Chapter 12

# Value as Potentiality

## Blockchain and the Age of Institutional Challenges

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### A. Introduction

Value can be understood, analyzed, and created in various ways.[1] In addition to more pragmatic modes of valorization (e.g., rent, profits or a new technical innovation), there are "ontological" processes that can be understood to increase value, which we will refer to here as ontological valorization and progressively unpack. Ontological valorization generally works as *a foundation* for pragmatic valorization. David Graeber has pointed out[2] that value rises out of a system of relations,[3] and this is *the level of ontological valorization*. In this chapter, we explore ontological valorization for possibilities of transformation at this foundational level. We do so in the register of what French philosopher Gilbert Simondon calls *transindividuation*.[4] Already for Simondon, writing in the 1950s, technology was one of the elementary ways of mediating new modes of being, doing and valorization.[5] Today, new technological innovations, for example those connected to artificial intelligence or social media, are considered keys for pragmatic valorization linked to money and ontological valorization linked to social relations. We focus here on one class of technological innovation,

1 C. Tappolet and M. Rossi, 'What is value? Where does it come from? A Philosophical Perspective', in T. Brosch and D. Sander (eds.), *Handbook of Value. Perspectives from Economics, Neuroscience, Philosophy, Psychology, and Sociology* (2016), 3–22.

2 D. Graeber, *Toward An Anthropological Theory of Value. The False Coin of Our Own Dreams* (2001).

3 See, also M. Pasquinelli, 'The Number of the Collective Beast: Value in the Age of the Algorithmic Institutions of Ranking' [Presentation at "New Industries Conference"] (2014), http://matteopasquinelli.com/number-of-the-collective-beast/: "there is never an individual production of value – value is in itself always a collective relation, a collective measure, a collective abstraction preceding any monetary technique".

4 However, it is elementary to point out that what Simondon understands as transindividuation is a more complex and wider conceptualization. Thus, we are here referring to one dimension of transindividuation.

5 G. Simondon, *On the Mode of Existence of Technical Objects* [1958] (2017). Also, for the many theories of sociotechnical change see, e.g., B.K. Sovacool and D.J. Hess, 'Ordering Theories: Typologies and Conceptual Frameworks for Sociotechnical Change', (2017) 47 *Soc. Stud. Sci.* 703.

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namely blockchains, which have occupied an important and controversial place in the landscape of digital innovations since the 2010s.

The chapter explores the possibilities represented by blockchain technologies for both ontological and pragmatic valorization. We will argue and try to show that, even with its present-day limitations and problems, the technology's innovativeness lies in its ability to create a foundation for ontological valorization, though not necessarily in certain practical applications *per se*. The chapter focuses mostly on blockchain technologies that are public and open, that is *permissionless*, as they can be seen, at least in theory, most challenging as regards traditional, global institutional structures in the domains of economics, politics, and law. As blockchain is a technology to organize information and human action in a decentralized, peer-to-peer way without succumbing to any "third parties", private (*permissioned*) chains can be thought of as watering down these ideals. Permissioned models aim primarily to boost the efficiency of private organizations or corporations, producing value in a traditional monetary sense and reinforcing, for example, automatization of global value chains. Even permissionless systems, like Bitcoin, can exacerbate profound problems of the existing global market and monetary system (e.g., accumulation of wealth) – let alone problems related to energy consumption. The computing power that mining calculations require drives their energy use. Bitcoin suffers from large energy consumption due to its "proof-of-work" method (discussed below).[6] There are other consensus mechanisms that strive to provide more energy efficient solutions, like "proof-of-stake" (PoS) and its derivatives.[7]

However, many of the same systems at least have shown that blockchain (as a technical schema) can work even in practice. Bitcoin, even with its obvious flaws, has a dimension of critical and disruptive potential that we observe in an anti-hierarchical organizational structure and ongoing interest in new ideas about money in the discourses around it. New generations of blockchains, especially Ethereum-based, add new functionality to first generation

6 C. Mora et al., 'Bitcoin Emissions Alone Could Push Global Warming Above 2°C', (2018) 8 *Nature Climate Change* 931.

7 Proof-of-stake (PoS) requires admin nodes to provide proof that they are "invested in" the system – that is, they must provide stake of system's cryptocurrency or tokens to work as a validator. The many variations – theorized or in development – of PoS still use, in the end, the PoW method to reach the final consensus, but it is reached through a smaller number of validators and, thus, requires less energy. However, many of these mechanisms have their own problems, like for example, reduced decentralization due to the fact of a select group of validator-admins. See, e.g., Y. Xiao et al., 'A Survey of Distributed Consensus Protocols for Blockchain Networks', (2020) arXiv.org; M. Belotti et al., 'A Vademecum on Blockchain Technologies: When, Which, and How', (2019) 21 *IEEE Communications Surveys & Tutorials* 3796.

architectures such as Bitcoin, smart contracts and non-fungible tokens (NFTs[8]) foremost among those innovations.[9] We hold that these technical schemes can be understood to foster freedom, neutrality, openness, redistribution, and transparency.[10] However, this possibility must be thought of as *potential*, as it only actualizes through concrete practical applications. Thus, we will argue that blockchain technology offers an innovative technical schema which houses potentiality to create new systems of relation that can lead to new valorization.

The rise of cryptofinance in the 2010s has opened a new frontier in the financial market. While many states (e.g., China) and financial institutions still prohibit their citizens or employees from engaging with the crypto economy, other states and financial institutions, such as J.P. Morgan, Morgan Stanley, PayPal, Visa, have either adopted cryptofinance instruments into their business models or have started exploiting some of the underlying technologies in their operations. Whether developments like these signify a mainstreaming of cryptofinance or subversion of its decentralizing promise, to maintain control of money in already-powerful hands, is a key dilemma.[11] While there are many who dismiss blockchain as a hyped fad, other critics note that it deserves serious attention even if its disruptive potential may never materialize.[12]

Global legal structures[13] have been strongly biased in favor of centralized authority structures. International legal regimes have excelled in centralized, exclusionary, and formal devices that operate through "proof", ledgers, and audits; we refer to this as "the archival logic".[14] Institutionalized archival logic has led to the establishment of global financial and power centers that accumulate wealth rather than share it. Through emerging technologies, however, their gatekeeping and auditing functions may be decentralized, distributed, and shared through communities and platforms, which would, in a radical scenario, slow or even reverse uneven accumulation through "the archival logic".[15]

8 NFT = non-fungible tokens display true ownership of an asset on the blockchain. NFTs can hold restricted and limited rights to an asset, allowing the owner exclusivity to a function, art piece, or audio file; they support the ability to digitally verify scarcity and originality and will be used to store and mark value of non-fungibles in music, other art, certifications, IDs, collectibles, domain names (digital "real-estate"), fashion, finance, and insurance. See, e.g., Ivan on Tech, 'Non-Fungible Tokens – Explaining NFTs, ERC-721 and ERC-1155', 2020 (5 November) *academy.ivanontech.com*.

