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Augmented Law: Formalism in Blockchain

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Abstract

The relationship between law and code has been widely debated and scholarship exploring the regulatory capacities of code itself, is wrestling with the conceptual questions posed by the increased relevance of digital governance. Blockchain technology, with its decentralised automated rule application and enforcement, is discussed as particularly potent techno-legal infrastructure. Automation and the idea of an unambiguous language inscribed in code, promise not only the potential to replace law, but to effectively enhance law by offering an augmented ordering technology. In response to the ambitions of disruption and displacement, this paper explores the legalism of blockchain in relation to a particular stream of legal thinking: hyper-formalism, a commitment to a renewed and reinforced version of formalism. We trace this development through the codification of law into blockchain protocols (code-ified law), the transition towards self-executing legal mechanisms facilitated by smart contracts (automated law) and the expansion of legal paradigms through the integration of blockchain's capabilities (augmented law). A strong will theory coupled with automated rule application makes blockchain the pinnacle of (hyper-) formalist legal thought, as such, it runs the risk of combining the most exclusionary aspects of formalism based on representational demands, with a perfect transactional infrastructure driven by a market-logic. We conclude with a brief sketch of critical legal approaches that respond to these tendencies.

Keywords: legal formalism, blockchain, hyperformalism, translegalism, posthumanism, legal theory

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Introduction

Peter Thiel Says, 'Crypto Is Libertarian, A.I. Is Communist.' Not shy to draw on equally grand proclamations, Hofmann responds by summoning another dichotomy: 'Cryptocurrencies are "anarchy" and artificial intelligence is "the rule of law." '[1] In her report on a debate hosted at Stanford University's Hoover Institute in February 2018 between Paypal co-founder Peter Thiel and LinkedIn founder Reid Hofmann, Sonya Mann, reporter for the American business magazine Inc. asks 'What the Heck Does That Mean?'. In the article she juxtaposes the most provocative quotes of the discussants and thereby provides a glimpse into the far-reaching ambitions and assumed expertise of tech billionaires and the larger societal implications of technological innovation.

Without affording too much attention to the statements as such, questions about the ordering capacities of emerging technologies are serious. Can technology be libertarian or communist? Can it *be* the rule of law? Can it *beat* the rule of law? How do different technologies relate and renew long-standing ideas in political philosophy and law? And where does this leave the repertoire of critical legal responses? Scholarship in the field has grown exponentially in the past couple of years grappling with the question of how to best relate the terms (through 'and' or through a hyphen 'techno-legal' or without hyphen 'technolegal').[2]

Within legal scholarship, the work on blockchain technology has, broadly speaking, taken two different directions. The first direction inquires into the regulation of blockchain technology and its relationship to established legal regimes.[3] The second direction is interested in regulation through blockchain and the normative effects that might be understood as constraining behaviour or as a form of law.[4] In this contribution, we are interested in the latter understanding that has also been described as 'smart-law', 'cryptographic law' or 'code-driven law'.[5] 'Code-driven law', a notion coined by Mireille Hildebrandt, is understood in juxtaposition to 'data-driven law'[6] and is often approached through the provocative slogan 'code is law' attributed to Lawrence Lessig.[7] Building on Lessig's work, De Filippi and Hasan trace the relationship between code and law through four phases, each bringing code ever closer to law.[8] The final phase, the 'code-ification' of law, suggests that legal rules are now absorbed into the mechanical workings of blockchain technology.[9] Smart contracts, DAOs (Decentralised Autonomous Organisations), as well as NFTs (Non-Fungible Tokens) are then considered iterations of such a functionally equivalent technology in a 'crypto-law system'.[10] Reactions to the spectre of the 'code is law' provocation and the digitalisation of law, more generally range from celebrating the rationalism and efficiency of the translation of law into codified forms, to reproaching such propositions as reductionism of law that negate the most important qualities of law such as ambiguity, contextuality and flexibility.

[1] Sonya Mann, 'Peter Thiel Says, "Crypto Is Libertarian, A.I. Is Communist." What the Heck Does That Mean?' (*Inc.* 2018).

[2] This contribution is indeed submitted to one of the new journals in the field that conceptualise the relationship as a meeting point between two different disciplines, indicated by calling it 'Cross-disciplinary' rather than inter-, trans-, etc. For a conceptualisation relying on the hyphen see also: Rebecca Mignot-Mahdavi, *Drones and international law: a techno-legal machinery* (vol 180, Cambridge University Press 2023); Jake Goldenfein, *Monitoring Laws: Profiling and Identity in the World State* (Cambridge University Press 2019).

[3] Michèle Finck, *Blockchain regulation and governance in Europe* (Cambridge University Press 2018); Philipp Hacker and others, *Regulating blockchain: techno-social and legal challenges* (Oxford University Press 2019); Robert Herian, *Regulating blockchain: Critical perspectives in law and technology* (Routledge 2018).

[4] Primavera De Filippi and Aaron Wright, *Blockchain and the law: The rule of code* (Harvard University Press 2018).

[5] Mireille Hildebrandt, 'Code-driven Law: Scaling the Future and Freezing the Past' in Simon Deakin and Christopher Markou (eds), *Is Law Computable? Critical Reflections on Law and Artificial Intelligence* (Hart 2020).

[6] Mireille Hildebrandt, 'Algorithmic regulation and the rule of law' [2018] (376) Philosophical transactions of the Royal Society of London 1.

[7] Lawrence Lessig, *Code: And other laws of cyberspace* (Basic Books 1999).

[8] Samer Hassan and Primavera De Filippi, 'The expansion of algorithmic governance: from code is law to law is code' [2017] (Special Issue 17) Field Actions Science Reports. The journal of field actions 88.

[9] ibid.

[10] Gavin Wood, 'Ethereum: A secure decentralised generalised transaction ledger' [2014] (Yellow paper). For an application of the functional equivalence approach see: CConstance Choi and others, 'Model law for decentralized autonomous organizations (DAOs)' [2021] Coalition of Automated Legal Applications.

