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# From cryptocurrencies to cryptocourts: blockchain and the financialization of dispute resolution platforms

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## ABSTRACT

This paper contributes to emerging discussions of blockchain governance through an analysis of dispute resolution platforms that reimagine justice. We focus specifically on *Kleros*, a blockchain-enabled dispute resolution platform, that promises to secure, authenticate, and democratize access to justice for the twenty-first century. We advance the concept of cryptocourts whereby jurors, incentivized by accumulating cryptocurrency, rapidly mobilize using principles of on-demand crowdsourcing to resolve disputes. We critique the broader social imaginaries that cryptocourts such as *Kleros* will result in a more open, trustworthy, transparent, and democratic systems of justice. These platforms instead pose important questions concerning their potential impact on civil dispute resolution practices by embedding it within an economy of cryptocurrency speculation. This ostensibly results in a legal infrastructure founded on principles of financial acquisition that positions jurors as economic agents seeking to profit from disputes, and courts as computational systems that merely authenticate and secure the distribution of evidence and verdicts.

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## Introduction

In 2018, as cryptocurrencies such as Bitcoin were hemorrhaging value from the latest and worst crash to date, a start-up decided to test how cryptoeconomics could be applied to decentralized decision-making using an online dispute resolution platform. The outcome would serve to demonstrate not just the efficacies of their arbitration technology enabled by blockchains and cryptocurrency, but more importantly, serve as a theoretical model for reimagining justice in the twenty-first century. The ‘Doges on Trial’ experiment tested how their platform would respond to an imagined dispute by asking users to submit images of the Shiba Inu ‘Doge’ internet meme to an online gallery which could then be verified or challenged by users (James, 2018). Both submissions and challenges required the user to make a cryptocurrency deposit which in turn was used to pay jurors and award the winning party. For its creators, the result would test the feasibility of

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‘crowdsourced’ jury deliberation where users, incentivized by earning cryptocurrency tokens on a ‘jurors-on-demand’ platform, would assemble to solve disputes of any kind for a price. This would serve an important proof-of-concept for *Kleros*, a blockchain-enabled dispute resolution platform that offers the promise of liberating justice from the courts.

What interests us is not the experiment’s outcome, but the underlying logic and values of reinventing justice through cryptocurrency tokens and blockchain-enabled online dispute resolution platforms that we term *cryptocourts*. This includes the theoretical frameworks and ‘socio-technical imaginaries’ (Jasanoff & Kim, 2009) that the designers of *Kleros* – and other similar blockchain platforms purporting to reinvent justice – mobilize in order to achieve a sense of credibility and authority over an emergent cryptocurrency market. Here, we explore how *cryptocourts* promise to enable a more transparent, open, and democratic judicial system divorced from traditional state-administered courts and tribunals. We argue that while *cryptocourts* may provide an alternative path to justice, they are nonetheless embedded in emerging institutions of cryptocurrency speculation that require an analysis of the social, political, and economic relations between jurors, *cryptocourts*, and platform financialization. While existing research has focused on the legal implications of online dispute resolution platforms to identify best practices and policies to guide their development (Kaal & Calcaterra, 2017; Koulu, 2016; Schmitz & Rule, 2019), there is a lack of conceptual and theoretical research into the socio-technical imaginaries of *cryptocourts* and their judicial implications. This is significant because dispute resolution platforms that people rely on to resolve various legal disputes have hitherto not been tied to larger institutions of platform and cryptocurrency valuation. Such platforms thereby pose important questions concerning the extent to which market forces of digital currencies should govern the production of justice.

This paper offers a theoretical analysis of *cryptocourts* to understand how blockchain is imagined to reinvent justice in a more open and democratic way that does not depend on state bureaucracies, courts, and traditional forms of legal expertise. Instead, *cryptocourts* reconfigure arbitration around cryptoeconomic maxims where jurors must stake tokens to participate in arbitration and thereby financially invest in the outcome of a trial. *Kleros* describes its platform as ‘the justice protocol’ enabled by an assemblage of blockchain, smart contracts, cryptocurrency, and crowdsourcing to create an ‘open dispute resolution platform bringing justice for all’ (*Kleros*, 2020). While there are similar dispute resolution platforms built on blockchain, including, for example, *Jur* and *Aragon Network*, an extensive examination of all of them is beyond our scope (Katsh & Rabinovich-Einy, 2017; Metzger, 2019; Schmitz & Rule, 2019). *Kleros* is in many respects the most developed and ambitious platform because it incorporates both technological and social epistemologies to critique existing legal infrastructures as evident in a variety of publicly available texts and intellectual outputs analysed throughout this paper. This includes white papers, academic conferences, online videos, blog entries, and even a 305-page *Handbook of Decentralized Justice* (*Kleros*, 2019a). We see these texts as providing fertile ground for theorizing how blockchain developers re-imagine justice, and exemplifying how actors must strategically guide the entry of new technologies into the marketplace and show how they should be discursively understood within a community (Hardy, 2010; Munir & Phillips, 2005; Pinch & Bijker, 1984; Stahl, 1995).