9 J. Ehrenfeld et al., 'Legal Issues Surrounding Blockchain, Cryptocurrency, & Bitcoin', (2019) 20 *Transactions: TENN. J. Bus. L.* 1135; Belotti et al. *supra* note 7.

10 J.J. Bambara and P.R. Allen, *Blockchain. A Practical Guide to Developing Business, Law, and Technology Solutions*, (2018).

11 D.W. Perkins, 'Cryptocurrency: The Economics of Money and Selected Policy Issues', R45427, 2020 (April 09)

12 R. Herian, 'Taking Blockchain Seriously', (2018) 29 *Law Critique* 163; R. Herian, *Regulating Blockchain. Critical Perspectives in Law and Technology*, (2019); Perkins, *supra* note 11.

13 E.g., D. Kennedy, *International Legal Structures*, (1987a).

14 We are utilizing this term to represent institutional centralization of power and money. See, e.g., J. Derrida, 'Archive Fever: A Freudian Impression', (1995) 25 *Diacritics* 9.

15 Derrida, *supra* note 14.

Consider the argument of Alex Williams, who holds that, "[t]o create a new platform, businesses are exhorted to create products which solve key systemic problems, capable of facilitating as wide a variety of services as possible".[16] Especially when a new platform "acts as a foundation for other systems to be constructed upon", they "are capable of generating extraordinarily powerful business dynamics".[17] The ability to work as "a foundation" and, thus, to offer alternative platforms for the conduct of financial operations is one of the ways in which blockchain-based services impact the global economy. Blockchain technologies in general have enabled new actors and new economic logics to emerge, for instance by enrolling independent, yet co-operative node operators and stakeholders.[18]

## B. What is a Blockchain – a Short Summary[19]

"Blockchain is a peer-to-peer decentralised database with a highly original system for organising information and human action".[20] The most well-known blockchain applications are Bitcoin and Ethereum.[21] In recent years, however, the number of blockchain models, their sub-chains and other technological support systems have grown rapidly. Thus, for instance, speed of transactions, electricity requirements, and security solutions multiply and vary. Bitcoin is digital money that does away with third-party intermediary institutions (e.g., banks). Bitcoin's blockchain is a vast decentralized database, a digital ledger, that continuously records network transactions and was the innovation that kicked off the blockchain-based technological era. It is constantly updated with every user, each holding identical copies of it. Bitcoin is the most well-known cryptocurrency, often characterized as the "grand-father" of the crypto economy. Its market capitalization is still above 50 percent of the entire cryptomarket.[22] Bitcoin is classified as permissible in most jurisdictions, although it remains illegal or has been criminalized in others.[23] Yet, as its blockchain technology is

16 A. Williams, 'Control Societies and Platform Logic', (2015) 84–5 *New Formations* 209, at 222.

17 Williams, *supra* note 16, at 221.

18 P. Nadimi et al., 'Practicing Blockchain Law', (2019) 34 *J. Marshall J. Info. Tech. & Privacy L.* 52.

19 The short summary is derived mostly from Bambara and Allen, *supra* note 10; P. De Filippi and A. Wright, *Blockchain and the Law*, (2018); Q. DuPont, *Cryptocurrencies and Blockchains*, (2019a); Herian (2019), *supra* note 12; M. Quiniou, *Blockchain – The Advent of Disintermediation*, (2019); also, J. Rantala, 'Blockchain as a Medium for Transindividual Collective', (2019) 60 *Culture, Theory and Critique* 250.

20 Rantala, *supra* note 19, at 250.

21 S. Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System', (2008); V. Buterin, 'Ethereum White Paper', (2021).

22 It is diminishing rapidly, lately as quickly as 10 percent per month. See e.g., D. Cawrey, 'Market Wrap: Bitcoin in Neutral at $55.5K as Ether Continues Bull Run', (2021) *Coindesk.com*.

23 The legal framework is changing and evolving nationally and internationally; for a map see: www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf.

older and more limited than the many new innovations that keep emerging, its future use cases appear to be growing ever more limited. Bitcoin is moving into a phase in which, due to its brand value, it becomes a value-holder rather than an instrument of exchange or, indeed, driver of innovation, and accordingly is sometimes described as "digital gold". In a sense, however, it is more limited or scarce than gold, because its maximum issue has been programmed to cap at 21 million Bitcoins. This finite quality has arguably been the most important driver of Bitcoin's monetary unit value from a few dollars to tens of thousands per unit in less than 15 years.

The original Bitcoin system and the many new cryptocurrencies require two kinds of actors: currency users, and "miners" along with other systemic support providers. The miners provide computing power for the use of the network to verify transactions. Redundant copies and computing power requirements protect the legitimacy and security of transactions. In the first years of Bitcoin, mining could be done by home computers, but as user numbers have grown and the mining algorithms have become more and more difficult, miners have begun using special equipment, and often belong to "mining pools", that is, services that combine the computational power of different users. Mining, which relies on what is called "proof-of-work" (PoW), is an example of what is called a consensus mechanism.[24] Decentralized blockchain systems do not formally include a singular authority to ensure the system's validity: consensus mechanisms are the only ways to make valid changes in the database or ledger maintained by the blockchain. The technical system itself is the mediating third-party, in place of an institution like a bank.