Blockchain technology and the aspirations associated with it are often still far from full implementations. They can better be understood as explicitly articulated socio-technical imaginaries of the future[11] with proto-typed articulations of such visions in DAOs and other digital communities relying on the technology.[12] Thus, blockchain technology or the crypto space, is not a unified phenomenon. To the contrary, the term connotes almost everything ranging from different material infrastructures, to particular computation languages specifically written for blockchains, to competing world-views ranging from radical markets[13] to radical friends.[14] What is striking in the rise of blockchain technology as a phenomenon, is the strong appeal towards new normativities, alternative ways of ordering and propositions of new socialites at scale. Thus, rather than making exhaustive claims about blockchain as such, we engage with the particular forms of ordering aspirations underwriting the blockchain space. The relationship of blockchain and law is paradoxical in a certain sense. State-based law and established social institutions like governments and banks are viewed with suspicion and perceived as problematic in carrying all the failures and flaws responsible for the contemporary multiple crisis.[15] Yet, law as the core discipline for thinking and understanding governance and modes of ordering through blockchain technology is at the heart of the conversation.[16] This interest in law and legal institutions can also be found in legal analogies such as the treatment of smart contracts as contracts[17] or discussions about blockchain constitutionalism.[18] To put it in a nutshell, if blockchain rejects traditional law, it also entertains an equivocal fascination for it, projecting its own law, an augmentation of law - driven and executed by code. So, it comes as no surprise that discussions on creating new socialites have brought forth fully fledged propositions of digital Network States[19] or Coordi(nations).[20]

Amorphous and fast paced, the crypto world and its world-making ambitions has no graspable centre or all-encompassing discourse. Thus, following Amoore we turn to the written source code of the projects and read them for the 'ethico-politics' they engender.[21] We follow Amoore's call to 'extending attention to the worldviews and normative commitments forged in the very textbooks and papers.'[22] No project of significance in the blockchain space can afford to forgo offering a Whitepaper laying out the scope and aims of the proposition. In addition, the Whitepaper has become a regulatory demand in the recently developed MiCAR Regulation of the European Commission on Crypto Assets.[23] Little research has been undertaken on the genre of the Whitepaper generally[24] and even less so in the blockchain space.[25] Yet, the history of

[11] Ruth Catlow and Penny Rafferty, *Radical friends: Decentralised autonomous organisations and the arts* (Torque Editions 2022).

[12] We develop an account of the role of the socio-technical imaginaries as they pertain to blockchain space projects in: Primavera de Filippi and Andrea Leiter, 'Blockchain in Outer Space' (2021) 115 American Journal of International Law Unbound 413.

[13] Eric Posner and Eric Weyl, *Radical markets: Uprooting capitalism and democracy for a just society* (Princeton University Press 2018).

[14] Catlow and Rafferty (n 11).

[15] This mistrust can be traced in blockchain projects across the political spectrum. See also: Primavera De Filippi, Morshed Mannan, and Wessel Reijers, 'The alegality of blockchain technology' (2022) 41(3) Policy and Society 358.

[16] Kevin Werbach, 'Trust, but verify: Why the blockchain needs the law' (2018) 33(2) Berkeley Technology Law Journal 487.

[17] Max Raskin, 'The law and legality of smart contracts' (2016) 1 Geo. L. Tech. Rev. 305.

[18] Primavera De Filippi and others, 'Blockchain Constitutionalism: The Role of Legitimacy in Polycentric Systems' [2023] Publications Office of the European Union; Eric Alston and others, 'Blockchain networks as constitutional and competitive polycentric orders' (2022) 18(5) Journal of Institutional Economics 707.

[19] Srinivasan Balaji, *The Network State* (2022).

[20] P De Filippi and JK Schingler, 'Coordi-nations: A new institutional structure for global cooperation' (2023) ⟨https://jessykate.medium.com/coordi-nations-a-new-institutional-structure-for-global-cooperation-3ef38d6e2cfa⟩.

[21] Louise Amoore and others, 'Machine learning, meaning making: On reading computer science texts' (2023) 10(1) Big Data & Society, 2.

[22] ibid 11.

[23] Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937, OJ L 150, 9.6.2023, p. 40–205.

[24] Edward A Malone and David Wright, '"To Promote That Demand" Toward a History of the Marketing White Paper as a Genre' (2018) 32(1) Journal of Business and Technical Communication 113.

[25] Andrea Leiter, 'Blocks: How Blockchain Technology Narrates the World' in Peter Goodrich, Daniela Gandorfer, and Cecilia Gebruers (eds), *Research Handbook on Law and Literature* (Edward Elgar Publishing 2022).

the genre reflects an amalgam of governance and financial ambitions moving from a British government document to a must-have in any corporate sales deck.[26] Reading the Bitcoin and Ethereum Whitepapers[27] offers a glimpse into the world-making ambitions of the projects. Crypto communities are often understood as connected through founding myths[28] or charismatic leadership figures, sometimes even characterized as benevolent dictators.[29] What is more, the references to the founding visions are remembered for guiding the way when projects run the risk of going array.[30]

We combine the reading of the Whitepapers with an analysis of the techno-legal infrastructure following van den Meerssche and Gordon's analytic of *regimes of operadiction* to 'investigate the values embodied in the technical systems themselves'.[31] The proposition here is to read the running code in a blockchain infrastructure as a double operation: 'one operation continuously recreates realities out of information, in a reiterative process of patterned construction; the other instantaneously operationalizes those realities.'[32] This proposition shares similarities with a cybernetic approach to behaviour regulation through feed-back loops.[33] Taking explicit cue from Lessig, Hildebrandt complicates the idea of viewing law 'as a subset of cybernetic regulation, alongside, for instance, market forces, social norms and techno-regulation or architecture'[34] by insisting that 'current modern law' - 'text driven law', qualifies what counts as lawful by reference to the sources of law and thus the legality principle.[35] The point is well taken, yet it is precisely in the tendency to break away from established 'legacy institutions' and thus the state-based rule of law in the blockchain space, where we locate blockchain's strive towards an augmented order. This is currently most potently expressed in transhumanist propositions of decentralised artificial intelligence, proclaiming new societies based on code- and data- driven inference for the application and enforcement of market rules, which will ultimately avoid the distinction of 'code-driven' and 'data-driven' law.

In what follows we show that blockchain technology's structuring ambitions extend motifs from a distinct strand of legal philosophy that could be referred to as variations of legal formalism.[36] Thinking with this continuation rather than against it, allows us to employ the considerations and especially the critiques advanced against formalism throughout the 20th century.[37] However, while we believe that insisting on this affirmative relationship is fruitful, we also argue that blockchain is not just a repetition of legal formalist ideas, but in its drive to further abstract rules in code through the specific modalities of its infrastructure, blockchain inscribes a computational hyper-formalism that claims to enhance and augment law by enabling it to expand beyond the limitations of human thinking capacity. We trace this development through the codification of law into blockchain protocols (code-ified law), the transition towards self-executing legal mechanisms facilitated by smart contracts (automated law) and the expansion of legal paradigms through the integration of blockchain's

[26] Leiter (n 25).

[27] The Bitcoin Whitepaper was authored by the mythical Satoshi Nakamoto, the Ethereum Whitepaper by Vitalik Buterin, and the Ethereum Yellow Paper by Gavin Wood. Satoshi Nakamoto, 'Bitcoin: A peer-to-peer electronic cash system' [2008] (White paper); Vitalik Buterin, 'Ethereum White Paper: A next-Generation Smart Contract and Decentralized Application Platform' [2013] ; Wood (n 10).

[28] Sandra Faustino, Inês Faria, and Rafael Marques, 'The myths and legends of king Satoshi and the knights of blockchain' (2022) 15(1) Journal of Cultural Economy 67.

[29] Sarah Azouvi, Mary Maller, and Sarah Meiklejohn, 'Egalitarian Society or Benevolent Dictatorship: The State of Cryptocurrency Governance' in Aviv Zohar and others (eds), *Financial Cryptography and Data Security* (Springer Berlin Heidelberg 2019).

