~ as a system in which trust resides in the technology, and in relation to which the social nature of trust is actually ancillary to its functioning. It is a common belief that, thanks to blockchain, the burden of building trust among participants is eliminated~~,~~ and replaced by a

Commentato [EO14]: Or another, more specific term, like “start-uppers”?

Commentato [GA15]: "allows to get rid of" is sufficient

Commentato [EO16]: Please note: the journal’s style doesn’t italicize quotations from interviews.
In quotes from interviews, I’ve also made minor edits for grammar and for consistency with the journal’s style for punctuation, etc.

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Commentato [EO17]: Edit OK, to clarify the meaning?

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technology-enhanced process of validation. In this sense, it may be said that ‘‘trustless’’ actually means a system where trust is envisaged to be ‘‘automated’.’’ This A Milan-based CEO of a blockchain start-up startup that aims at supportingto support companies in the digital transformation argues that, while often misunderstood, blockchain is ultimately all about developing a system of trust where “you press a button and it works”:

> "The blockchain is difficult to understand and is often forced on things that are useless, there are many people who speak ill of it because they have not understood what it is, there are many people who talk about it as fundamentalists without explaining how to use it. We instead believe that to make a technology work, it must be a closed box, you press a button and it works, you don’t have to care what’s behind it, you need to know that it gives you guarantees, just like a car: you turn the key, press the pedals, and you don’t have to know how it works [(*sic*)]. So it is [with] technology for us. All our work is focused on simplifying technology for the user, as well as on complicating our work. This is the only way the blockchain can become a commonly used technology, we won’t talk about it anymore because it will be taken for granted that the blockchain is there. [(…)] Decentralized means that all the actors within the network, despite having conflicting, opposing, or otherwise no trust interests, have found a way to communicate in complete safety. The blockchain transforms a natural characteristic of man—, that is, greed—, into something positive that is a safe and secure environment". (Informant 28, Research 1)

The capacity to ‘‘automate’’ trust is so much a chief topic in the discussion around the disruptive potential of blockchain among start-upersstartuppers, that some have come to the almost paradoxical conclusion that blockchain and trust are quintessentially antithetical, such assimilar to science and religious faith and science. This A Milan-based entrepreneur, who defines himself as a ‘‘blockchain evangelist’’ and who owns a YouTube channel that discusses distributed ledger technologies, explains that:

> Trust is never mentioned when it comes to blockchain, I even give it a negative connotation when we talk about blockchain! Why do you trust that your boyfriend behaves well? Because you can’t follow him twenty-four24 hours a day and verify that this is the case. If you had this chance, you would no longer need to trust, because *YOU KNOWyou know*. As we said before,

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> everything in the blockchain is transparent, so everyone knows everything, or everyone can still check everything. So the concept of trust disappears and is replaced by verification. In fact, one of the mottos that runs in the community is "'Dd~~d~~on't trust, ~~:~~ verify', " because there is this possibility. Partly because the idea of making checks exempts you from the concept of trusting, the concept of trust is very close to the concept of faith: faith means believing something true without the possibility of having elements to support this vision. Here instead you have all the elements of the case, and the trust disappears. And this is a dangerous element, because every time you hear someone tell you that blockchain increases trust, it is not true, very wrong: it does the opposite, it completely eliminates it from the game because you no longer need to trust. (Informant 13, Research 1)

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However, the automation of trust is easier said than done. The practical implementation of "'trustless~~trust-less~~"' social exchanges clashes practically ~~clashes~~ with a variety of social and cultural constraints, as the mediation operated by the blockchain technology embeds within existing power structures and social relations in a given context. The "'~~'~~magic"' belief that blockchain "'~~'~~automates"' trust ultimately reveals a generalized ~~generalised~~ lack of understanding by our participants of how social relations actually work and highlights a certain naïveté ~~naivety~~ about the possibility that trust-building processes can be delinked from the nature of "'~~'~~the social"' in the context where blockchain is deemed to be experimented with. Some, however, are very well aware of these issues. As a well-known London-based blockchain entrepreneur ~~in London~~ ironically summarizes~~summarises~~:

> "'Trustless technology creates trust how? It's a tough question…"' (Informal conversation, Research 2)

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Others are more realistic about the peculiar differences between purely financial blockchain applications and "'~~b~~Blockchain 2.0"' experiments~~experimentations~~. For instance, a~~A~~ Milan-based entrepreneur, who is the head of a start-up ~~startup~~ that aims ~~at including~~to include blockchain in academic education, ~~for instance~~ skeptically notes that some important differences exist in the way blockchain works in the domain of finance~~,~~ vis-à-vis how it might integrate in other social contexts, and that these differences are commonly overlooked:

> ~~“~~So, this is a technology for which the whole issue of trust works either that you try to create a network of trust, and therefore increase the level of trust, or build mechanisms to basically manage distrust. Blockchain is one of the latter. The issue of trust, trust, is used in an ambiguous way, because in fact the blockchain as a trustless ~~trust-less~~ mechanism is good in some public environments such as ~~bitcoin~~Bitcoin, where you want to operate anonymously and do not want to be recognized, but in an environment such as education, there is not really the same trust. You know you’re giving a diploma or a qualification, don’t you? Therefore the discussion is not independent of the context. It works in finance, but a little less in the social world.~~"~~ (Informant 27, Research 1)

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Commentato [EO18]: Please confirm that “trust” is repeated here.

Commentato [GA19R18]: yes

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Thanks to these insights, we can appreciate how, in the contexts here observed, participants in the ~~‘b~~Blockchain 2.0~~’~~ scene are persuaded that blockchain applications outside the financial sector can actually pursue the utopian goal of removing ~~“‘~~the social~~”’~~ from trust-building social exchanges, ascribing the ~~“‘~~magic~~”’~~ power of producing trust to the blockchain technology. Accordingly, as the technology that ~~“‘~~automates~~”’~~ trust, blockchain is seen as a perfect machine ~~which~~ whose functioning can ~~only~~ be spoiled only by individual behavior~~behaviour~~: the blockchain technology does its ~~“‘~~magic~~”’~~ only if users do not betray how the technology works. This evidences how, in envisaging the creation of a ~~“‘~~trustless~~trust-less~~~~”’~~ environment, ~~‘b~~Blockchain 2.0~~’~~ entrepreneurs display an understanding of social relations that, on the one hand, reproduces and exacerbates the libertarian, hyperindividualized ~~hyper-individualized~~ vision of society that animated its creators’ vision of the world (Nakamoto~~,~~ 2008). Yet, on the other hand, it also shows that when this vision gets embedded in the start-up ~~startup~~ scene, it seamlessly blends with neoliberal entrepreneurial cultures that relentlessly promote competition and meritocracy as forms of social reproduction, ~~and~~ where these views get to be further emboldened by the arrival of a new technology that is seen to be fitting with these goals.

Blockchain, trust, and meritocracy: T~~t~~he financialization of social relations

In the contexts observed, blockchain is seen by many as a tool that would unleash the potential of creating social systems whereby one does not need others in order to be successful. If this, on the one hand, largely mimics the libertarian worldview of blockchain creators (Nakamoto~~,~~ 2008), on the other hand, it also fits perfectly within the neoliberal culture of meritocracy that characterizes the start-up ~~startup~~ world, by which the onus of success and failure falls firmly onto the individual and ~~her/his~~that individual’s hard work. Accordingly, the blockchain technology is seen as able to remove those

intermediaries that impede the affirmation of meritocracy ~~to actually affirm~~. See, for instance, how ~~this~~ a blockchain expert from Milan, who works for a start-up ~~startup~~ that provides a variety of blockchain solutions for companies, describes the role of blockchain in society:

> Respondent: "I dream of a meritocratic world. For me, the blockchain was exactly the element I expected. Clearly this is only in my head, without the world becoming aware of it, it becomes difficult. But even without resources, here I am in a position where I can showcase everything I have in my head. I'd like to create platforms where various actors – for example, musicians – can emerge from below without intermediaries, without forms of corruption. I put meritocracy first. And since we have the blockchain, it is possible to create a distributed environment in which these actions take place without someone directly controlling them. I stand up for it.
>
> "(Interviewer: ~~and~~ And what does the blockchain have to do with it? What do you mean by *meritocracy*?
>
>)
>
> Respondent: "That any actor has the same chance as others to emerge." (Informant 29, Research 1)