In some cases, decentralization seems to have a more theoretical rather than practical impact. We can take as an example the case of the bail-out of "The DAO". DAOs are Decentralized Autonomous Organizations, organizations built out of blockchain code, and "The DAO" was an early attempt to demonstrate their potential. Instead, it demonstrated the ineluctable power of the 51 percent attack. In blockchains such as Bitcoin there is a threat that if one person or a group controls more than 50 percent of the computing power provided for the network, they can control the system ("the 51 percent attack") – that is, alter the decentralized ledger or database that the blockchain is supposed to guarantee. The DAO, which was an Ethereum-based system, included code that enabled one or more individuals to siphon off one-third of the system's cryptocurrency. This led to coordination among a group of people who were in the position to stop this act by pooling 51 percent of the computing power behind the blockchain to create a replacement blockchain alongside the original Ethereum chain, thereby rewriting the ledger that the latter was supposed

24 Xiao et al., *supra* note 7.

to have validated.[25] It is estimated that the number of blockchain experts working in the crypto ecosystem does not exceed ten thousand, which inevitably brings oligarchical tenets into the ecosystem regardless of how passionately "the community" aspires for decentralization, distribution, radical democracy, genuine meritocracy, inclusivity, and anonymity/pseudonymity/privacy. Other problems with blockchains include scams and, although rare, hacks, as well as stigmatization for association with money laundering, human trafficking, the drug trade, tax evasion, and international organized crime. Despite these problems, however, giant investment banks and payment services increasingly offer cryptoassets and derivatives; and many central banks are developing digital currencies based on blockchain models.[26]

Ethereum-based blockchains are second-generation chains. Their most important innovation, in addition to offering a platform for more robust consensus mechanisms, was introducing *smart contracts* in which "users can decide (code) the rules for the contract, which are automatically enforced by the blockchain".[27] Updating the idea of the general, open-source blockchain structure of Bitcoin, Ethereum applications include everything from token systems (digital coins) to financial derivatives and stable-value currencies, identity and reputation systems, decentralized file storage or cloud computing, savings e-wallets, commodity (e.g., crop) insurances and on-chain decentralized marketplaces. Such blockchains can automate functions of organizations, by managing economic rights, distributing dividends, allocating profits or losses, and storing property rights.[28] DAO's are based on this sort of functionality, and although the DAO project mentioned above was not successful, DAOs remain vehicles for building transnational communities in cyberspace. Further, the year 2020 saw the expansion of the decentralized finance (DeFi) blockchains, mainly still based on Ethereum technology, and many new blockchains emerged to either compete with or enhance the functionality of Ethereum (e.g., Polkadot, Chainlink, Binance C-DeFi).

C-DeFi ("centralized-decentralized finance") is a kind of hybrid between centralized and decentralized finance, as its name suggests, to avoid a radical shift from central authorities (such as banks) to completely decentralized models in which users interact without any intermediary besides the technology. Binance is founded by Chinese-Canadian Changpeng Zhao (known as

25 This is called "hard fork". The event led also to the creation of Ethereum Classic, which is the original Ethereum chain. See, e.g., Q. DuPont, 'Experiments in Algorithmic Governance: A History and Ethnography of "The DAO", a Failed Decentralized Autonomous Organization', M. Campbell-Verduyn (ed.), *Bitcoin and Beyond: Blockchain, Cryptocurrencies and Global Governance* (2019b).

26 J.-P. Vergne and G. Swain, 'Bitcoin', A. Ledeneva et al. (eds.), *The Global Encyclopaedia of Informality: Understanding Social and Cultural Complexity. Vol. 2.* (2018), 148, at 149–50.

27 Buterin, *supra* note 21.

28 De Filippi and Wright, *supra* note 19. See also, applications in use/progress: www.stateofthedapps.com/rankings/platform/ethereum.

"CZ"), and it has semi-independent exchanges based all around the world, its own cryptocurrency (BNB), and many other ecosystem elements such as project incubators, accelerators, sizeable funding schemes, and C-DeFi instruments.[29] However, Binance represents the accumulation of economic power and is ultimately little different from traditional companies or private financial ecosystems.

Despite developments such as the growth of Binance, the potential of blockchain technology continues to point to financial, economic, and societal changes, even though the new elements currently manifest in a mere one or two percentiles of the global political economy when compared approximately with the turnover of the global financial industry.[30] The potential is harnessed by several projects that seek to grow and implement value, disrupt ownership structures, and broaden the span of digital global commons. For example, the SingularityNET project strives to offer a decentralized network for AI agents on an open access basis.[31] In theory, everyone who participates in SingularityNET will one day gain access to AI technology or become a stakeholder in its development: anyone can add an AI/machine learning service to SingularityNET for use by the network and receive network payment tokens in exchange.

The disruptive potential of blockchain lies in its ability to work as a platform or protocol to decentralize human organization. Hybrids such as Binance's C-DeFi invite criticism for counteracting the drive for alternative finance, but blockchains do not – in their open, public form – provide any hidden centralized system in addition to the technology itself. This, of course, can be questioned since no technology works independently from any human intervention or maintenance. Yet, at their "truest", disruptive blockchain systems go beyond distributed models which preserve the original connection to central authority as a final decision-maker.[32] At this level, we are talking

29 S. Philippe and V. Wachter, 'Decentralized Finance, What Do You Need to Know?', 2019 (December 9); also, Bambara and Allen, *supra* note 10.

30 A rough estimate (or figure) based on the comparison of the crypto-market and the traditional financial market. This is not intended as an economic calculation but a heuristic figure.

31 'SingularityNET White Paper 2.0', (2019). E.g., a text-to-speech AI and an Italian-to-English translation AI are placed on the SingularityNET (digital network), and the whole network becomes capable of using Italian text to produce English speech.