[30] Vitalik Buterin, 'Make Ethereum Cypherpunk Again' (2023) ⟨https://vitalik.eth.limo/general/2023/12/28/cypherpunk.html⟩.

[31] Dimitri Van Den Meerssche and Geoff Gordon, 'The contemporary values of operadiction regimes' in Isabel Feichtner and Geoff Gordon (eds), *Constitutions of Value* (Routledge 2023) 239.

[32] ibid 241.

[33] Norbert Wiener, *Cybernetics or Control and Communication in the Animal and the Machine* (MIT press 2019).

[34] Hildebrandt, 'Algorithmic regulation and the rule of law' (n 6) 4.

[35] ibid 6–7.

[36] Duncan Kennedy, 'Legal Formalism' in *Encyclopedia of the Social & Behavioral Sciences* (Elsevier 2001) 8634.

[37] This resembles an argument advanced vis-a-vis artificial intelligence by Ben Green and Salomé Viljoen, 'Algorithmic realism: expanding the boundaries of algorithmic thought' (2020).

capabilities (augmented law). A strong will theory coupled with automated rule application makes blockchain the pinnacle of (hyper-) formalist legal thought.

Code-ified law: formalist re-enchantment or making formalism great again!

Blockchain ideas are disparate and fragmented and can hardly be summarised in a single body or source. Yet despite their variety, advancing rules as an alternative ordering mechanism has been part of the blockchain project since its inception.[38] The drive to respond to and compete with law, as a modality of social engineering, can be traced quite explicitly in the blockchain genesis narrative. The canonical relevance of the early writings is constantly reinscribed together with their appeal to a larger vision for building 'holistically toward a more free and open society and economy, where the different parts - technological, social and economic - fit into each other'.[39] The focus is on 'developing the base layer of a more open internet stack'[40] with the notion of stack understood in Bretton's sense as 'planetary-scale computation changing geopolitical realities'.[41]

The diagnosis of the dysfunctional, unreliable and archaic transaction system offered by the rule of law, appears everywhere as the starting point of the disruption offered by blockchain. In the foundational blockchain paper referred to as the Bitcoin Whitepaper, published on 31 October 2008 in the midst of the financial crisis, Satoshi Nakamoto laments in the opening paragraph that the 'trust based model' suffered from 'inherent weaknesses', since 'financial institutions cannot avoid mediating disputes' and there was no mechanism to make 'non-reversible transactions for non-reversible services'.[42] In the Ethereum Yellowpaper, Wood locates the crypto project even more firmly as a response to the perceived deficiencies of law by stating that the project aims to facilitate transactions currently not possible due to 'the incompatibility, incompetence, unwillingness, expense, uncertainty, inconvenience or corruption of existing legal systems.'[43] The underlying assumption is clearly stated: blockchain aims at conquering the world-making domain of law, precisely where law has failed.

But while blockchain seems to offer a radical alternative to law, it actually rides on the perpetuation and re-enchantment of one of law's own imaginaries as projected by legal formalism.[44] It strives for a transaction system driven by formal rationality, channelling complex social interactions with predictability and security through 'unambiguous language' and a system that guarantees that 'an agreement will be thus enforced autonomously.'[45] If blockchain announces a disruption of the legal system, it also re-enacts the adherence to a formal legal ideal. The so-called trust-based model refers to the legal bureaucratic system in which institutions such as a bank or a contract enforced by a judge are trusted to interpret and implement the transaction agreed on by the parties and usually formalised in a text. Formalism precisely conceptualises the legal system as enabling complex societies by guaranteeing the operation of transactions. Fore fronting legal certainty, formalism reduces the interpretative margin through narrowly understood textual deductions and promises to guarantee that the outcome of the transaction will conform to the wording of the agreement.[46] As outlined by Weber, the legal reason for the form pledges to allow complex societies to move away from a charis-

[38] De Filippi, Mannan, and Reijers (n 15).
[39] Buterin, 'Make Ethereum Cypherpunk Again' (n 30).
[40] ibid.
[41] Benjamin H Bratton, *The stack: On software and sovereignty* (MIT press 2016).
[42] Nakamoto (n 27) 9.
[43] Wood (n 10) 2.
[44] Kennedy, 'Legal Formalism' (n 36).
[45] Wood (n 10) 1.
[46] Pier Giuseppe Monateri, 'Legal Formalism' in Federico Vercellone and Salvatore Tedesco (eds), *Glossary of Morphology* (Springer International Publishing 2020).

matic, interpersonal mode of social engagement towards a rational, bureaucratic technology, namely law.[47]

Formalism, as advanced throughout the 19th and 20th centuries as theoretical practice[48] or as an aesthetic,[49] has many meanings and understandings. Legal formalism generally refers to specific ideas about modes of determining rules in law, foregrounding text over context. Through a formal legal lens, the determination of a rule as law relies less on the substance or on the materiality or the transcendental legitimacy of the rule than on the method or form through which it is ascertained.[50] Rarely claimed as a rallying theory by authors,[51] the expression 'legal formalism', if sometimes debated,[52] has mostly been used through a legal realist critique to describe a legalistic, conceptualistic mindset, developed in late-nineteenth-century legal doctrine.[53] In this sense, legal formalism foregrounds specific styles and practices also referred to as classical legal thought. In a formalist approach, the meaning of a rule should be derived from text (or form) and not from context or purpose, excluding social, economic or policy considerations.[54] Legal formalism can here be understood both as an emphasis of form in legal ascertainment of rules and as an interpretative approach that aims at evacuating both morals and socio-political context in the work of interpretation, which prefers to rely on restrictive textual interpretation to ensure greater legal certainty. As Schauer puts it: 'At the heart of the word "formalism", in many of its numerous uses, lies the concept of decision-making according to rule. Formalism is the way in which rules achieve their "ruleness" precisely by doing what is supposed to be the failing of formalism: screening off from a decision-maker the factors that a sensitive decision-maker would otherwise take into account.'[55] Concerned with the claim that legal interpretation might be too political, legal formalism aspires to 'import into the process of legal reasoning the qualities of logical inexorability'.[56] The logical deductionism and rationalism are purported to best afford legal certainty to rules. This rational-legal authority tied to legal forms will be challenged by sociological sensibilities. A refreshed interest in context and society, at the centre of the novel social sciences at the turn of the 20th century, will again foreground the context – this time, social and political – over form and text, constructed as abstraction and 'transcendental nonsense'.[57] It is precisely against this 'ultra-mechanical' case-law[58] – that claims to eliminate the 'judges heart and conscience'[59] – that early legal realists rally.