Many in the '~~b~~Blockchain 2.0' scenes here studied share the view that blockchain is a neutral technology and a tool that levels inequality. A locally well-known female participant from Milan, who is the head of a project ~~which~~ that seeks to improve awareness ~~on~~ of Bitcoin and blockchain, argues that:

> "Blockchain is an extremely inclusive network: it doesn't matter if I am a woman, a man, or something else, as long as I have internet access, I am not asked for any of these parameters. With pseudo-anonymity, I protect myself from who I am, and I am not excluded." (Informant 31, Research 1)

Yet, the vision of a meritocratic trustless ~~trust-less~~ social system operating through the blockchain cannot do away ~~of~~ with money altogether, even if it is envisaged to operate in a nonfinancial ~~non-financial~~ context. Tokenization and smart contracts, in fact, represent elements that are key to the vision of blockchain as a functioning, meritocratic tool that ensures the automation of trust. Often

Commentato [EO20]: Should there be something after "to actually affirm"?

Commentato [GA21R20]: I've revised in this new format

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Commentato [EO22]: Or "pseudonymity"?

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described as “~~“~~tokenomics~~”~~ (Kampakis~~,~~ 2019), a key feature of blockchain “~~“~~social~~”~~ applications is the translation of real-life assets into digital assets, or “~~“~~tokens~~”~~,” that can be purchased through the distributed ledger. Token sales, also often referred to as ~~ICOs (~~iInitial cCoin oOfferings (ICOs), allow organizers of a project to sell digital tokens, most commonly to sustain the financing of the project (Rohr and Wright~~,~~ 2018). Yet~~,~~ tokens also are “the artefact of choice to represent assets, utility or a claim on something inherent to a specific blockchain project” (Oliveira et al.~~,~~ 2018~~,~~: 1). As Lotti (2019) suggests, tokens may be seen as affordances that reprogram the relationship between financial and social relations. Building on this understanding, we contend that, when combined with smart contracts, tokens configure a process of “~~“~~financialization~~”~~ of social relations that is anchored to the notion of a “~~“~~trustless~~trust-less~~~~”~~ system whereby trust can be, in the view of blockchain enthusiasts, “~~“~~automated~~”~~ and materially inscribed in the technology. See how the same Informant 28, introduced earlier, describes this process:

> Blockchain creates a kind of internal circular economy supported by actors, an economy managed on tokens and smart contract. There are a series of dynamics achievable only by the meeting of different actors without a central intermediary. (Informant 28, Research 1)

In other words, the fact that through tokens, social interaction gets to be “~~“~~financialized~~financialised~~~~”~~ within the blockchain system discourages individuals ~~to~~ from ~~engage~~ engaging in transactions that would undermine the “~~“~~trustless~~trust-less~~~~”~~ system. As a well-known Bitcoin evangelist and entrepreneur from Milan also explains:

> “~~“~~Unlike words, purchases are worth more. I can tell my boss how healthy I am, but the insurance payment is worth more. I can tell my girlfriend how much I love her, but paying for a pendant to my lover is worth more. I can tell the party leader how loyal I am to the party line, but if I make a payment to a group of opposing activists, that speaks more. So payment is something that speaks more than we do: while it is possible to send us messages directly peer to peer, before Bitcoin, payments could not be peer to peer. ~~[(…]~~) Money is essential when we have to exchange value with strangers, with people we don’t trust. Maybe they are enemies, maybe they are tribes that fight and have to exchange, or international powers that have to trade: money takes over [that] which must be fungible as a characteristic.~~”~~ (Informant 26, Research 1)

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Commentato [EO23]: A different person from the girlfriend? If they are the same, please use the same word, for clarity.