32 It seems that historically, for example, in administrative sciences and in organizational theory, "decentralized" has meant a way of distributing some central power (e.g., a state) into smaller units (like municipalities) which have enjoyed autonomy, while the central power had a final say on the decisions. This, at least partly, *might be* due to the fact of limited technical solutions available. See, e.g., R. Common et al., *Managing Public Services. Competition and Decentralization*, (1993); K. Manfred and K.W. Deutsch, *Decentralization. Sketches Toward a Rational Theory*, (1980); J. Manor, *The Political Economy of Democratic Decentralization*, (1999); P. Oxhorn, 'Unraveling the Puzzle of Decentralization', P. Oxhorn et al. (eds.), *Decentralization, Democratic Governance, and Civil Society in Comparative Perspective – Africa, Asia, and Latin America*, (2004), 3. Only at the end of the 20th

again about the possibility of ontological valorization, which can be elaborated through the theories of French philosopher Gilbert Simondon, and especially through his concept of transindividuation.

## C. Blockchain and Transindividuation[33]

The term "transindividuation" is connected to Simondon's idea of individuation, which is a name for the elementary processes that form individual entities within the heterogeneous matter that we know as reality. Without going into detail, these processes start from the material or physical level and move all the way to encompass human thinking and the processes of technical objects. Transindividuation is also a form or mode of individuation, that is, one that connects an individual to psychic *and* collective domains. Humans are individuated, that is, formed through physical and biological processes, and they are also subject to individuali*z*ation, that is, *psychic-collective* individuation. However, it is worth noting that these different levels of individuation are, as it is quite evident, happening at the same time: an individual is the outcome of various individuations occurring simultaneously and interconnecting and intertwining. In general terms, all living beings, including humans, constantly continue the process of their individuation(s). According to Simondon, this means that they are *metastable*, neither stable nor unstable, products of heterogeneous forces and potentials which exist in a pre-individual domain. Simondon points out that quantum mechanics offer one way to conceptualize this pre-individual domain.[34]

Thus, an individual is always a system as a process, it is an individual-milieu couple: it is never abstracted out of its milieu and its relations. In addition, it is an open system, that is, it is always grasped only as a phase of individuation, in its becoming and not as a "whole individual" in any real terms. Living beings, especially, "carry with them" as "unstructured background" unindividuated reality, the pre-individual, that houses potentials ready to be individuated. In the light of potentials, one can say that individuation in all its forms is a way of resolving tensions created by potentiality, which can be posed, for example,

century, modern information and digital technology have provided tools to create platforms that actualize decentralization more precisely. See, even more recent examples in, e.g., Y. Hui and H. Halpin, 'Collective Individuation: The Future of the Social Web', G. Lovink and M. Rasch (eds.), *Unlike Us Reader. Social Media Monopolies and Their Alternatives*, (2013), 103.

33 The following summary is based on G. Simondon, *Individuation in Light of Notions of Form and Information*, [1958] (2020); Simondon, *supra* note 5; also, Rantala, *supra* note 19, as well as A. Bardin, *Epistemology and Political Philosophy in Gilbert Simondon. Individuation, Technics, Social Systems*, (2015); M. Combes, *Gilbert Simondon and the Philosophy of the Transindividual*, (2013); Y. Hui, *On the Existence of Digital Objects*, (2016).

34 See, e.g., Simondon, *supra* note 33, at 6 and 368.

by a milieu, other individuals, or an individual. However, individuals also face problems *that they cannot overcome by themselves*.

In transindividuation, which is a continuous ongoing process, human individuals "engaged in a transformative relation reunite the pre-individual shares in them".[35] These shares are potentials for new relations and transformations. In a sense, individuals provide their own pre-individual potentials for the use of others. But transindividual processes "are neither independent of, nor entirely determined by, individual agency".[36] In transindividuation, individuals operate as elements of a system, a transindividual collective, in which they "discover a structure and functional organization that integrates and resolves the problematic [of] exceeding of their own capacity".[37] As an example, we can think of the Internet as a complex "solution" to problems of global communication that enhance individual and collective power.[38] Simondon also differentiates "inter-individuality" from transindividuality. In short, inter-individuality is a kind of simple collectivity (e.g., rigid economic relations) which *might offer resolution to certain individual problems but does not create more general transindividuation through new resolutions* – that is, only certain individuals can achieve resolution of tensions/problematics.[39]

Simondon considers such technical objects as media (and symbols) for the transindividual. As an invention, "the technical object is crystallisation of human activity (or gesture)", and the "crystallisation" remains in the object after its construction: "The object is created through an act of thinking or invention that transfers a thinking process as an analogy from one structure to another".[40] Technical objects are key sites of transindividuality. Blockchain, in this context, is a protocol – a zone of participation – through which individuals can share their potential and continue the initial individuation.[41] In other words, transindividuality can be connected to decentralization. In transindividuation

35 Rantala, *supra* note 19, at 253.

36 Rantala, *supra* note 19, at 254.

37 Ibid; also, Simondon, *supra* note 33, at 339.

38 Simondon writes that transindividuality "supposes a veritable operation of individuation on the basis of a pre-individual reality that is associated with individuals and is able to constitute a new problematic which has its own metastability" (Simondon, *supra* note 33, at 9).

39 As Marco Deseriis summarizes, "[t]ransindividuation is nothing but a transversal concatenation or a transductive concatenation whereby group individuals activate their possible other individuations in the process of relating to others" (M. Deseriis, 'The Politics of Condividuality', (2018) 3 *Traversal Texts*).

40 Rantala, *supra* note 19, at 254; see also, Bardin, *supra* note 33, at 58; Simondon, *supra* note 5, at 252–3.

41 E.g., M. Swan, 'Digital Simondon: The Collective Individuation of Man and Machine', (2015) 6 *Platform: Journal of Media and Communication* 46, at 52–3; Rantala, *supra* note 19, at 260; Simondon, *supra* note 32, at 330. David Weinbaum and Viktoras Veitas point out that "a distributed population of interacting heterogeneous agents achieves progressively higher levels of coordination" (D. Weinbaum and V. Veitas, 'Open Ended Intelligence: The Individuation of Intelligent Agents', (2017) 29 *Journal of Experimental & Theoretical Artificial Intelligence* 371).

the field of pre-individual potentials is open, each individual with potentialities connected to others. The blockchain protocol can provide a platform for this decentralized organization and mediate human activity, information, and even affects. Differences are preserved but the collective works as something more than the sum of its parts – the different potentialities are "pooled together" providing new ways of organizing, thinking, and acting. In addition, "blockchain is a model […] that leads to further individuations by freely organising individuals through constant re-invention of new digital spaces and platforms, that is, practical blockchain applications".[42]