Methodologically, we undertook a thematic analysis of documents published by Kleros to identify the underlying social beliefs, values, and imaginaries that inform how cryptocourts reinvent justice using blockchain technology. This was done by gathering all available documentation published by Kleros developers and undertaking a thematic analysis of the underlying sociotechnical imaginaries of justice. We then identified specific patterns in the discourse of why blockchain dispute resolution platforms ostensibly should be trusted to arbitrate disputes. We focused specifically in examining the arguments Kleros advances to legitimate their platform, including their beliefs and philosophies of justice, and the values they inscribe into blockchain technologies to overcome particular issues in existing legal dispute resolution practices, in order to synthesize a theoretical understanding of cryptocourts. The findings here present an overview of the dominant themes identified in order to contribute to this emerging area of theoretical scholarship and critique of blockchain imaginaries. Other studies have undertaken thematic analyses of blockchain and cryptocurrency texts to understand how developers and stakeholders discursively construct particular social and political issues of governance, including new ideologies and political authorities divorced from the state to legitimate new blockchain applications (Atzori, 2017; Campbell-Verduyn, 2018; Dupont, 2018; Golumbia, 2016; Swartz & Castells, 2017; Woodall & Ringel, 2019). We extend this field of research into the legal sector to understand the intellectual groundwork that legitimates cryptocourts as a new and more trustworthy configuration of knowledge, expertise, and technology.

The body of this paper is organized into three parts. The first section discusses the social imageries of blockchain and its emergence within the legal sector to situate cryptocourts within a larger backdrop of online dispute resolution and access to justice. Section two examines how cryptocourts are made meaningful by producing new objects of legal deliberation and arbitration, and by creating broader narratives of trust that promise to democratize access to justice (Seidel, 2018). The third section critiques these imaginaries by examining the political economy of Kleros that coalesces into a ‘justice-as-a-service’ modality of cryptocurrency exchange. We specifically analyse how cryptocourts such as Kleros are embedded within a larger political economy of platforms and cryptocurrency financialization (Davis & Walsh, 2017; Langley & Leyshon, 2017; Srnicek, 2017; Zook & Grote, 2020), whereby users must first invest in the Kleros cryptocurrency that sustains the platform in order to become selected as jurors. We conclude by reflecting on the implications of cryptocourts on reconfiguring access to justice narratives whereby trial verdicts, and in turn the production of justice, are subject to the rules of the market.

### **The emergence of blockchain within the legal sector**

There is a long history of imagining and designing an array of online services and digital platforms to overcome economic, geographic, linguistic, psychological, and cultural barriers to accessing justice. While these services are often benign in the sense that they simply move existing process online, technologies that reimagine online dispute resolution platforms have sought to provide paths to justice outside of the formal adjudicative regimes (Katsh & Rifkin, 2001). These dispute resolution platforms first arose in the context of online commercial disputes where the growth of e-commerce necessitated an

efficient multi-jurisdictional mechanism to quickly resolve disputes between buyers and sellers of products. One of the earliest and best-known examples of this was eBay's dispute resolution tool (Katsh & Rabinovich-Einy, 2017). These services appealed to the intrinsic qualities of the internet to bridge offline relationships by allowing distant parties to meet in a virtual space and resolve their disputes using a trusted expert. The underlying logic of dispute resolution remained consistent with existing offline dispute resolution practices; the objective was simply to develop a more efficient, affordable, and accessible space to resolve consumer disputes.