This idea of an execution of 'the rule' without relying on interpretation by a judge or another intermediary is praised as a key achievement of blockchain architecture. Formalism's effort has always been aimed towards limiting the margin of action of the decision maker. Despite the imperfect medium of linguistic text, the textual sign appeared to be the best technology to determine rules for legal formalism. The code-driven normativity enabled by blockchain assumes that it can finally circumvent the conundrum of textual interpretation. And despite many cases in which the spirit or context of the code has been evoked against its

[47] Max Weber, *Economy and society: An outline of interpretive sociology* (vol 2, University of California press 1978); Duncan Kennedy, 'The disenchantment of logically formal legal rationality, or Max Weber's sociology in the genealogy of the contemporary mode of Western legal thought' (2003) 55 Hastings Law Journal 1031.

[48] Frederick Schauer, 'Formalism' (1987) 97 Yale Law Journal 509.

[49] Pierre Schlag, 'The aesthetics of American law' (2001) 115 Harvard Law Review 1047.

[50] See Monateri (n 46); Schauer (n 48); Kennedy, 'Legal Formalism' (n 36).

[51] William E Scheuerman, 'Patterns of American Jurisprudence.' (1997) 25(5) Political Theory 740; Morton J Horwitz William W Fisher III and Thomas A Reed, *American Legal Realism* (Oxford University Press 1993).

[52] If some claim that legal formalism does not relate a specific school of thought or even period, the appellation is yet being revived in a renewed call to formalism or neo-formalism. Schauer (n 48); Jean d'Aspermont, *Formalism and the Sources of International Law: A Theory of the Ascertainment of Legal Rules* (Oxford University Press 2011).

[53] Morton J Horwitz, *The Transformation of American Law, 1870-1960: The Crisis of Legal Orthodoxy* (Oxford University Press 1994) 16.

[54] Kennedy, 'The disenchantment of logically formal legal rationality, or Max Weber's sociology in the genealogy of the contemporary mode of Western legal thought' (n 47).

[55] Schauer (n 48) 510.

[56] Horwitz (n 53) 16.

[57] Felix S Cohen, 'Transcendental Nonsense and the Functional Approach' (1935) 35(809) Columbia Law Review.

[58] Roscoe Pound, 'Law in Books and Law in Action' (1910) 12(44) American Law Review, 20.

[59] ibid.

letter and fully automated on-chain governance ran into problems,[60] the advantages that code provides vis-a-vis textual formalism continues to be foregrounded as one of the powerful promises of blockchain.

Thus, where the calculability of law and rationalisation through traditional formal legal systems of norms relied on a bureaucratic infrastructure, blockchain technology can finally, according to its own terms, ensure calculability and an 'absolute confidence in the possible outcomes'[61] of a rule because of its technical superiority. As Wood puts it: 'The incorruptibility of judgement, often difficult to find in the real world, comes naturally from a disinterested algorithmic interpreter.' This 'disinterested algorithmic interpreter' realises, at last, a faithful restrictive logical deduction that enables absolute predictability. The 'incorruptibility of judgement' is finally achieved through the technical reason of code. Vagueness and substantive interpretation are purged by radical transparency allowing 'to see exactly how a state or judgement came about through the transaction log and rules or instructional codes.'[62]

This formal rule ascertainment driving the blockchain project is committed to a strong individualistic will theory basing its legitimacy and its authority on individual consent and an emphasis on legal certainty through coherence. The notion of will theory at play here is linked to the broad liberal ideal in which 'the private law rules of the "advanced" Western nation states were well understood as a set of rational derivations from the notion that government should help individuals realise their wills, restrained only as necessary to permit others to do the same.'[63] The strong will theory is at the basis of the necessity of legal certainty.[64] For this voluntarist view, as will is the cornerstone of the liberal net of obligations, it should not be changeable or betrayed by a third party for external considerations, even public interest or morals. The formal ideal guarantees that the State, through the operation of the Rule of Law, becomes the force that protects and enables individual will.[65]

The idea of individual freedom expressed through consent as legitimising foundational myth is what is re-stated in the blockchain project. The State, or the Rule of Law are replaced – or rather augmented – through the code-driven decentralised protocol.[66] Decentralisation actually perfects the meeting of minds at the core of contractual theory. As such, blockchain architecture has been described as a form of social contract or as a platform for societal organising beyond the state.[67]

In assessing the effects of blockchain as an ordering force, blockchain appears to be driven precisely by the desire to reconcile the formal legal project with itself. On the one hand, naked will theory allied with a certainty in its outcome, is what opposes legal discourse to other modes of digital normative ordering linked to standardisation and normalisation, such as digital profiling and data-driven personalised regulation. Against the mobile norms of data-driven algorithmic regulatory devices, formal legal arrangements appear to grant both the possibility of public debate about substantive rules and procedural protection and contestation; as well as a sense of 'ruleness' and certainty. The critique of these hyper-factual normative assemblages finds itself often cornered to a fetishism of legal forms. To critique the real-time, evidence-based and data-driven personalization of regulatory assemblages, it becomes appealing to reinvigorate rule and form.

[60] See for a seminal example, governance debates about the DAO HACK: Quinn DuPont, 'Experiments in Algorithmic Governance: A History and Ethnography of "The DAO," a Failed Decentralized Autonomous Organization' in *Bitcoin and Beyond* (Routledge 2017); Julia Meier and Benedikt Schuppli, 'The DAO Hack and the Living Law of Blockchain' in *Digitalisierung–Gesellschaft–Recht: Analysen und Perspektiven von Assistierenden des Rechtswissenschaftlichen Instituts der Universität Zürich* (2019); Muhammad Izhar Mehar, Charles Louis Shier, and Alana Giambattista, 'Understanding a Revolutionary and Flawed Grand Experiment in Blockchain: The DAO Attack' (2019) 21(1) Journal of Cases on Information Technology 19.

[61] Wood (n 10) 1.

[62] ibid.

[63] Kennedy, 'Legal Formalism' (n 36) 8635.

[64] Weber (n 47) 809.

[65] ibid.

[66] De Filippi and Wright (n 4).

[67] Wessel Reijers, Fiachra O'Brolcháin, and Paul Haynes, 'Governance in Blockchain Technologies & Social Contract Theories' (2016) 1(134) Ledger; Marcella Atzori, 'Blockchain Technology and Decentralized Governance: Is the State Still Necessary?' (2017) 45(6) Journal of Governance and Regulation.

Hence formalism, rule of law and will theory are being reinvigorated in many critiques of tech-driven law. Against algorithms and the de-formalisation of governance, the stability of rule of law institutions and reasonings seem to appeal to a sense of control and contestability, at least to lawyers.[68] But the critical bite of these positions necessarily falls through when these technologies, while claiming an ambition to replace law, actually perpetuate its project through a powerful technical infrastructure. Formal positions – *i.e.* law against ethics or algorithmic governance – can subsequently turn into an antiformal critique – law against blockchain. In addressing the challenges of digital technologies' ordering ambitions, concomitant appeals to the hardness and previsibility of law against the mobile norms of data-driven algorithmic regulation; and to the softness, discursive and indeterminacy of law against the implacable mechanics of blockchain, might reveal a commitment to law – if not fetishism[69] – rather than critical assessment of the effects produced by these ordering technologies.[70] These affiliations and disaffiliations to formal and informal ideas are of course not unique to reactions against blockchain projects and can be spotted across many legal debates, projects and styles.[71] Consequently, critiques of tech-driven transformation of normativity gain depth when the continuity of legal projects and tech-projects is traced. This allows us to narrow down on the specific force and effects produced by this material change of infrastructure. Even if these transformations, while continuing ideals, are also translating them radically.