In the case of blockchain technology, decentralization is one of its essential potentialities. The innovation of the technology comes from overcoming the traditional idea of centralized or *semi*-decentralized systems, such as markets. For example, in the case of traditional monies (i.e., fiat monies), it is usually a central figure (e.g., central bank or a state) that has control over the currency. In the world of semi-decentralized markets business organizations are controlling the market and private banks control money flows. In both cases, there remain power centers.[43] The crypto economy, on the other hand, strives, at least theoretically, to create possibilities for peer-to-peer modes of being in which individuals themselves can create the conditions for the economy and/or markets. In addition to the DEX services, so-called initial coin offerings (ICOs), public offerings of cryptocurrency or tokens for purchase and production, provide an alternative to traditional initial public offerings (IPOs), thereby challenging power relations.

Therefore, blockchain technology can challenge, in theory and even in practice, traditional institutions. The kinds of complex social, economic, and even cultural changes that may be involved, however, are not well understood. But there are some notable possibilities. For one, it has been pointed out that the peer-to-peer payment system of blockchain could help hundreds of millions of non-banked people in the developing world.[44] For another, Claus Dierksmeier and Peter Steel point out that cryptocurrencies and other new peer-to-peer payment systems enable, especially for immigrants, easier and cheaper money

42 Rantala, *supra* note 19, at 260. Re-invention is required, otherwise transindividuality is not preserved (i.e., the collective would reach a stable phase not resuming metastability and be reduced to inter-individuality). Also, on decentralization versus atomistic group individualism (as offered by the likes of Facebook and Twitter), see e.g., Hui and Halpin, *supra* note 32.

43 See, e.g., L. Winner, 'Decentralization Clarified', *The Whale and The Reactor. A Search for Limits in an Age of High Technology*, (1986), 85.

44 D. Tapscott and A. Tapscott, *Blockchain Revolution. How the Technology Behind Bitcoin is Changing Money, Business, and the World*, (2016); M. Swan, 'Anticipating the Economic Benefits of Blockchain', (2017) 7 *Technology Innovation Management Review*, 6.; also, BBC, 'Cryptocurrencies: Why Nigeria is a Global Leader in Bitcoin Trade', (2021); S. Stonberg, 'Cryptocurrencies are Democratising the Financial World', 2021 (22 January) *The Davos Agenda*. This idea is based on thoughts of economist Hernando De Soto to whom poor people have capital, but it is just not organized properly – that is, they have not mortgaged it which could, in turn, create growth.

transfers to their home countries than Western Union.[45] These practical solutions already provide the foundation for transindividuality to rise in the form of new possibilities, potentialities, and as an alternative to traditional monetary institutions. However, it is worth noting that transindividuation, which is always an ongoing process and one that is always executed by living beings (e.g., humans) requires complex technical networks and environments.[46]

The second-generation chains, for example those based on Ethereum – especially in their open-source and permissionless/public form – generate potentiality as tools to create new platforms and interactions among them. Valorization, whether ontological or more practical, derives from blockchain's possibility *as a technical schema*, and not from a certain individual chain, to organize and secure information, provide transparent logistical chains (e.g., know-your-customer, proof of origin/authorship), empower people to engage with global markets, enable security and anonymity, produce new services like financial services for cryptos, non-fungible tokens for art and collectibles, IPFS and in general smart contracts for peer-to-peer level interaction.

## D. Potential for Institutional Change

In terms of innovation, institutions are particularly problematic because their very concept is characterized through persistence, permanence, and establishment[47] – their *raison d'etre* is to immunize against radical renewal. While European states keep promoting new institutions, such as, for instance, a world environmental organization, and remain obstinately hopeful for others such as the ailing international criminal institutions,[48] many other states and constituencies are more doubtful. As the 2018 report of the International Panel of Social Progress (IPSP) finds, international institutions are increasingly problematic because:

> (A) handful of countries in the Global North dominate intergovernmental organizations (…) (I)nternational and global governance operates through

45 C. Dierksmeier and P. Seele, 'Cryptocurrencies and Business Ethics', (2016) VIII *Journal of Business Ethics*.

46 It could be pointed out that, in the end, *ontological*, *transindividual valorization* is the possibility of sustaining dynamic difference (or "disparation" to use Simondon's term) in a platform (technology) (we are following here Deseriis, *supra* note 39).

47 See e.g., www.finedictionary.com/institution.html.

48 For the many failings of the international criminal courts, see a series of blog posts by Guilfoyle ('Reforming the International Criminal Court: Is it time for Assembly of the States Parties to be the Adults in the Room?', 2019 (8 May); 'The International Criminal Court Independent Expert Review: Questions of Trust and Tenure', 2020a (20 November); 'The International Criminal Court Independent Expert Review Questions of Accountability and Culture', 2020b (7 October)) reflecting on the special reports and critiques towards the ICC and other courts.

> varieties of governance technologies (that) have few mechanisms for tapping into creativity and tacit knowledge at local levels and (…) implicitly vest expertise and normative authority in the Global North and centers of geopolitics or finance. In doing so, they mute the voices of many domestic actors.[49]

The authority of international institutions embeds a dilemma because liberal democratic legitimation would seem in conflict with the accumulation and centralization of power. Indeed, liberal democracies seem to keep such contradictions in relative balance, but when the balance fails, institutional practices seem but a machinery to accumulate authority in conservative sites and to thwart the concerns of the underprivileged. To acquire a voice in an international institution requires great resources and is subject to complicated processes of representation and institutional-administrative mechanisms that, in turn, require expertise. The accomplishments of international institutions do not leverage global justice and fairness against structural problems and systemic failures – inequality, poverty-related disease, conflict cycles, failures of development, the multiplication of environmental catastrophes.[50] Institutions – whether understood as organizations (such as the UN) or as social institutions (such as law) – are conditioned by a closed and centrally kept ledger (following the archival logic, mentioned earlier). Their authority is based on continuous accumulation of the relevant data generated on the conditions and criteria set by the powerful actors of the Global North, which supply the terms for the narratives, documentations and dates that control the episteme – including memory, expert knowledge, law, and even the avenues of relevant resistance. To reach beyond the institutions will thus seem "irrelevant" or "simply mad", as Hilary Charlesworth once put it regarding feminist resistances.[51] However, demands for systematic change are made. As the IPSP underlines in their "manifesto":

> (t)he key drivers of progress will involve reforming all institutions in all spheres in order to better distribute the resources, power, status and knowledge (…) Moreover, this will not happen by making more 'progressive' parties come to government but will involve grass-root initiatives and changes in the governance of many organizations, in particular and

49 International Panel on Social Progress [IPSP], 'Chapter 11: International Organizations and Technologies of Governance', *Rethinking Society for the 21st Century*, (2018).