The introduction of blockchain, however, has given reason to suggest that new approaches to dispute resolution, coupled with their own philosophical interpretation of justice and governance in the twenty-first century, are emerging. Research has sought to understand how blockchain represents an 'engine of alterity' to speculate on the socio-technical design of a future world and theorize the larger social imaginaries of blockchain governance (Swartz & Castells, 2017). Set against a larger backdrop of the 2008 financial crisis, reputation and trust has become a key rhetoric of blockchain advocates for its supposed capacity to contest existing relationships between the state and private sector and create decentralized alternatives to existing governance frameworks (Faria, 2019). Trust and reputation are seen as building blocks for the creation of new visions and systems for exchange are shared both amongst far-right libertarians and anarchist collectives of the left (Dodd, 2018). The value of blockchain is not simply tied to its technological affordances or innovations such as cryptography but is sustained through speculative imaginaries of decentralizing trust without the need of existing political and social institutions (Herian, 2018), which could reconfigure existing legal structures and authorities. For example, smart contracts that leverage blockchain to automatically verify and execute encoded contractual terms and obligations could challenge the roles of contractual language used by lawyers, insurers, and auditors (DuPont & Maurer, 2015). Such challenges would signify a shift in expertise from traditional knowledge professionals in fields of law towards computer scientists and engineers, and moreover accelerate processes of information disintermediation and automation in knowledge work that may not otherwise be desirable (Campbell-Verduyn, 2018). The ability of blockchain to automate execution of smart contracts through the coding of law has been critiqued for its potential to blur the lines between technical and legal rule that could in effect produce a much stricter regulatory system where the interpretation and translation of legal rules is governed by algorithmic and mathematical models (De Filippi & Hassan, 2016). For Ortolani (2019, p. 442), blockchain sits at a 'terra incognita' of transnational arbitration because of its potential to create 'self-sufficient private adjudication systems' that do not rely on the state for enforcement of arbitral rulings. This could lead to numerous questions and challenges for courts in the future, including both the parties' and the public's ability to scrutinize dispute resolution outcomes. Taken to its extreme, the belief in blockchain as enabling a self-sufficient juridical regime embodies what Atzori (2017) critiques as a 'stateless global society' of technocratic governance. That the nation state is – or rather should be – dismissed as an outdated institution that needs to be replaced by borderless and globalized government-as-a-service offered by 'tools' such as blockchain. This interpretation sees the rise of a 'techno-leviathan' state (Scott, 2014) where neoliberal governance is automated through these emerging technologies.

Such predictions merit further understanding and critique. For Zou (2020), industry hype surrounding blockchain for legal applications such as smart contracts are problematic precisely because code intersects with market, social, and legal modes of regulation to constrain how blockchain applications function. Put differently, innovations in legal technology should not discount the social values and theoretical frameworks that inform how parties come to trust legal institutions to govern conflict (Zou et al., 2019).

These issues demonstrate how new technologies such as blockchain are accompanied with new understandings and visions of political experiences that influence a broader collective imagination of the political (Husain et al., 2020). Against this backdrop, a new market for scalable online dispute resolution based on ‘distributed jurisdiction’ has begun to surface that is only beginning to be understood (Kaal & Calcaterra, 2017).

The public sphere is also beginning to experiment with blockchain technologies, particularly to streamline legal infrastructure. In the United Kingdom, the courts are currently investing £1.2bn in modernization programmes such as Digital Ledger Technologies for evidence handling and document management. Despite claims that this modernization programme might render some 6,500 jobs expendable (Bowcott, 2018), blockchain stakeholders see this as a ripe opportunity to introduce blockchain into legal frameworks for a more efficient and secure data architecture based on decentralized, distributed, and cryptographically sealed evidence management systems (Sachs, 2018). However, a deeper subtext often used to rationalize blockchain is that the courts are fundamentally antiquated due to their ‘physical’ brick-and-mortar and paper-trail infrastructures. This view, typically advocated by executives of companies that offer digital and cloud-based solutions, see the courts as important institutions but nonetheless ‘relics of the past’ (Clarke, 2018). At the same time, efforts to digitize the courts are likewise seen as a risk. For example, one blockchain security protocol firm argues that the ‘reliability of facts and evidence has never been more threatened’ due to risks of hacking, theft, and data manipulation (Forst, 2020). In this interpretation, it is precisely *because* courts are trying to digitize that blockchain becomes necessary.

These interpretations demonstrate how stakeholders negotiate an emergent socio-technical configuration of legal technology that will impact the production of justice through changes to documentation practices and archival techniques. These collective forms of reimagining juridical bureaucracy also reflect larger negotiations of emergent forms of global governance that prioritize technocratic systems of rule enforcement. In 2018, for example, Dubai’s Courts of the Future forum launched the ‘world’s first Court of the Blockchain’ to aid verification of cross border enforcement. The product of a partnership between the Dubai International Financial Centre and Smart Dubai, the government backed smart city initiative, the Court of the Blockchain promises to prototype a commercial court that would streamline cross-border court judgements and enforcement through blockchain ‘allowing cost effectiveness while empowering timely justice and unparalleled convenience’ (Nabilah, 2019). The Court of the Blockchain could operate virtually anywhere in the world because blockchain is seen as having the necessary credibility to remove any modicum of epistemological skepticism over the authenticity of a particular judgement. In effect, this represents a re-imagining of judicial technocracy optimized by blockchain for global capital. Inefficiencies in court bureaucracy, including jurisdictional conflicts, are seen as the major obstacle that blockchain can help overcome by offering an irrefutable mechanism to verify the credibility of court

judgements, and in turn reduce the need for existing forms of transnational bureaucratic oversight. Elsewhere, China's Supreme Court ruled in 2018 that blockchain can legally authenticate evidence and are likewise experimenting with blockchain and artificial intelligence in judicial reforms that would in theory streamline and automate justice (Cant, 2019).