Automated law: hyper-formalism

The foregrounding of legal certainty in formalism operates both through a close attention to coherence and through a strong individualist will theory. As Weinrib put it: 'Formalism's concern is entirely with the coherence of legal arrangements and with the way the doctrinal and institutional components of law manifest that coherence.'[72] The formalism in blockchain operates with the explicit goal of facilitating 'transactions between consenting individuals'.[73] This transactional formalism centres its operative reasoning in consensus and consent.

The very ground layer, the so-called layer one protocols rely on different 'consensus mechanisms', such as proof-of-work or proof-of-stake. The Proof of Work (PoW) model in blockchain requires miners to solve complex puzzles for transaction verification, but due to its high energy consumption, there was a shift towards Proof of Stake (PoS), which selects validators based on their asset holdings, offering a more energy-efficient alternative. With few exceptions, including Bitcoin, most blockchains today run on a PoS mechanism. In both iterations, however, the idea is that the 'right' transactions are compiled into a block, issuing a block reward, after a 'consensus' was achieved that a given node has proven its trustworthiness.

The key technology for the implementation of this formalism are smart contracts, meaning pieces of code that run on the distributed network and are permanently synchronised into a state.[74] Smart contracts are best understood as a mode of decentralised, automated computing. Anyone can engage in a transaction in the network and it will be executed on all nodes that comprise the network. The explicit

[68] Antoinette Rouvroy, 'The End(s) of Critique: Data-Behaviourism vs. Due-Process.' in *Privacy, due process and the computational turn* (Routledge 2013); Mireille Hildebrandt, 'Law as Computation in the Era of Artificial Legal Intelligence: Speaking Law to the Power of Statistics' (2018) 12(68) University of Toronto Law Journal.

[69] Julieta Lemaitre, 'Legal Fetishism at Home and Abroad' (2007) 3(1) Harvard Unbound.

[70] See a similar critique about human rights: David Kennedy, 'International Human Rights Movement: Part of the Problem?' (2002) 15 Harvard Human Rights Journal 101.

[71] See: David Kennedy, 'When Renewal Repeats: Thinking against the Box' (2000) 32 New York University Journal of International Law and Politics 335.

[72] Ernest J Weinrib, 'Legal formalism: On the immanent rationality of law' (1987) 97 Yale Law Journal 949, 958.

[73] Wood (n 10) 1.

[74] Buterin, 'Ethereum White Paper: A next-Generation Smart Contract and Decentralized Application Platform' (n 27) 15.

legal analogy contained in the expression 'smart contracts', continues to entertain the idea that the blockchain both advances and replaces the formal legal project, claiming an improved efficiency by flawless execution on its own terms, what we have come to call hyper-formalism.

Commitments to an enhancement of the will theory as 'an attempt to identify rules that should follow from consensus in favour of the goal of individual self-realisation,' appeal to legal formalism.[75] In opposition to natural law conceptualisation of will theory, its formalist revision does not justify this self-realisation goal through philosophical or substantive motives, but restricts the work of law to a rational logical deduction of the rule.[76] Legal formalism aims at constraining the deduction and its application by a human interpreter and the inherent risk of misinterpretation it carries. Here, the risk is claimed to be removed and interpretation is secured through the architecture of computing and cryptography that enacts the will of parties. Coherence is produced through ensuring that all transactions are ordered and recorded. At regular intervals, a number of transactions are gathered into a block and the block is then added to the previous block, creating a chain of blocks, a blockchain, or as one author put it 'simply a list of things that happened.'[77] This ledger is publicly accessible to anyone and keeps a record of all transactions ever executed on the blockchain. As stated in the Bitcoin White paper: 'The only way to confirm the absence of a transaction is to be aware of all transactions.'[78] To maintain this record of transactions the ledger is permanently synchronised along all nodes of the network. The synchronisation is also called consensus building, in the sense that it is a consensus of all participating nodes on the state of all the enacted transactions.

So if, for legal formalism, the legal system constitutes coherence in the determination of the meaning of a rule through a hierarchy of both norms and judicial institutions, blockchain realises rule determination through a network in which the information is perpetually synchronised. The centralisation of the legal system through hierarchy is displaced through a powerful decentralised network infrastructure. The transactions in turn function as the expression of a meeting of minds. The smart contracts are considered to be a representation of matching wills and their execution turns into an execution of truth.[79] The reliance on the theory of the matching of wills is hereby powered by a mechanism that not only perpetuates the formal legal projects but enhances it by relying on its technological architecture. The will of parties is expressed in a way that is unambiguous for the entire network because the interpretative frame is channelled through the code-driven infrastructure.

Indeed, blockchain locates the problem it is attempting to fix in the realm of the accuracy of the execution of this 'meeting of minds'. The transactions build the bridge between an old valid state and the new valid state that now includes the change enacted through the transaction.[80] This is where the consensus mechanism becomes the most important tool. The decentralised network would replace authority or rather re-constitute it through decentralised computer power in which an algorithm resolves any incompatible disputes and ensures consensus in the network; code would replace law and execute immediately and exactly as written.[81]

This restatement of authority through a flawless execution is what we have come to call hyper-formalism. The difference from legal formalism lies in the fact that it allows no remedy in case of non-compliance and that it contains the conditions for unambiguous interpretation in its architecture. What remains as footprints of formal legal thinking in the hyper-formal blockchain is both a pledge to will theory characterised by individualism and restrictive interpretivism based on logical rationalism: the legal system committing itself to individual self-realisation by rationalisation. It proposes an order exclusively based

[75] Duncan Kennedy, 'Three Globalizations of Law and Legal Thought' in David Trubek and Alvaro Santos (eds), *The New Law and Economic Development - A Critical Appraisal* (Cambridge 2006) 26.
[76] ibid.
[77] Clara Brekke and Bridle James, *The White Paper* (Ignota Books 2019) xiii.
[78] Nakamoto (n 27) 2.
[79] Buterin, 'Ethereum White Paper: A next-Generation Smart Contract and Decentralized Application Platform' (n 27).
[80] Wood (n 10) 2.
[81] Clara Jaya Eleanora Brekke, 'Disassembling the Trust Machine' (PhD thesis, Durham University 2019) 255, 103.

on agreements between consenting individuals enforced seamlessly by the execution of code.