50 E.g., O. Korhonen, 'Onko kansainvälinen institutionalisaatio aikansa päässä?' ['Is International Institutionalisation at the End of its Road?'], (2017) 3 *Tieteessä Tapahtuu* 4; also, D. Kennedy, 'The Move to Institutions', (1987b) 8 *Cardozo Law Review* 841; IPSP, *supra* note 49.

51 H. Charlesworth, 'Feminist Methods in International Law', (1999) 93 *The American Journal of International Law* 379.

> crucially within the key economic institutions at all levels, from the small business to the international organizations.[52]

There is good reason to avoid scenarios invoking technological development as the savior or even a radical game-changer. The emerging, allegedly disruptive, technologies including blockchain ecosystems may be seen as amenable to capture by the existing private and public powers, like any other social, economic, or technological innovation.[53] Fleurbaey et al. warn that "when the internet was introduced (…) it was greeted as an emancipatory technology which held the promise of being a strong equalizer"; however, we now see it as "hostage to bubbles [in which] people live, fake news and the celebration of hate crimes".[54] The promise of the Internet has faded, and it has left us with fragmentation and the "reinforcing [of] the polarizing tendencies that exist in society today" and "[n]ewly emergent technologies usually trigger many more choices as to who will appropriate them, how they will actually be used and by whom and which of the different possible alignments will actually shape their further trajectories".[55] Thus, "the relationship between the social and the technological [consists] of mutually interdependent and variable processes of co-production or co-evolution".[56] This hazard mirrors, at least partly, Simondon's distinction between mere inter-individuality and transindividuality. The stabilization of institutions to the point of rigidity corresponds with inter-individuality, whereas transindividuation represents emancipatory change.

As transindividuation and ontological valorization are something carried, in the end, by humans, new technologies can only have effect as a medium if they are utilized as open systems that openly house potentialities. Traditional, archival forms of institutions strive towards closed systems. However, for transindividuation to occur as an ongoing process requires openness *and* decentralization-like organization to guarantee pre-individual potentials to connect up with the community as a whole and each individual member of it. The closed or centralized form would subordinate the plurality of decentralization into a system formed out of rigid inter-individual relations and, thus, block transindividuation.

The techno-positive view of blockchain ecosystems harks to decentralized institutional solutions, Internet-facilitated co-production, and how they challenge traditional pricing, property and corporate structures of the market and financial ecosystems.[57] Liberal distinctions of profit/non-profit, public/private,

52 M. Fleurbaey et al., *A Manifesto for Social Progress, Ideas for a Better Society*, (2018), at 8.

53 Ibid.

54 Ibid, at 47–9.

55 Ibid.

56 Ibid, at 39.

57 Y. Benkler, *The Wealth of Networks. How Social Production Transforms Markets and Freedom*, (2006); S. Davidson et al., 'Blockchains and Economic Institutions of Capitalism', (2017) 14 *J. Inst. Econ.*; S.

home/work that have long been in decline are coming into new focus.[58] The blockchain enables renewed ideas about the relationship between the individual and society, production and product, value and valuation, new approaches to the protection of privacy, perceptions of the need to decentralize power, support for spontaneous organization as well as distribution of agency and power more widely.[59] Those who seek to harness the disruptive and transformative value of the sociotechnical changes made possible by blockchain, however, need to focus on what is inscribed in the technological algorithm and its authorization. Social creativity, self-correction, and a need to fully understand the global techno-economic system would have to be foregrounded. Thus, the inequality-perpetuating axioms of centralized ledgers of authority, whether public or private institutions, must be questioned. It is envisaged that "productive firms of various sorts (corporations, cooperatives, social enterprises, benefit corporations, sharing platforms…) can jointly evolve and occupy different niches in the economy and the labor market" to rupture the traditional logic of the system".[60]

## E. Political Economy of the People on Blockchain? – The Case of SEEDS

For an example of the emancipatory, disruptive goals pursued in a blockchain project, we can consider the SEEDS project. The project, subtitled as a "people's economy", has its own token or currency, which is also called SEEDS. The self-stated project goal is to "overcome planetary threats and inequality".[61] The project is used here to illustrate recurring themes associated with blockchain initiatives that aspire to create an ecosystem rather than just another digital currency. Some ideological tropes that we observe in the discourse include: (1) the present global economy with its institutions, including its law, governance and the state governments, cannot be expected to solve the life-threatening problems and injustices of the global political economy or ecosystem; they are deemed minimally useful or outright harmful; (2) change must come from the bottom-up with concrete hands-on, immediately applicable solutions that do not necessitate international negotiations or agreements; (3) ecological sustainability must be prioritized; (4) dependencies on traditional monies must be radically transformed; new kinds of funds must be invented; and (5) transformation necessitates ideological, not necessarily traditionally political, change.

Sheckelford and S. Myers, 'Block-by-Block – Leveraging the Power of the Blockchain Technology to Build Trust and Promote Cyber Peace', (2017) 19 *Yale J. L. & Tech*. 334.

58 D. Kennedy, 'Stages of the Decline of the Public/Private Distinction', (1982) 130 *University Pennsylvania Law Rev*. 1349.