Parallel to the courts' efforts to modernize adjudicative mechanisms are private sector actors who are leveraging blockchain technology to develop online dispute resolution platforms. Though specific processes and systems differ, dispute resolution platforms generally utilize some sort of token or cryptocurrency system to incentivize juror participation and to reward or punish specific behaviours (Rabinovich-Einy & Katsh, 2019). These platforms typically present themselves as a more efficient, cost-effective, system of arbitration in an international and multi-jurisdictional economy than traditional courts whereby blockchain can realize a more accessible judicial system and democratic dispute resolution process. Despite the emerging interest in blockchain for legal services, there remain many misconceptions concerning the relationship between law and the supposed immutability of blockchain technologies to replace traditional judicial remedies and processes. As Low and Mik (2020, p. 136) argue, the excitement over blockchain's transformative capacity in the legal sphere stems from a mutual misunderstanding in terms of how lawyers do not understand blockchain technology, and how technologists make 'false assumptions about how legal rules work and thus imagine legal systems ripe for disruption'. Here, we would add to this critique and suggest that there is a deeper issue of how blockchain technologists reimagine *justice* by envisioning new platforms and services that operate using blockchain and cryptocurrency. Extant literature on blockchain and the legal sector has largely not addressed this.

## Disrupting dispute resolution

Legal sector investments into blockchain are often grounded within social imaginaries of decentralized and distributed governance using 'trustless' peer-to-peer systems that operate independently from third parties such as courts and regulators (De Filippi & Loveluck, 2016). In the context of understanding the judicialization of blockchain (Ortolani, 2019), an important imaginary begins with disrupting existing legal structures, problematizing existing approaches to online dispute resolution, and critiquing institutions of governance as oppressive. These 'spaces of disruption' (Zook & Blankenship, 2018) typically envision a return to juridical first principles to create a genuine democratic justice system that does not require the state as a coercive body to enforce rules. Echoing how cryptocurrency communities envision truck, barter, and exchange without the need for centralized regulatory authorities (Swartz, 2018), blockchain communities are likewise reimagining justice through cryptocourts that produce verdicts using decentralized governance, including crowdsourced juror deliberation, cryptoeconomic theories, and automated smart contracts. This blockchain imaginary has become evident with the emergence of blockchain dispute resolution platforms such as Kleros that claim to provide a more efficient and accessible system of arbitration that does not depend on national jurisdictions and centralized courts.

Kleros describes itself as a 'blockchain dispute resolution layer' inserted into a smart contract that will provide 'fast, open and affordable justice for all' (Kleros, n.d). Briefly,

when a dispute is in need of arbitration, Kleros will issue a call for jurors. Any user of their platform can respond to this call by staking a certain amount of cryptocurrency tokens on the dispute. Though jurors are selected randomly from the response pool, the more a potential juror stakes the greater the likelihood of them being selected as a juror. Once selected, the jurors then review the evidence submitted by the parties and vote on an outcome. Jurors that voted with the majority are awarded a share of the staked tokens and those who voted in the minority lose their tokens. Thus, Kleros claims to incentivize jurors to vote truthfully by penalizing ‘dishonest’ or dissenting jurors (Ast & Lesage, 2017).

Kleros claims that approximately 150 jurors have resolved over 200 cases since 2018 (Blockfyre, 2020). Kleros is supported by various stakeholders, including startup incubation capital from *Thomson Reuters*, the French investment bank *bpifrance*, and most recently the recipient of a Blockchains for Social Good prize from the European Union’s Horizon 2020 research and innovation programme. While there are several other blockchain dispute resolution platforms in varying stages of development (Metzger, 2019), Kleros has made significant efforts to produce various intellectual outputs that detail the theoretical foundations and socio-technical imaginaries of blockchain dispute resolution platforms. Kleros has sought to distinguish itself in the market through three objectives: to create a new business model for justice that puts blockchain at the centre of dispute resolution technologies; to develop a new field of legal-tech research into blockchain; and to advance a judicial reform movement that would ‘inspire people that a different justice system is possible’ (Kleros, 2019a, p. 27). These efforts arguably demonstrate its attempts to reshape the broader legal imaginaries through blockchain through a continued investment in researching and publishing reports on the feasibility of decentralized justice, including most recently starting an unfunded ‘Fellowship of Justice’ to attract researchers to this nascent field. One whitepaper envisions Kleros as:

... a decision protocol for a multipurpose court system able to solve every kind of dispute. It is an Ethereum autonomous organization that works as a decentralized third party to arbitrate disputes in every kind of contract, from very simple to highly complex ones. Every step of the arbitration process (securing evidence, selecting jurors, etc.) is fully automated. Kleros does not rely on the honesty of a few individuals but on game-theoretical economic incentives. (Lesage et al., 2019, p. 1)

Kleros has its genesis in a 2015 conceptual article co-authored by cryptoeconomist Alejandro Sewrjugin, and Frederico Ast, the CEO of Kleros, claiming that although the ‘digital revolution’ has transformed many institutions and industries, the judicial system has remained relatively unchanged. Nevertheless, developments such as ‘collective intelligence, open government, social epistemology and the blockchain’ can restructure courts in ways that are more ‘epistemically efficient and financially sustainable’ (Ast & Sewrjugin, 2015, p. 2). It is unclear what exactly this means, however, such critiques are largely based on purely technocratic theories of judicial performance and efficiency that can be solved with new software developments and automations. These blockchain imaginaries not only predict future socio-technical regimes of blockchain governance, but also draw on historical interpretations and myths to construct an ideal vision of legality. For example, drawing on Jeremy Bentham, the authors claim that while modern courts are an improvement from mediaeval discursive productions of truth, they



nevertheless depend on a similar bureaucracy of judges and lawyers, ‘artificial rules’, and procedural obfuscation that impact the efficiency and utility of the courts. In effect, the authors repurpose Benthamite critiques of early modern courts to analyse contemporary judicial spheres in order to legitimate a future imaginary of blockchain driven courts (Ast & Sewrjugin, 2015). This portrayal of courts as artificial and historically inefficient is central to the blockchain imaginaries of utilitarian justice: hierarchical, professional, and centralized legal institutions using printed documentation alienate justice from genuine forms of democratic public participation, transparency, and oversight. The gatekeeping function of judges and arbitrators who, as legal experts, oversee and curate the legal process, are seen as incompatible with emerging judicial futures and legal disputes. While existing courts will serve some important functions, they are nonetheless considered incapable of addressing contemporary issues stemming from online activities and e-commerce due to their reliance on national jurisdictions and paper-based contracts (Kleros, 2019a). Courts have, in their view, reached their ‘complexity limit’ and cannot truly govern contemporary global disputes (Kleros, 2019a, p. 43). This critique hinges on a judicial ontology whereby courts are nothing more but ‘an epistemic engine’:

... a tool for ferreting out the truth about some event that happened or did not happen from a confusing array of clues and indicators. There is a procedure (judicial process) where an agent (jury) uses some input (evidence) to produce an output (verdict). The truth value of the verdict is dependant [*sic*] on such variables. (Ast & Sewrjugin, 2015, p. 1)

Kleros reimagines the discursive qualities of truth-seeking inherent in the judicial process and reduces complex social processes – such as validating rights, developing laws, or condemning undesirable conduct – to a series of technocratic inputs and outputs that can easily be automated with the right software. While this critique of the courts arguably reinforces beliefs that blockchain will offer a more reliable and trustworthy system of information production and preservation (Woodall & Ringel, 2019), Kleros also uses it to envision new ways that jurors can be efficiently selected for service. This requires the use of new forms of ‘algorithmic governance’ rooted in blockchain philosophies of cryptoeconomics to automate the process of legal arbitration (Zook & Blankenship, 2018).

Technocratic arbitration depends on reconfiguring the processes of juror selection to be compatible with decentralized governance. This requires a radical departure from existing legal processes in favour of a ‘fundamentally rethinking justice from a first principles perspective’ (Kleros, 2019a, p. 26). These first principles include ancient Greek democracy as the ideal type by which online justice should embody because of its supposed efficiencies in executing justice through a jury of non-experts selected at random. Both the Kleros cryptocurrency token, the *Pinakion* (PNK), and the name of the platform itself are derived the fourth-century Athenian juror selection process whereby juror candidates would insert a citizen token called a *Pinakion* into a randomization machine, a *Klērōtēria*, to determine jury selection (Ast & Sewrjugin, 2015; Kleros, 2019a). As Kleros sees it, this technique offers a more efficient, and less corruptible system of juror deliberation due to its supposed resistance to juror bribery. While a proper critique of the historical accuracy of these claims is beyond the scope of this paper, some have argued that in practice the *Klērōtēria* was far more complex, and issues of juror corruption and bureaucratic centralization persisted alongside broader transformations in Athenian government (Carawan, 2016). For that matter, issues of juror corruption and bribery are