The cost of having to determine the meaning of a text through a judge is consigned to the infrastructure: there is no need for a human intermediary to become involved, no judge, no lawyer, no decision-maker: the execution is perfected by the machine. Blockchain is not only formal, but its power and the modalities through which it responds to the diagnosed deficiencies of the legal system explicitly rely on the presumed infallibility of the machine; it is hyper-formal in rulemaking as well as in rule application. In other words, the project embodied by blockchain is not only fascinated by formalism but wants to perfect it. It produces a computational legalism[82] that fetishizes the rules – powered through pure individualistic will-theory – as well as the infrastructure that enacts it.

Augmented law: the dystopia of digito-commodification

While the notion of hyper- directs our attention to the extreme degree of formalism of the blockchain architecture, this transformation of law and rule-thinking into fully automated machine-written and machine-applied infrastructure also intensifies the expansion of the market logic and the price mechanisms for societal organising. By now it is hard to argue that the main stream blockchain space is 'becoming just another "disruptive" neoliberal technology to grow the self-image of all people and populations as solely-economic beings, motivated by financial reward and therefore legitimate subjects in a tireless search for efficiency and productivity gains through full automation.'[83] The 'truth' and 'incorruptibility' claim in automated smart contract execution serves as a prerequisite for a perfected 'digito-commodified' society.[84] To this branch of transhumanist thought[85] the power of blockchain is the 'requisite tool for collective intelligence gathering and systemic risk modelling to reduce the possibility of large-scale failure such as financial contagion and collapse.'[86] Through decentralised data storage, in combination with algorithmic reasoning, emerges 'the development of Artificial General Intelligence (AGI)' as promoted and developed by the 'world's leading decentralised AI marketplace' SingularityNet.[87] The proposition of the Singularity, most famously advanced by Ray Kurzweil and recently pronounced to not only be 'near'[88], but 'nearer,'[89] envisions a society based on accelerated technological advancement that 'will allow us to transcend the limitations of our biological bodies and brain'.[90]

The role of blockchain here is to provide a tool 'to enable agreements such as treaties and enforcement mechanisms that produce good player behaviour in large-scale network environments, including contracts, penalties, and reputation systems.'[91] This version of an accelerationist proposition collapses the above-mentioned distinction of 'data-driven' and 'code-driven law' leading to a perfect flow and execution of algorithmically inferred transactions. Underwritten with the logic of 'priced transactions as the only glue'[92] the substantive rule is not programmed *a priori* but emerges as the result of the patterns drawn in data and is therefore both moving and un-

[82] Laurence E Diver, *Digisprudence: code as law rebooted* (Edinburgh University Press 2021).

[83] Catlow and Rafferty (n 11) 38.

[84] Nick Land, *Fanged noumena: Collected writings 1987-2007* (MIT Press 2011) 338.

[85] The term transhumanism covers a number of distinguishable and comprehensive approaches, Ferrando distinguishes between Libertarian Transhumanism, Democratic Transhumanism, Extropianism, and Singularitarianism. Francesca Ferrando, *Philosophical posthumanism* (Bloomsbury Publishing 2019) 31.

[86] Melanie Swan, 'Transhuman crypto cloudminds' in *The transhumanism handbook* (Springer 2019). On the danger of cryptofascist tendencies see: Ana Teixeira Pinto, 'Capitalism with a transhuman face: The afterlife of fascism and the digital frontier' (2019) 33(3) Third Text 315.

[87] https://singularitynet.io/.

[88] Ray Kurzweil, *The singularity is near: When humans transcend biology* (Penguin 2005).

[89] The second iteration of the book is highly awaited and expected to be published in June 2024: Ray Kurzweil, *The Singularity Is Nearer: When We Merge with AI* (Viking 2024).

[90] Kurzweil, *The singularity is near: When humans transcend biology* (n 88) 24.

[91] Swan (n 86).

[92] Catlow and Rafferty (n 11) 38.

known as 'data and algorithms gather in new and emergent forms.'[93] The normative choice of organising through quantifiable priced transactions is being displaced into the conception and architecture of the techno-legal infrastructure itself. Van den Meerssche and Gordon might call these 'technologically mediated forms of governance that constantly produce and perform the realities through which they operate', *regimes of operadiction*.[94] Developing the hyper-formalism of blockchain as perfected automated inputs and outputs eradicates any non-quantifiable and thus non-representable life form or to put it differently: the social contract in blockchain applications 'simply lacks a concept of the social'.[95] The techno-legal order then emerges as market-order with rule inference based on price finding algorithms, finally augmenting law 'beyond the constraint of the current unitary meatspace packaging of the human brain.'[96]

Swan is to a certain degree a fringe figure in the blockchain space and her writings should not be overemphasised. Yet, a transhumanist vibe, in various iterations ranging from Libertarian Transhumanism, Democratic Transhumanism, Extropianism and Singularitarianism,[97] can be traced across a larger spectrum of the blockchain space.[98] Longevity research has come to constitute a cornerstone around what is dubbed 'DeSci' (Decentralised Science) with players such as 'Vita-Dao - The Longevity DAO" holding over 28 Million in funds[99] and self-described transhumanist Patri Friedman, who is a regular speaker at Ethereum community events. The lines are blurred and it is not our intention to develop a definitive categorisation of the blockchain space, much less a cheap critique that frames the whole space as aspiring to transhumanism. However, in understanding the ordering proposition of blockchain, we believe it crucial to see this appeal to transhumanism. Without it, possible modes for critical engagement with ideas of automated and augmented law might miss the point.

Certain transhumanist elements are anticipated in most of the critiques of the 'code-ification' of law. Many revolve around the question of the place of the human or human subjectivity in the new techno-legal systems.[100] In reference to Arendt's conception of the human condition, Hildebrandt puts it succinctly in arguing that the 'underdetermination' of the future that is supposed to be overcome by 'code-driven law' 'cannot be resolved because it [the underdetermination] defines the human condition.'[101] On the distinction between code and language and their heuristics, she shows how 'text-driven law is adaptive in a way that would be difficult to achieve in code-driven law (which relies on a kind of completeness that is neither attainable nor desirable)'.[102] In a similar vein, arguing from a perspective of political economy and the protection of labour, Pasquale argues for a defence of human expertise in the age of AI with new robotic laws to ensure that 'robotic systems and AI [should] complement professionals, not replace them'.[103] More generally, the call to a wide audience for the development of human-centred technology has become an incantation for both opponents and proponents of digital technology in our social architectures. There is undoubtedly power in the idea of reinstating the human as the centrepiece to safeguard law's humanity against a trans-humanist project.[104] Yet, locating the hu-

[93] Louise Amoore, *Cloud ethics: Algorithms and the attributes of ourselves and others* (Duke University Press 2020). See for applications in global security: Marieke De Goede, *Speculative security: The politics of pursuing terrorist monies* (University of Minnesota Press 2012); Dimitri Van Den Meerssche, 'Virtual borders: International law and the elusive inequalities of algorithmic association' (2022) 33(1) European Journal of International Law 171.

[94] Van Den Meerssche (n 93) 239.