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To appreciate how this works, blockchain-based dating apps (Research 2) ~~represent~~ offer a useful example. Viola.AI is a blockchain-based application used in the context of romantic relations, described as a "relationship registry" available to singles but also unmarried and married couples. Viola.AI aims to "resolve global challenges in the love industry"; to do so, it employs a blockchain registry supported by a token, VAI, which represents a "community currency" used for a number of purposes, including payment facility. This is combined with an "AI Lifelong Love Advisor" that uses artificial intelligence to ensure that the best matches are generated. As a registry, the blockchain allows people to also marry through the app, using the device of smart contracts.[2] This is not an isolated example: Luna,[3] for instance, is a dating app that uses distributed ledger technology to "mitigate the underlying inequality" of online dating, conceived as an attention economy. Luna proposes to get rid of the advertising-fuelled economy of dating apps and replace it with a tokenized relationship system that maximizes ~~maximises~~ the possibility that a match is working, while ensuring financial viability without large-scale extraction of personal data for advertising purposes. In its white paper, it is argued that:

> "The token essentially acts as an invisible hand within an information-rich marketplace. Luna's fuel is its QRC-20 token, the Star. Stars are the means for all in-app transactions between users. Luna endeavors to provide new users the ability to purchase tokens in several different ways, such as in-app credit card transactions with a licensed third-party API, on secondary exchanges, or by earning them through their interactions on and with the Luna app. Luna's reserve pool is used to provide liquidity and rewards to users, for example for verifying real-world encounters or providing compatibility feedback. A portion of funds raised may be used to ensure Stars are listed on exchanges. Luna thus has the ability to encourage growth of the ecosystem. Tokens also provide greater user control: users do not require Luna's authorization to buy or sell, or withdraw tokens to an exchange. Furthermore, the token system allows for an exchange or secondary market to form, allowing users be compensated fairly for their efforts and attention by a price determined by the market, not by Luna. ~~[(…])~~ Stars allow for the initiation of conversations with users who have hit their limit by bumping messages up the queue to the recipient's inbox. These Stars then transfer to the message recipient's account.

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[2] See: https://viola.ai/. ~~([l~~Last accessed ~~27~~ July 27, 2020.~~)~~
[3] See: https://www.meetluna.com/. ~~([l~~Last accessed ~~27~~ July 27, 2020.~~)~~

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> Users can thus earn Stars by reading, in a timely fashion, incoming conversation starter messages with attached Stars. This ability to earn tokens provides a strong incentive for new users to join Luna, and for existing users to remain active on the network. [(…)] The introduction of tokens as a liquid, platform-discrete asset thus succeeds in addressing the issue of inequality in the attention economy that fundamentally compromises the conventional online dating experience. Moreover, the base of popular, responsive users created will increase the value of the platform and aid in overcoming the network effect." (Ornish et al., 2017, 5)

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Viola.AI and Luna are only two of many apps that experiment with the use of blockchain technology to develop systems whereby social relations are essentially financialized. The kind of financialization of social relations here shown ensures, in the view of their creators, the unfolding of horizontal, meritocratic social exchanges as they get to be mediated by the blockchain. As the example of Luna in particular illustrates, tokens—in their combination with smart contracts—permit us to devise systems whereby, in Polanyian terms, social relations are embedded in economic ones, thus implementing the vision of a perfectly rationalperfectly rational market inhabited by perfectly rationalperfectly rational actors (Polanyi 1944/2001; Krippner, 2001). In this sense, tokens, like money for Polanyi, are a symbolic noncommodity non-commodity that gets "fictitiously commodified" to be sold or consumed, thus enabling the form of social organization in which it inscribes (see also Gandini, 2019a). This implies an understanding of social relations as ancillary to the technologically driventechnologically driven workings of the system and delinked from the social nature of trust-building processes, which are considered to be entirely technologically constructedtechnologically constructed and absolute from "the social" and its inherent power structures.