generally not considered barriers to justice in contemporary scholarship (Macdonald, 2010). Nevertheless, while Kleros claims that the Klērōtēria of ancient Athens provides a secure method of reducing juror corruption, there is a marked difference between Klērōtēria and the modern Kleros platform since Kleros tokens must be *purchased*. For Kleros, the efficiencies of blockchain dispute resolution depend on securing the processes of juror selection against various risks such as juror bias that could stem from ‘Sybil attacks’ – whereby an attacker tries to shift the outcome of a decision by flooding the juror pool with multiple fake identities (George, 2018). Kleros views its PNK token, and the necessity that jurors must purchase them in order to be selected, as a solution to a complex puzzle of how to securely produce an unbiased juror pool using ‘trustless’ decision-making processes. This thinking aligns with Hayes’ (2019) argument that cryptocurrencies are often regarded by their proponents as solutions to socio-technical puzzles such as the double-spending of digital coins. Put differently, for Kleros crypto-court financialization is directly tied to a larger socio-technical puzzle of producing juror honesty. However, this puzzle depends on appealing to the immutability of cryptoeconomic theories and laws to govern juror behaviour.

### **Cryptocourt financialization**

Advocates of blockchain governance, including cryptocourts such as Kleros, appeal to the logic of ‘game theory’ as a natural governing structure that provides a mathematical justification for risk assessment and speculative decision-making. This is seen as providing a common foundation for both the enactment of social judgement (i.e., juror decision-making) and the enforcement without external coercion:

Game theory based incentivization of the ruling mechanism is natural for a blockchain based system as blockchains themselves rely on game theoretic ideas to function. Hence, similar cryptoeconomic security properties underlie both the ruling and enforcement mechanisms of Kleros. (Kleros, 2019a, p. 108)

Cryptocourts rely on certain economic assumptions about human behaviour and the ability to co-ordinate it through the use of ‘Shelling Points.’ Developed by economist Thomas Shelling, then repurposed by cryptocurrency evangelists such as Vitalik Buterin into ShellingCoins (2014) a Shelling Point is an economic concept in game theory that refers to the solution that people will arrive at when they are unable to communicate with each other. That is, in circumstances where individuals do not trust one another or cannot speak to one another, this theory argues that economic incentives can align the behavioural expectations of a group. Shelling Points form the theoretical blueprint for the Kleros PNK token – an economic incentive to ensure that individual jurors vote coherently with a majority. As Kleros argues:

SchellingCoin uses this principle to provide incentives to a number of agents who do not know or trust each other to tell the truth. We expect agents to vote the true answer because they expect others to vote the true answer, ... In this simple case, the Schelling Point is honesty. (Lesage et al., 2019, p. 2)

Kleros imagines that juror honesty, and in turn the production of juridical truth, can be governed by immutable cryptoeconomic laws and correct incentive structures that cryptocourts can provide. This is because the architecture of Kleros only rewards jurors

who voted coherently with the majority, while punishing those who vote incoherently. While Kleros claims that the platform selects jurors at random, they also acknowledge that jurors that stake more tokens have a higher probability of being selected (Kleros, 2019a, 2019b). In effect, this can be understood as a political economy of token redistribution where the platform encourages potential jurors to invest labour, and behave in predictable ways otherwise face the risk of financial loss. Yet, as Metzger (2019, pp. 100–101) notes, the underlying use of Schelling Points and other such financial incentive structures in prediction markets are problematic when applied to the production of juridical truth as they presume that the different legal and cultural perspectives of jurors from around the world will coalesce around a ‘correct outcome’. Issues of how jurors come to semantically understand a dispute, or analyse evidence are not considered substantive problems for Kleros because ultimately cryptocourts situate jurors as rational actors seeking to financially profit from their labour. Any notion of potential juror bias or dishonesty can therefore be overcome by configuring cryptocourts in such a way that aligns judicial arbitration with economic incentives (Ast & Dimov, 2018).

For Kleros, the delivery of justice is synonymous with the consensus of an anonymous body of jurors motivated by the accumulation of tokens. This approach to democratic deliberation using ‘speculative markets’ is rooted in Robin Hanson’s *Futarchy* whereby citizens ‘vote values but bet on beliefs’ as a model for dispute resolution (Hanson, 2013). Like Kleros’ distrust of legal experts, *Futarchy* is skeptical of the value of policy experts and the ‘failure’ of democratic governments to aggregate sufficient information for decision-making, and instead argues that speculative markets provide a superior method for measuring policy decisions. Disputes, and more precisely assembling the necessary information for understanding which decision will lead to a ‘better’ future, is governed by the logic of speculative finance where parties bet on matters of fact, such as which party has been wronged in a legal dispute. Cryptocourts, therefore, organize jurors around speculating which outcome is most likely to win, and subsequently rewards those that vote coherently with that outcome. This is precisely how cryptocourt financialization operates *through* a legal imaginary that encourages jurors to engage in speculative predictions, and indeed gambling on, a future outcome of a dispute. In this way, justice is synonymous speculative investment.