59 Quinou, *supra* note 19; Vergne and Swain, *supra* note 26, at 148.

60 IPSP, *supra* note 49.

61 SEEDS, *Constitution & Gameplay*, (2019).

In the following, we shall quote extensively from the SEEDS constitution – that is, the organization's "white paper" or founding document – to illustrate how the above features and tenets relating to blockchain technology, transformation of money, global economy, grassroots movements, humaneness or human ethics are speculatively knit together in a blockchain project.[62]

In the draft constitution it says that SEEDS exists to "create a healthier society by subsidizing the transition to regenerative agriculture, providing grants for regenerative projects and aligning business incentives towards regeneration", and, thus, serving "as the foundation of a frictionless more rewarding peer-to-peer local food system".[63] They continue that they aim to "reduce the cost of healthy food while increasing the nutritional density, thus enabling more people to improve their health". Finally, they strive to provide "creation of the peer-to-peer and sharing economies" by fostering "equality in our monetary system, creating a currency that rewards use and equitably distributes the benefits of money creation; facilitate more equal opportunity (freedom) with the capacity to meet their needs, by rewarding not just financial commitments, but a diversity of contributions" (*sic*). In the spirit of transindividuation they continue by underlining cooperation before "healthy competition". This leads to striving for "governance and trade that by design to benefit [*sic*] the whole of human and all life from a place of earth care, people care and fair share". Thus, we should "reclaim our roles as Stewards and caretakers of Earth".[64]

SEEDS' fundamental idea can be read as to create a better (transindividual) foundation for ontological valorization. The draft constitution approaches this by listing a number of methods for reaching such goals:

> crowd-source idea development, deployment and funding; provide communities with funding to create projects they care about and have a direct voice in how and where to direct collective wealth; finance the regeneration of Earth through direct grants for regenerative projects and interest free loans for regenerative enterprise.[65]

In this aspirational framework, the blockchain is supposed to "automate the evaluation and assignment of Rights according to the software contracts (aka smart contracts) created and entered into with mutual consent of various Members".[66] Blockchain is, thus, envisioned here to organize rights between members and preserve decentralized communities. In addition, SEEDS

62 The project has established ties with states such as Liechtenstein and Sweden over various forms of cooperation.

63 SEEDS, *supra* note 61.

64 Ibid.

65 Ibid.

66 Ibid.

underlines that the possible flaws of software development will be patched up with "processes for community governance" (e.g., arbitration, conciliation, and voting).[67]

For the SEEDS project, the code is not the law, but "the Constitution is". The constitution describes its implementation (code and design) as "game mechanics". The game is not supposed to be "played" with an "us" versus "them" mentality, instead, the game is supposed to oppose "humanity and the planet" against "the systems we've inherited".[68] This is because "[n]o human alive today designed the foundations to the game the majority of humans are born into". We must, according to SEEDS, "co-create new games for humanity to play that better serve life" and that foster "new financial, economic, and governmental […] global cooperation" for creating "regenerative culture, […] healthier local food systems, more equitably distributive value to people, give people more voice, and raise the collective quality of life, of not only humans but all life on our planet".[69]

The key element for achieving in practice this cultivation of transindividuality and, thus, ontological valorization is through concrete blockchain technology. As the project underlines openness and equality, they base their system on the EOS.IO blockchain which strives to offer fee-free transactions and rewards for completed transactions. In addition, the EOS.IO system uses the PoS mechanism, which is, as pointed out earlier, more energy efficient than PoW.[70] Freedom from transaction fees is seen by SEEDS as a way of providing "a fair share of the economic surplus from the activity people generate in their economy". The idea is that today "the surplus from the people's economic activity concentrates at the top of our economies, disproportionately rewarding a handful of people". The project "aims to make that model obsolete by better distributing the value to the people who create it". This is achieved by establishing the SEEDS token, which "is owned by the people that comprise it and members receive and direct economic surpluses as the economy grows". Thus, the system "provides direct compensation for […] contributions to the economy".[71]

We use the SEEDS constitution as an example to describe aims that would support a new *possibility of transindividuation*. This is actualized through a twofold movement of ontological valorization: as a practical technical protocol (blockchain system) SEEDS may create conditions for realizing certain ideological ideals, like equal distribution of surplus. At the same time, as a technical innovation, it may enhance those ideals by showing paths to even more

67 Ibid.
68 Ibid.
69 Ibid.
70 See also, EOSIO, White Paper v.2, (2018).
71 SEEDS, *supra* note 61.

profound change, that is, for example, towards a post-capitalist economy. The practical realization is upheld by a coded technical system, which is not controlled by one party, and that can be further updated through a voting process.

In projects like SEEDS there is a real possibility for challenging the centrality of money and government, the logic of demand and supply, and the central control of institutional activity. However – and as hinted at earlier – cryptocurrencies easily become commodities themselves, that is, financial instruments that are "ripe for speculation".[72] Thus, they might contribute to the same problems – like the accumulation of wealth – as traditional economic institutions. This is especially true when the economic activity in its full and complex real-world phenomenon is reduced to mere and rigid transactions or the execution of smart contracts (inter-individual relations)[73] – which is sometimes the case especially with those blockchain systems that have only a token or a crypto to offer, and not a complex economic environment. On the one hand, even simple systems (e.g., Bitcoin) can open a path or discussion which can lead to further realization of the possibilities of technical schematics of blockchain. This is already a form of transindividuation – or a phase of transindividuation in progress – and can lead to ontological valorization (e.g., realization of new forms of thinking and actualization of economic activity). On the other hand, these systems can easily collapse into the old institutions and their modes of action. In addition, decentralization, a key element for the foundation of transindividuality and ontological valorization, can be decreased or overcome through various ways (as for instance in the DAO case, mentioned earlier). For example, the design and coding of the system is usually done by a group of people, and not the users themselves, creating a possible bottleneck of centralization. This can be overcome by providing open-source code and, as envisioned for SEEDS, the option to update the system through user voting. Also, investing in an ICO usually requires traditional currencies, and if the process is not controlled by any party (or mechanism) those who already have money (and thus power) can have great influence on the systems. On the other hand, if it is controlled by a party, it is not "fully" decentralized – and in the case of a controlling mechanism, how would we design that mechanism? Even the open-source foundation is not without its problems: even if the code can be seen, it must also be understood as must be the functioning of the system. In blockchain systems, the possible updating, that is, for example in SEEDS, the actualization of rule and system changes voted on by the users, are usually done by a group of programmers. Of course, this can be implemented in the system by enabling the voting process to execute smart contracts that change the rules automatically. However, if more profound changes to the code are

72 B. Massumi, *99 Theses on the Revaluation of Value. A Postcapitalist Manifesto*, (2018), at 21.
73 Ibid., at 110.

required, the blockchain database must be updated by people with certain skills in programming – or at least they must code the changes which then will be voted on by the users.