Conclusion

The This article has investigated the cultural conceptions of trust that characterize the experimentation of with blockchain applications in societal domains beyond finance. Our study fills a gap in the existing research on blockchain as it sheds new light onto on the cultural assumptions that underpin the uses of the blockchain technology beyond the financial sector, taking blockchain as a social and cultural object with peculiar features and revealing the contradictory understandings of "the social" that participants in the 'bBlockchain 2.0' scene in the contexts of London and Milan seem to share. For them, the building of trust among individuals is largely a by-product byproduct of technological rather

than social and cultural processes; they envisage that the blockchain technology would allow trust to be ~~"~~automated~~"~~ and essentially reduced to a process of social validation that would ~~"~~inevitably~~"~~ determine the creation of meritocratic social systems. While in the context of blockchain-based financial endeavors ~~endeavours~~ this may be nothing new, the fact that it has naturally extended ~~onto~~ to ~~the~~ experimentation ~~experimentations of~~with blockchain in societal contexts that differ from cryptocurrency bears a number of related implications.

At a first level, our findings seem to corroborate the view that the ~~"~~blockchain scene,~~"~~ broadly considered, is largely characterized ~~characterised~~ by a limited understanding of how social organization processes work (Rozas et al.~~,~~ 2018) and by a fair degree of ~~"~~techno-solutionism~~"~~ (Morozov~~,~~ 2013), which sees technology as a natural solution to societal issues and effectively a replacement of societal processes. The view of the trust-building mechanisms that seems to be shared by participants in the ~~'b~~Blockchain 2.0~~'~~ start-up ~~startup~~ scene in London and Milan is remarkably connoted by a failure to understand the social nature of these processes and by a conception of trust as something that may be created in a vacuum, delinked from its underlying social relations and power structures. Instead, ~~As~~as~~,~~ ~~instead,~~ sociological research widely demonstrates, trust is a multidimensional~~multi-dimensional~~ process enshrined in notions of mutuality and reciprocity and whereby a number of micro and macro dimensions intervene (see, ~~for instance~~ e.g., Khodiakov~~,~~ 2007).

Accordingly, this invites the question of *what kind* of trust-building processes are actually peculiar to the mediation of social relations operated by blockchain technology applications beyond finance. Further research is needed in this regard to expand the existing understanding of how individual applications of blockchain in sectors where currency exchange is not the primary goal of interaction actually work and shape the trust-building social exchanges among participants. There is a necessity to further investigate what social actors directly interacting through blockchain-based applications consider to be trustworthy behavior~~behaviour~~, what aspects specifically ~~concur~~ relate to the building of trust as a social process once this gets mediated by the blockchain technology, and how these ultimately relate to established sociological notions of trust. It may be interesting, for instance, to question whether these ultimately delink from notions of trust based on mutuality and reciprocity to converge toward ~~towards~~ an understanding of trust that is closer to the view of sociologist Niklas Luhmann (1986, 2000), who considered trust ~~as~~ the assessment of the risk of interacting with unfamiliar others—a conception that is otherwise actually quite typical of digitally mediated

Commentato [EO24]: A suggested edit ("concur" doesn't seem quite right here). Please review and revise further, if necessary.

Commentato [GA25R24]: OK

~~digitally mediated~~ forms of interaction where reputation is central as a cultural conception of value (e.g.~~,~~ Gandini~~,~~ 2016). From what we know so far, blockchain ~~seem~~ seems to effectively take the role of what Shapiro (1987) calls an impersonal "~~'~~guardian of trust"~~' (Shapiro, 1987)~~; yet~~,~~ this conception demands a thorough discussion of the social organization that characterizes it, and of the processes of social control that underpin it.

Commentato [EO26]: Or another term that makes "this" specific?

At a second level, ~~the~~ this article shows that the diffusion of blockchain in the start-up ~~startup~~ world has resulted in the coupling of the libertarian worldview of blockchain creators (Nakamoto~~,~~ 2008) with the neoliberal culture of entrepreneurialism, individualism~~,~~ and meritocracy that characterizes mainstream tech culture. As Littler (2018~~, :~~8) notes, "[~~(~~n~~])~~eoliberal meritocracy promotes the idea of individualistic, competitive success, symbolised by the ladder of opportunity"; as shown in our research, in the view of ~~blockchain~~ Blockchain 2.0 entrepreneurs~~,~~ the blockchain offers a convenient technological device to give life to this worldview, enshrined in the belief that a digital tool is able to facilitate social reproduction irrespective of the nature of "~~'~~the social"~~'~~ in which it operates. This highlights the inability by participants in these contexts to understand how blockchain ultimately consists in a social object that embeds in a set of existing social relations and power structures ~~which~~ that need to be accounted for when its application is envisaged.