[95] Hito Steyerl, 'Walk The Walk Beyond Blockchain Orientalism' in Ruth Catlow and Penny Rafferty (eds), *Radical Friends: Decentralised Autonomous Organisations and the Arts* (Torque Editions 2022) 129.

[96] Swan (n 86) 518.

[97] Ferrando (n 85) 31.

[98] Kelsie Nabben, 'Resilient Future-Making: How Cryptocurrency & Transhumanism Overlap for Immutable, Decentralised, Autonomous Futures' (2021) ⟨https://ssrn.com/abstract=3911005⟩.

[99] https://coinmarketcap.com/currencies/singularitynet/.

[100] Goldenfein (n 2).

[101] Hildebrandt, 'Code-driven Law: Scaling the Future and Freezing the Past' (n 5).

[102] Mireille Hildebrandt, 'Learning as a machine: Crossovers between humans and machines' (2017) 4(1) Journal of Learning Analytics 6, 6.

[103] Frank Pasquale, *New Laws of Robotics: Defending Human Expertise in the Age of AI* (Harvard University Press 2020).

[104] Duncan Kennedy, 'Form and substance in private law adjudication' (1975) 89 Harvard Law Review 1685, 1685.

man at the centre of worldmaking and thus law-making propositions, might fall short in developing responses to blockchain phantasies of augmentation beyond state law and run the risk of reinscribing tendencies of exclusionary humanisms at the centre of legal reasoning.[105]

At the core of these critiques rests the problem of representationalism as formulated by posthumanist scholarship and in particular feminist posthumanist scholarship.[106] In this understanding the focus is on the form as representational, where only what is legible through the form can become part of the world. The representational character of the legal system can be traced back to early writings about the common law tradition, formulating the logic of the writ as one that stipulates 'now writ nor remedy, no remedy, no wrong'.[107] The order of the logic is key for understanding the charge: it is the legal form of the writ that has to be in place to make the 'wrong' legible to law, to enable it to exist in the world of law. In particular the legal scholarship of new materialism has articulated the exclusionary character of the representational demand in law[108] and charted paths for defying the representational demand of legal thought by attending to the very qualitative, relentlessly excessive fabric of life.[109] The encoding of rules into blocks via smart-contracts is another iteration of such a representational system.[110] Only by representing life in 'discrete states'[111] can the machine obtain the potential to represent anything that can currently be represented by a computer.[112] Representation is then understood as a precondition for computing[113] and the 'real' is perfectly detached from the world, from this 'real world' as Wood puts it.[114]

Thus, we turn our attention to scholarship that shows how blockchain 'cuts' differently in code and produces a different set of politics.[115] Speculative engagements with radical alterity in the blockchain space have long accompanied the mainstream developments. Often gathered around new forms for community grounding in DAOs 'to enlarge the reach of friendship to the point of replacing corporations and government.'[116] These practices and writings are trying to move through and not against the techno-legal appeal of blockchain technology. We see ourselves in alliance with those who engage with blockchain technology in order to create protocols for post-capitalist economic expression,[117] cosmo-financial imaginaries[118] and DAOs of Difference.[119] It is here that we hope to find the 'muscle for co-creating resilient support systems for the life of the

[105] Emily Jones and Matilda Arvidsson, 'Introduction to International Law and Posthuman Theory' in *International Law and Posthuman Theory* (Routledge 2024) 43;Daniela Gandorfer, *Matterphorics: On the Laws of Theory* (Duke University Press 2024).

[106] Rosi Braidotti, *Nomadic subjects: Embodiment and sexual difference in contemporary feminist theory* (Columbia University Press 1994).

[107] Frederic William Maitland and Francis Charles Montague, *A sketch of English legal history* (The Lawbook Exchange, Ltd 1998) 99.

[108] Hyo Yoon Kang, 'Law's Materiality: Between Concrete Matters and Abstract Forms, or How Matter Becomes Material' in Andreas Philippopoulos-Mihalopoulos (ed), *Handbook of Law and Theory* (Routledge 2018); Marie-Catherine Petersmann, 'Response-abilities of care in more-than-human worlds' (2021) 12 Journal of Human Rights and the Environment 102; Gandorfer (n 105). From an anthropological perspective on the question of legal representation see especially: Elizabeth A Povinelli, *The cunning of recognition: Indigenous alterities and the making of Australian multiculturalism* (Duke University Press 2002).

[109] Jones and Arvidsson (n 105); Emily Jones, *Feminist theory and international law: Posthuman perspectives* (Routledge 2023).

[110] Jake Goldenfein and Andrea Leiter, 'Legal engineering on the blockchain:'Smart contracts' as legal conduct' (2018) 29(2) Law and Critique 141.

[111] Alan M Turing, 'Computing Machinery and Intelligence' [1950] (59) Mind 433, 439.

[112] Wood (n 10).

[113] Hildebrandt, 'Code-driven Law: Scaling the Future and Freezing the Past' (n 5) 74.

[114] Wood (n 10).

[115] Brekke (n 81) 62. Brekke works with a notion of 'cut' coined by science philosopher Karen Barad locating sense making at an onto-epistemological level of forces rejecting the distinction between mind and matter. Karen Barad, *Meeting the universe halfway: Quantum physics and the entanglement of matter and meaning* (Duke university Press 2007).

[116] Nathan Schneider, 'Practice Upwards' in Ruth Catlow and Penny Rafferty (eds), *Radical Friends: Decentralised Autonomous Organisations and the Arts* (Torque Editions 2022) 20.

[117] Dick Bryan, Jorge López, and Akseli Virtanen, *Protocols for Postcapitalist Expression: Agency, Finance and Sociality in the New Economic Space* (Minor Compositions 2023).

[118] Erik Bordeleau and Nathalie Casemajor, 'Interspecies Cyber-Governance: BeeDAO and the Artistic Imaginaries of Blockchain for Planetary Regeneration' [2025] Journal of Urban Technology 1.

[119] Inte Gloerich, 'Towards DAOs of difference: reading blockchain through the decolonial thought of Sylvia Wynter' (2023) 12(1) A Peer Reviewed Journal About: Minor Tech 162.

physical and data body in a principled unending hack of totalising systems of violent coercive control.'[120]

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[120] Catlow and Rafferty (n 11) 27.

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A reply: **Augmented? Law?**

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Andrea Leiter's and Delphine Dogot's tour-de-force account of the philosophical paradox at the heart of todays' law-as-code-as-law projects is right to the point. Blockchains, Decentralized Autonomous Organizations, and smart contracts try to remove all arbitrariness of human/institutional modes of ordering inherent in law through designing technical infrastructures which self-enforce protocol-encoded rules. Leiter and Dogot rightly point out that rather than replacing law, this approach actually develops an extreme version of it through hyper-formalization: taking a centuries old idea in legal scholarship to its logical, and therefore highly problematic conclusion.

The blockchain hyper-formalism, as the authors duly note, is just a means to get to some end. In this response, I would like to explore what these ends are, and whether hyper-formalism is a suitable approach to achieve them.