## F. Conclusions: Value in Institutional Renewal?

Decentralization through blockchain systems is a real, practical possibility. Bitcoin, even with its obvious flaws, is an example of a working blockchain that cultivates peer-to-peer-based decentralization globally. Bitcoin can also be seen as a point in the history of blockchain technologies that is overcome, for instance with updates from Ethereum-based blockchains, such as smart contracts and PoS. The irony of Bitcoin is that it is immutable: it is a closed system that started with a revolutionary bang and then moved to execute the same old functions of capitalism as many other systems before and after. The "true" ontological valorization of Bitcoin can probably be traced to the fact that the system was designed as an open source. This led to the beginning of the crypto economy, new systems and new technologies.

However, the emancipatory solutions of the blockchain technology and ecosystems remain occupations of a periphery[74] – as with other alternative market movements, like the Nigerian *esusu* movement[75] – while the profit of blockchain technologies is harnessed to contribute to giants and monopolies of the network society, such as Google or Facebook, Visa, PayPal, Alibaba, J.P. Morgan, or to boost the efficiency of the ledgers of the global financial and banking industry.[76] Even permissionless/public systems have created their own financial oligarchies: "[i]n Bitcoin the top 4 mining pools control over 53% of the hashing power, whereas in Ethereum the top 3 mining pools control over 61% of the hashing power".[77] This does not yet mean that they can utilize the previously mentioned 51 percent attack, which would require that all the pools *and* their users would agree on the attack. Some of the pools, however, are

74 Vergne and Swain, *supra* note 26, at 151.

75 "*Esusu* describes traditional forms of cooperation in African societies whereby groups of individuals contribute to informal savings and credit associations for their mutual benefit. These associations are found mainly in agricultural production and credit financing, and they substitute for and complement modern cooperative institutions and formal financial systems". E. Osabuohien and O. Ola-David, 'Esusu (Nigeria)', A. Ledeneva et al. (eds.), *The Global Encyclopaedia of Informality: Understanding Social and Cultural Complexity. Vol. 2.*, (2018) 66, at 66 and passim.

76 The flagship blockchain and crypto-currency company in the US, Ripple Labs, who partnered with Bank of America and Banco Santander, has been caught by the SEC for misrepresenting its token (XRP) as currency when, under US law even if not in other states, it qualifies as a security. In addition, the SEC has charged its top executives for fraud and price manipulation in late 2020, although many believe that a settlement is in the interests of all. D. Fuke and J. He, 'Causing a Ripple: SEC Files Lawsuit Alleging Unregistered Offering of XRP', (2021) *Lexology*.

77 A.R. Sai et al., 'Taxonomy of Centralization in Public Blockchain Systems: A Systematic Literature Review', (2021) 58 *Information Processing and Management* 102584.

owned and led by companies and do not have individual users, which increases the risk of malicious behavior.

The "transindividual" power of blockchain lies in its ability to work as a technical and operational schema that is a resolution to practical difficulties of decentralized organization. This enables ontological valorization as the schema can be implemented in various ways for various purposes. That is, the blockchain, as a schema, does not offer any precise application or service, but a schematic foundation which can be implemented in numerous ways. Ontological valorization *already happens at this level, as an understanding of possibility – as a potentiality*. It is a foundation for practical (e.g., economic) forms of value – and a foundation for realizing the new possibilities of value creation. To put it another way, blockchain as an operational schema for decentralized organization *already manifests ontological valorization through the fact that it opens a horizon of possibility*. The difficulty lies in the question, how best to realize this horizon? How can we individuate – and transindividuate – further and not reduce all this potentiality to mere inter-individual relations? By creating non-hierarchical organizations through which humans can organize on a peer-to-peer basis? Or by creating decentralized autonomous organizations (DAOs), which in theory could even own "themselves", alongside humans to take up all the rudimentary tasks of handling mundane tasks of organizations? The possibilities of blockchain, especially as a non-hierarchical organizational tool, stand in opposition to the traditional global institutional plane, which cultivates a centralized and rigid institutional model.

Regulatory interventions, bans or licenses by states and international institutions add their own contribution to the "mutually interdependent and variable processes of co-production or co-evolution"[78] including technology and society. It is not easy to come up with radically new imaginaries since they must transcend the archival logic of the institutions of power, including liberal law concepts and categories. It is telling that government agencies and courts in the US are still mainly relying on the 1934 Howie Test[79] when attempting to regulate new cryptoassets and associated ecosystems. The test strives to prove with four points if a certain asset is a security. To be secure, "it should involve an investment of money, operate with a profit expectation, be tied to a common enterprise, and the profits, in question, should be generated by a third party".[80] The test seems dated, tacitly subscribing to conservative forms of law and institutions. Institutional models based on "archival logics" will not overcome themselves. As much as the rise of the cryptomarket has been branded "madness" and a dangerous "folly", it draws motivation from challenging "the

78 Fleurbaey et al., *supra* note 52, at 39.

79 328 U.S. 293.

80 A. Athawasya, 'In the Era of Bitcoin, What is the Relevance of Howey Test?', (2019) *AMB Crypto*.

system".[81] As the IPSP said, "we face the paradoxical situation that a globally interconnected world which has reached the highest level of technological development in history is lagging in its institutional capacity to adequately deal with the unprecedented challenges that confront it".[82] Technologies like blockchain, especially as a technical schema for new value productions, can be one key foundation for confronting these challenges.

81 See, e.g., E. Graffeo, 'Bitcoin is in a "Massive Bubble" and Investors don't Understand how its Supply Works, says Economist David Rosenberg', (2020) *Business Insider.*

82 Fleurbaey et al., *supra* note 52, at 38–9.