Commentato [EO27]: Clarify what "This" refers to?

As a final note, we reiterate that our research maintains a largely exploratory nature. The size and scope of our work do not allow for generalizations beyond the cases observed. Admittedly, blockchain cultures can vary greatly according to the community observed, as well as from one geographic context to another (especially so if we observe non-Western cultures and scenes). Yet~~,~~ we believe that our study emphasizes the necessity ~~to~~ of ~~engage~~ engaging in further research on the social applications of blockchain, on the evaluation of their implementation and their outcomes, and on the peculiar forms of social organization these actually foster. As it continues to make its way into "~~'~~the social~~'~~,~~"~~ blockchain configures itself to be a very specific kind of platform, ~~that~~ which connects social and economic relations in original ways and ~~which~~ whose larger implications remain to be discovered.

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Competing Interests

The corresponding author confirms on behalf of all authors that there have been no involvements that might raise the question of bias in the work reported or in the conclusions, implications, or opinions stated.

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References

Antonopoulos, A. (2014). Bitcoin Security Model: Trust by Computation. O'Reilly- Radar. Retrieved from http://radar.oreilly.com/2014/02/bitcoin- security-model-trust-by-computation.html (Last accessed ~~25~~ July 25, 2020).

Arvidsson, A. (2020). Capitalism and the Commons. *Theory, Culture & Society*, *37*(2), 3-30.

Arvidsson, A. (2019). *Changemakers: The Industrious Future of the Digital Economy*. London: Polity.

Atzori, M. (2017). Blockchain Technology and Decentralized Governance: Is the State Still Necessary? Journal of Governance and Regulation, 6(1), 45–62. https://doi.org/10.22495/jgr.

Commentato [EO28]: From the information at the beginning of the article.

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Berg, C., Davidson, S., & Potts, J. (2019). *Understanding the blockchain economy: An introduction to institutional cryptoeconomics*. Edward Elgar Publishing.

Bollier, D. (2015). The Blockchain: A Promising New Infrastructure for Online Commons. *News and Perspectives on the Commons*. Available at: http://bollier.org/blog/blockchain-promising-new-infrastructure-online-commons (Last access ~~25~~ July 25, 2020).

Cadwalladr, C., & Graham-Harrison, E. (2018). Revealed: 50 million Facebook profiles harvested for Cambridge Analytica in major data breach. *The Guardian*, *17*, 22.

Casey, M. J., & Vigna, P. (2018). In blockchain we trust. *Technological Review* 121, 10-16.

Catlow, R. (2017). Artists Re: thinking the blockchain: introduction. In R. Catlow, M. Garrett, N. Jones, S. Skinner (eds.), *Artists Re: Thinking the Blockchain*, Liverpool: Liverpool University Press, pp. 21-37.

Coleman, G., & Golub, A. (2008). Hacker practice: Moral genres and the cultural articulation of liberalism. *Anthropological Theory*, 8(3), 255–277.

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

Davidson, S., De Filippi, P., & Potts, J. (2016). *Economics of blockchain*. Available at SSRN: https://ssrn.com/abstract=2744751 or http://dx.doi.org/10.2139/ssrn.2744751.

De Filippi, P. (2018). *Blockchain and the law: The rule of code*. Cambridge, ~~Mass~~MA: Harvard University Press.

De Filippi, P., & Loveluck, B. (2016). The invisible politics of bitcoin: governance crisis of a decentralized infrastructure. *Internet Policy Review*, 5(4).

Codice campo modificato

Faria, I. (2019). Trust, reputation and ambiguous freedoms: financial institutions and subversive libertarians navigating blockchain, markets, and regulation. *Journal of Cultural Economy*, 12(2), 119-132.

Galen, D., Brand, N., Boucherle, L., Davis, R., Do, N., El-Baz, B., ... & Lee, J. (2018). *Blockchain for social impact: moving beyond the hype*. Stanford Graduate School of Business, Center for Social Innovation, in collaboration with RippleWorks. Available at: https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/study-blockchain-impact-moving-beyond-hype_0.pdf (Last accessed ~~25~~ July 25, 2020).