However, as Andrejevic (2010) argues, celebratory accounts of prediction markets and betting platforms based around principles of *Futarchy* typically reproduce now well-worn narratives of users as active participants in a new form of democratic governance, while also offering the promise to overcome the alienation of modernity and top-down expertise. This allows platforms such as Kleros to dismiss existing legal institution as antiquated or even antagonistic to a ‘true’ democracy while justifying the laws of the market as a more effective replacement for delivering justice using cryptocourts. This would in effect transform the logic of justice from a domain of experts engaged in deliberation, fact finding, and critique with a domain where experts are replaced by winners, and deliberation by free markets. Kleros understands the market as merely an organizational logic for the truth and that ‘paying’ jurors (at least those who win) is an incentive mechanism for honesty. Kleros sees itself as offering a ‘missing link to decentralized freelancing’ and devotes significant space in their materials to explaining the value of incentivized jurors as proffering a more reliable or trustworthy judgement, even in some instances describing their platform as ‘trust as a service’ business solution to online

disputes (James, 2019). However, we argue that in this context a trustworthy judgment is actually governed by speculative profit-seeking that encourages jurors to deliberate verdicts based on predicting which party will most likely win as opposed to a review and debate of evidentiary claims. For that matter, ‘trust as a service’ models reduce jury arbitration to little more than another form of precarious platform work that is endemic to so-called ‘sharing economies’.

Even if such debates surrounding trust, truth, and profit are philosophically vexing, cryptocourts – and indeed the broader political economies of ‘trustless’ forms of algorithmic governance in blockchain platforms – necessarily depend on sustained financial investment via cryptocurrency speculation and accumulation. This is precisely why the juror selection process, though claiming to be random, nonetheless favours jurors that stake more tokens than other would-be jurors. As Zook and Grote (2020) note, initial coin offerings in blockchain startups reshape the social relations and roles of investors and clients, often resulting in clients encouraged to take on the role of investors. We would extend this argument to consider how, in the case of cryptocourts such as Kleros, the ability to labour for such startup platforms is contingent on financial investment. In effect, the political economy of algorithmic governance, as exemplified in the underlying mechanics of juror selection necessary for deliberation, is directly tied to cryptocurrency financialization whereby jurors are encouraged to stake more tokens in order to compete for being selected.

Cryptocurrency tokens are arguably the true commodity being produced by Kleros as investment in PNK is a necessary precondition for jury service. Disputes, therefore, become a modality for cryptocurrency circulation and exchange that ties directly to the platform’s valuation and financialization (Langley & Leyshon, 2017). Currently, The PNK token is listed on several cryptocurrency exchanges and can be bought and sold on these exchanges independent of their use in the jury deliberation process on Kleros. In 2018 Kleros held their first public sale of tokens selling 160 million PNK. In January 2020, Kleros held a similar token sale selling 150 million PNK. This last sale raised about \$1.3 million USD for the organization (Kleros, 2020). Since Kleros is registered as a French cooperative – a legal entity created at the end of World War 2 to assist French farmers – the capital raised in this manner was not subject to taxation as it was ostensibly held for the benefit of the cooperative (Ast & O’Rourke, 2018). These sales function as a way to raise capital for the organization, and investors purchase PNK tokens not to further justice or expedite the dispute resolution process, but as a risky investment that may have high reward should the market value of the token increase over time. As noted by DuPont (2019) ‘... investors treat cryptocurrencies and blockchain technologies like speculative financial assets irrespective of their stated goals’ (p. 128). The founding team of Kleros also has a direct interest in seeing the value of the PNK grow as they have set aside 180 million PNK for their own benefit (Kleros, 2020). It would therefore appear that beyond some of the legal imaginaries of reinventing justice, the materiality of Kleros depends on engineering a profitable cryptocurrency.