The two authors offer a brief overview of the political and functional reasons to replace the legal system with blockchain based protocols. Transhumanist, libertarian, and – rather surprisingly – communitarian projects all see code-based ordering as a way to put their progressive imaginaries into practice. Algorithmic certainty around rules, their application and outcomes, and the evacuation of context and sociality from the rule-system are apparently seen as the preconditions of both individual and communal self-realization. What these politically and ideologically distinct initiatives want is freedom, just like the previous generations of (digital) freedom fighters[121]. They hope to establish their counter-hegemonic opposition to both the old powers of the state and traditional corporations, and the new, digital hegemons through the commitment to the same piece of technology.

Yet – and here lies the *real* paradox behind the hyper-formalistic approach – this latest generation of digital freedom fighters is the first to try to establish a counterhegemonic utopia by relying on an infrastructure of hegemony. Make no mistake, the blockchain-based ordering infrastructures cannot be anything but hegemonic, as they cannot, and will not deal with anything which is not rendered visible to their rules through the standardization of transactions, and the tokenization of things, value, individual qualities, and social relations. It is all the more surprising then that freedom is hoped to be achieved through ordering infrastructures which both try to organize whole socialities, and which, in the very same time, deliberately evacuate the concept of the social from their design.

Is it possible to achieve utopian social and political ideals with such an approach? In my opinion this is the question which this excellent piece logically leads to but comes short of answering.

My answer to the question would be a resounding no, and this answer also has an impact on the framing the authors chose for their analysis. Law, the rule of law, a democratic system based on fundamental rights is so far the best system invented to guarantee and protect freedom for individuals and communities. The kind of law which is able to do that, however, is more than just a set of rules: it is also the open, participative deliberation about the rules, their interpretation, and the ways to negotiate and resolve missing consensus.[122] In fact, no freedom-oriented system of rules can escape the discourse about the rules, about

[121] John Perry Barlow, 'A Declaration ofthe Independence of Cyberspace' [1996] ElectronicFrontier Foundation; Steven Levy, *Hackers: Heroes of the computer revolution* (vol 14, Anchor Press/Doubleday Garden City, NY 1984); Steven Levy, 'Crypto Rebels' [2010] Wired; Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (University Of Chicago Press 2006).

[122] Mireille Hildebrandt, 'The adaptive nature of text-driven law' (2020) 1(1) Journal of Cross-disciplinary Research in Computational Law; Emilie van den Hoven, 'Hermeneutical injustice and the computational turn in law' (2021) 1(1) Journal of Cross-disciplinary Research in Computational Law.

itself. There are no rules without breaches, no consensus without discord, and therefore any system of rules – unless it's a prison, or a totalitarian dictatorship – needs a forum to mediate disagreement. If the hyper-formalistic approach doesn't offer such a space within itself, then we must ask where and how the disagreements and their resolution will take place.[123]. On-chain governance, *i.e.*, a method to govern the evolution of the rules encoded in the technological system *within the system,* is the holy grail in the blockchain space, and so far it has proven to be just as elusive[124]. The alternative, however, is to build highly subjective, hierarchical, arbitrary systems of power around the technology, the very things hyper-formalized systems tried to render obsolete. Whether the charismatic leaders of blockchain communities are selling the promise of instant enrichment[125], or they are dutifully debating Protocol Improvement Proposals[126], hyper-formalization produced, and relies on its own antithesis: the arbitrary, subjective unstructured and untrustworthy messiness to discuss and develop the rules of the hyper-formalistic system.

So, this leaves us with two questions in response to the article. First, if the hyper-formalistic, code-driven, self-enforcing technological infrastructure cannot be without what it aimed to discard in the first place, what does it augment? And, even more importantly, if it cannot contain the most important function of law, namely the discourse on itself, is law the right comparison, the appropriate frame of analysis?

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Author's reponse

Delphine Dogot and Andrea Leiter

Can blockchain technology be a progressive technology for social ordering in light of its affordances? Balázs Bodó's careful and engaging response to our piece challenges us to make this question explicit.[127] In a clear and eloquent analysis, Bodo lands on a resounding No. He develops his answer from what he calls the blockchain's 'infrastructure of hegemony', that is the logical conclusion of the mechanic of on-chain governance, a system based on perfected quantification enabling full automation of decision-making and enforcement. What is lost in this process is the very possibility of deliberation. A 'forum to mediate disagreement' that is at the heart of democratic, rule-based systems is evicted from the blockchain architecture. As he points out, this is precisely how the very idea of an accurate, determinate rules-based system – the very notion of augmented law – turns over on itself and obliterates the very freedom it seeks to augment.

Our paper critically unpacks the stakes involved in the appeal of augmented law, critiquing its hyper-formalist tendencies without inadvertently falling back toward fetishising law. We engage with the problematic foundations, aspirations, and effects of hyperformalism in blockchain showing how a transhumanist embrace of blockchain for perfect digito-commodification describes the collapsing move of order turning over on itself.[128] However, our goal is not to re-enchant law. Our starting point is the understanding that law is a heterogeneous practice, shaped by and embedded within multiple, often conflicting, projects.[129] Formalism is one of the most powerful among these, exerting a deep influence on the discipline of law.[130] Our resistance to reenchanting law – even as we critique the competing normativity of blockchain – critically examines established distinctions between features and defects, virtues and vices.[131]

It is precisely because we observe that many in the field of law, including in its critical or formal corners seem to find new charms in indeterminacy, in lack of legal certainty, in deliberation, interpretation or negotiation when confronted with the radical formalism in blockchain, that we keep critique on the edge of the seat. Indeterminacy or interpretation do not have to be good or bad *in abstracto*. Whether lack of determination is a feature of law, or a problem of law will have to be assessed in specific situations, depending on a variety of factors including positioning, circumstances, resources etc.

So, if we share the skepticism of Bodó in the potential of such hyperformalism to keep its promises of seamless ordering, we also remain mindful that law may be just as implicated in the solution as it is in the problem. When Bodó asks whether it is 'possible to achieve utopian social and political ideal through hyperformalism' we respond simultaneously with skepticism about tool fetichism – whether law or blockchain - and pragmatic optimism about the creative possibilities of blockchain-driven socialities.

[127] Quinn DuPont, 'A Progressive Web3: From social coproduction to digital polycentric governance' in *Defining Web3: A Guide to the New Cultural Economy* (Emerald Publishing Limited 2024).

[128] Nick Land, 'Crypto-Current: Bitcoin and Philosophy' (2018) ⟨https://subliminalsensibility.wordpress.com/2021/05/06/crypto-current-bitcoin-and-philosophy-nick-land/⟩.

[129] See for instance: Andrew Lang and Susan Marks, 'People with projects: Writing the lives of international lawyers' (2013) 27 Temple International & Comparative Law Journal 437.

[130] Morton J Horwitz, 'The rise of legal formalism' (1975) 19(4) The American Journal of Legal History 251.

[131] Pierre Schlag, 'Rules and standards' (1985) 33 UCLA Law Review 379.