Gandini, A. (2020). Digital labour: an empty signifier?. *Media, Culture & Society*, DOI: 0163443720948018.

Gandini, A. (2019a). Reputation: the fictitious commodity of the sharing economy?. In R. Belk, G. Eckhardt, F. Bardhi (eds.), *Handbook of the Sharing Economy*, Cheltenham: Edward Elgar Publishing, pp. 375-384.

Gandini, A. (2019b). Labour process theory and the gig economy. *Human Relations*, *72*(6), 1039-1056.

Gandini, A. (2016). *The reputation economy: Understanding knowledge work in digital society.* London: Springer.

Gerard, D. (2017). *Attack of the 50 foot blockchain: Bitcoin, blockchain, Ethereum & smart contracts*. David Gerard.

Gillespie, T. (2010). The politics of 'platforms'. *New Media & Society*, 12(3), 347-364.

Golumbia, D. (2016). *The politics of Bitcoin: Software as right-wing extremism.* University of Minnesota Press.

Codice campo modificato

Formattato: Inglese (Stati Uniti)

Formattato: Tipo di carattere: Non Corsivo

Hawlitschek, F., Notheisen, B., & Teubner, T. (2018). The limits of trust-free systems: A literature review on blockchain technology and trust in the sharing economy. *Electronic commerce research and applications*, 29, 50-63.

Herian, R. (2018). *Blockchain and the distributed reproduction of capitalist class power*. In MoneyLab Reader 2: Overcoming the hype, 43-51.

Hileman, G., & Rausch, M. (2017). Global cryptocurrency benchmarking study. Cambridge University. Cambridge Center for Alternative Finance, Cambridge, UK.

Hosp, J. (2019). *Blockchain 2.0 Simply Explained: Far More Than Just Bitcoin*. Independently Published.

Huckle, S., & White, M. (2016). Socialism and the blockchain. *Future Internet*, 8(4).

Husain, S. O., Franklin, A., & Roep, D. (2020). The political imaginaries of blockchain projects: discerning the expressions of an emerging ecosystem. *Sustainability Science*, 1-16.

Jasanoff, S., Kim, S. H., & Sperling, S. (2007). Sociotechnical imaginaries and science and technology policy: a cross-national comparison. NSF Research Project, Harvard University.

Kampakis, S. (2018). Three case studies in tokenomics. *The Journal of The British Blockchain Association*, 1(2), 6325.

Khodyakov, D. (2007). Trust as a process: A three-dimensional approach. *Sociology*, 41(1), 115-132.

Kostakis, V., & Bauwens, M. (2014). Network society and future scenarios for a collaborative economy. London: Springer.

Levy, S. (1984). *Hackers. Heroes of the Computer Revolution*. Penguin Books.

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo

Littler, J. (2018). *Against meritocracy: Culture, power and myths of mobility*. London: Taylor & Francis.

Lotti, L. (2019). The Art of Tokenization: Blockchain Affordances and the Invention of Future Milieus. *Media Theory*, 3(1), 287-320.

Marcus, G. E. (1995). Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography. *Annual Review of Anthropology*, 24(1), 95–117. doi:10.1146/annurev.an.24.100195.000523

Marres, N. (2017). *Digital sociology: The reinvention of social research*. London: Wiley & Sons.

Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. Public Affairs.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. Available at: https://bitcoin.org/bitcoin.pdf (Last accessed ~~25~~ July 25, 2020).

O'Dair, M. (2018). *Distributed creativity: how blockchain technology will transform the creative economy.* London: Springer.

O'Dwyer, R. (2018). Limited edition: Producing artificial scarcity for digital art on the blockchain and its implications for the cultural industries. *Convergence*, 1–21. https://doi.org/10.1177/1354856518795097.

O'Dwyer, R. (2015). The Revolution will (not) be decentralised: Blockchains. *Commons Transition*, 11.