## Conclusion

Access to justice is concerned with a promise that democratic societies make to their citizens wherein they warrant that all people have the ability to access the institutions and

tools necessary to resolve their legal problems fairly. This promise is often framed as a right of democratic citizenship and a fundamental component of the rule of law (Trebilcock et al., 2012). However, the reality is that access to justice remains elusive for many who, for a variety of reasons, are unable to adequately address their legal needs (Farrow & Jacobs, 2020). Factors such as the high cost of legal fees, the complexity of legal procedures, long delays in obtaining a hearing date, and even the physical location of the courthouse are all commonly cited barriers to accessing the formal intuitions of resolution (Macdonald, 2010). Legal technologies, like blockchain, have the potential to provide much needed access to justice solutions. For example, the automated processes of a smart contract made possible through blockchain could pre-empt many disputes over non-performance from arising and completely remove the need for security agreements (Schmitz & Rule, 2019). Indeed, this use of blockchain corresponds to a modern conception of access to justice that focuses on the prevention and resolution of the legal problem itself – whether it is through the formal institutions or through informal alternatives – as opposed to a conception that focuses solely on access to lawyers and the courts (Farrow & Jacobs, 2020). However, there are numerous questions – particularly in regards to the enforcement of decisions – with how blockchain could be used to support online dispute resolution platforms (Allen et al., 2019; Koulu, 2016). Even if developers of smart contracts could somehow perfect the technology, overcome both civil and contract law principles, and determine and what rules of evidence should govern adjudication, the question of *where* parties will turn to resolve smart contract disputes remains (Schmitz & Rule, 2019). Kleros provides a fascinating case study in a potential use of blockchain in online dispute resolution because it not only purports to solve many of the difficulties with the enforcement of online dispute resolution decisions but also appeals to broader imaginaries of democratizing justice.

Ostensibly, Kleros voices many of the same concerns with accessing justice that academics and policy makers have identified. Indeed, Kleros claims that its platform will allow for expedient, effective and affordable resolution of all kinds of legal disputes (Kleros, 2019a). The primary distinction between Kleros and much of the access to justice scholarship, however, lies in Kleros' understanding of the role of the dispute resolution process within democratic governance. Kleros reduces the complexities of judicial processes into a set of mathematical axioms designed to maximize the circulation of the PNK token. This ignores the important role courts have not only in dispute resolution, but also in creating and regulating societal and economic norms (Farrow, 2014). Traditional access to justice scholarship presumes that justice is dispensed by the legal institutions and the problem with access lies in the inability of individuals to effectively mobilize these institutions to resolve their legal problems effectively (Kritzer, 2005). Kleros, however, clearly diverges from this conception of justice seeing the institutions themselves as barrier to justice that can be overcome with properly incentivized jurors acting through cryptocourts. This disintermediation is potentially problematic from a democratic governance perspective because it places the administration of justice in the hands of a technocratic elite. While user-friendly applications may allow for the widespread adoption of dispute resolution platforms such as Kleros (Schmitz & Rule, 2019), the underlying code of such platforms remain proprietary, in effect creating more complex questions around the issue of transparency. The proprietary nature of cryptocourts

may impact how parties understand the processes by which their dispute was organized as well as their ability to assess the fairness of a decision.

Another conceptual difficulty from an access to justice perspective lies in the decision-making process itself. The enrolment of jurors as owners of financial assets, namely cryptocurrency tokens such as Kleros' PNK token, means that jurors must internalize a risk calculus when delivering verdicts in terms of how the outcome will affect *themselves*. Put simply, while Kleros claims that the use of cryptocurrency tokens guarantees that juror bias can be overcome through cryptoeconomic game theories and immutable laws that can be programmed into algorithms and computer code, we argue that framing arbitration through a calculus of speculative investment in effect produces the opposite. Jurors are necessarily biased throughout the course of arbitration precisely because they must internalize their own financial interests within an external dispute. Cryptocourts thereby assemble multiple parties with conflicting interests that include plaintiffs, defendants, and jurors competing to financially profit from the dispute. This poses important questions concerning how jurors evaluate disputes on the platform, decide on which disputes to enrol in, and stake tokens on influencing its outcome.

This economization of disputes is structured by a prediction market where Kleros reduces the complexities of dispute resolution by transforming consensus into a series of calculable outcomes by self-interested rational parties motivated by cryptocurrency accumulation. In this understanding, justice is reduced to jurors risking financial investments by calculating, or more accurately speculating on, the probability that a party is likely to win. This is problematic because it structures the production of juror consensus using crypto-economic game theories that frame justice as governable by market logics, in effect producing a form of algorithmic governance in the service of maximizing cryptocurrency circulation. Within cryptocourts, the production of justice is therefore not a normative question of determining the appropriate remedy, but a financialized prediction of who will be right. We argue that it is necessary to make a distinction between the technocratic abstractions, legal imaginaries, and economic maxims that crypto-communities such as Kleros mobilize to govern particular social relations of legal disputes with the empirical realities of social judgement that occur in the practice of arbitration. Future research should therefore attend to the subjective and mundane aspects of cryptocourt labour, including how juries enrol into the platform, invest in the underlying cryptocurrency, select disputes, analyse evidence, and internalize economic risk.

### **Disclosure statement**

No potential conflict of interest was reported by the author(s).

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