Oliveira, L., Zavolokina, L., Bauer, I., & Schwabe, G. (2018). To token or not to token: Tools for understanding blockchain tokens. *Zurich Open Repository and Archi*ve. Available at: https://www.zora.uzh.ch/id/eprint/157908/1/To%20Token%20or%20not%20to%20Token_%20Tools%20for%20Understanding%20Blockchain%20Toke.pdf (Last accessed ~~25~~ July 25, 2020).

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Corsivo

Codice campo modificato

Codice campo modificato

Codice campo modificato

O'Neil C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy*. New York: Broadway Books.

Ornish, A., Gupta, V., Aella, Buchanan A. (2017). *Luna*. Available at: https://drive.google.com/file/d/1hKPKLORBzsxzJ5w5Ew26bTp5zt38TKwU/view (Last accessed ~~27~~ July 27, 2020).

Pazaitis, A., De Filippi, P., & Kostakis, V. (2017). Blockchain and value systems in the sharing economy: The illustrative case of Backfeed. *Technological Forecasting and Social Change*, 125, 105-115.

Peck, M. (2015). *The Future of the Web Looks a Lot Like the Bitcoin Blockchain.* Available at: https://spectrum.ieee.org/computing/networks/the-future-of-the-web-looks-a-lot-like-bitcoin (Last accessed ~~27~~ July 27, 2020).

Pinch, T. J., & Bijker, W. E. (1984). The Social Construction of Facts and Artifacts: or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other. *Social Studies of Science*, 14(3), 221–232. doi:10.1177/030631284014003004.

Polanyi, K. (1944/2001). *The Great Transformation: The Political and Economic Origins of Our Time.* Boston, MA: Beacon Press.

Potts, J. (2019) *Blockchain and Government.* Data61 'Future of Blockchain' Report, June 2019, Available at SSRN: https://ssrn.com/abstract=3404406 or http://dx.doi.org/10.2139/ssrn.3404406.

Reijers, W., & Coeckelbergh, M. (2018). The blockchain as a narrative technology: Investigating the social ontology and normative configurations of cryptocurrencies. *Philosophy & Technology*, 31(1), 103-130.

Ritchie, J., Lewis, J., & Elam, G. (2003). Designing and selecting samples. In L. Maruster, M. Gijsenberg (eds.), *Qualitative Research Methods*, London: Sage, pp. 77-108.

Codice campo modificato

Formattato: Tipo di carattere: Non Corsivo

Codice campo modificato

Formattato: Tipo di carattere: Non Corsivo

Codice campo modificato

Formattato: Tipo di carattere: Non Corsivo

Rohr, J., & Wright, A. (2018). Blockchain-based token sales, initial coin offerings, and the democratization of public capital markets. *Hastings LJ*, 70, 463.

Rozas, D., Tenorio-Fornés, A., Díaz-Molina, S., & Hassan, S. (2018). When ostrom meets blockchain: Exploring the potentials of blockchain for commons governance. Available at SSRN 3272329.

Shapiro, S. P. (1987). The social control of impersonal trust. American journal of Sociology, 93(3), 623-658.

Swan, M. (2015). *Blockchain: Blueprint for a new economy*. O'Reilly Media, Inc.

Scott, B. (2015). Blockchain technology for reputation scoring of financial actors. *Finance and the Common Good/Bien Commun*, 42/43, 128–139.

Srnicek, N., & Williams, A. (2015). *Inventing the future: Postcapitalism and a world without work*. London: Verso Books.

Tapscott, D., & Tapscott, A. (2016). *Blockchain revolution: how the technology behind bitcoin is changing money, business, and the world.* New York: Penguin.

Van Doorn, N. (2017). Platform labor: on the gendered and racialized exploitation of low-income service work in the 'on-demand' economy. *Information, Communication & Society*, 20(6), 898-914.

Werbach, K. (2018). The blockchain and the new architecture of trust. ~~Mit~~ MIT Press.

Yang, Z., Yang, K., Lei, L., Zheng, K., & Leung, V. C. (2018). Blockchain-based decentralized trust management in vehicular networks. *IEEE Internet of Things Journal*, 6(2), 1495-1505.

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: Profile Books.

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo

Formattato: Tipo di carattere: Non Corsivo