CHAPTER 2

Defining Boundaries of Due Process in Blockchain Arbitration

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1 Introduction

Blockchain, a decentralized ledger technology (DLT), has become prominent in our lives with the rise of Bitcoin, a type of cryptocurrency.[1] In addition to cryptocurrencies, blockchain presented many uses, which led to new types of disputes.[2] Arbitration has become one of the preferred methods to resolve such disputes related to blockchain transactions. On the other hand, blockchain applications, which can be referred to as blockchain dispute resolution (BDR) mechanisms, have been developed to resolve disputes. As it is not clear what is meant by blockchain arbitration, it becomes important to define blockchain arbitration and relevant due process standards. Regardless of the interpretation, due process is important to have enforceable outcomes. For BDR, it is also important for the legitimacy and reliability of the processes.

Blockchain arbitration, first of all, may refer to traditional (off-chain) arbitration for the resolution of blockchain disputes. Arbitrating this category of disputes is feared to have certain challenges as to the due process of the proceedings, which has an ultimate impact on enforceability (see chapter 1, p. 32-34 for other challenges). Due process is a concept that is mainly related to adjudicative processes. Although the scope of due process depends on the procedure, applicable legal sources, and the interpretation under the law, some of the fundamental notions of due process such as notification of parties, independent and impartial arbitrator, parties' opportunity to present their case and right to be heard are common across jurisdictions and arbitration procedures, whether national or international.[3]

The features of blockchain technology may create obstacles that prevent having the same level of due process that is generally required in the context of off-chain arbitration. For instance, difficulties with identifying the parties may hinder notification, hearings, and arbitrators' disclosure obli-

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gations, and challenge them due to conflicts of interest. Furthermore, parties may not get adequate redress because of difficulties in tracing and reversing the transactions on blockchain. Also, decentralization of blockchain applications may prevent identifying the responsible party and make it difficult to get the platforms who created these applications to comply with the awards or court orders granting enforcement. These aspects raise concerns about whether the parties to disputes related to blockchain transactions can have due process during traditional arbitration.

As a response to the challenges posed by the features of the technology such as irreversibility of transactions, pseudonymity of the users, and automated execution, it is suggested that the solution may come from within the blockchain community through BDR mechanisms. Among blockchain's many uses, some platforms have emerged to provide dispute resolution on the blockchain without the need for state involvement and with the idea of "bringing justice to unjusticed" following the idea of cryptocurrencies that brought "banking to the unbanked".[4] Following the decentralization philosophy of the blockchain, the platforms wanted to offer processes that remain outside the scrutiny of states whereas there is a form of oversight when off-chain alternative and online dispute resolution (ADR/ODR) procedures are reviewed by the courts, particularly in the context of annulment or enforcement procedures.

BDR as used in this chapter reflects the out-of-court processes facilitated by private platforms that may be consensual such as mediation and negotiation, or adjudicative-like arbitration.[5] BDR overall can be described as a type of ODR mechanism.[6] Although blockchain is used by some courts for validating evidence and verification of court judgments,[7] the use of new technologies in litigation is out of the scope of this chapter. Current out-of-court practices involve two main adjudicative BDR processes: on-chain arbitration and on-chain crowdsourced voting. BDR adjudication especially attracted the attention of the arbitration community with the on-chain crowdsourced voting. This process resolves disputes through the votes of a crowd that are incentivized through crypto economics and game theory principles.

Crowdsourced voting that does not follow the traditional international arbitration practice was labelled as "arbitration" creating unease among the arbitration practitioners due to significant differences from the arbitration procedure.[8] These concerns were mainly about the selection of non-lawyer jurors, lack of hearings, limited options for evidence submission, and how decisions are made in the sense that rather than applying the law to the facts established through evidence, jurors are incentivized to side with the majority to get a reward, and automatic execution of these outcomes without the scrutiny of courts.[9] On the other hand, the platforms argue that following incentivization and game theory principles will result in honest and fair outcomes.[10] Although reaching honest and fair outcomes is mostly related to substantive justice, the incentivization of anonymous, non-expert jurors acting as a crowd impacts procedural due process. Therefore, this new way of resolving disputes raised the question of whether we are reaching a new understanding of due process or whether it is still relevant in the context of BDR.

Due process standards may mainly come from off-chain ADR/ODR and arbitration principles. These include but are not limited to principles such as UNCITRAL Arbitration Rules[11], UNCITRAL Arbitration Model Law[12], UNCITRAL Technical Notes[13], the Council of Europe ODR Guidelines[14], the New York Convention[15], rules of arbitration institutions[16] and the EU ADR Directive for consumer disputes[17]. Even if they are not directly applicable, the values that aim to be protected enshrined in the standards can be interpreted for BDR adjudication.

In addition to ensuring procedural guarantees of fair trial and the right to be heard, due process has an impact on enforceability. This is relevant in the context of off-chain arbitration mainly resolving blockchain disputes, but also for certain BDR platforms providing on-chain arbitration resulting in awards that are to be enforced by the courts, presumably under the New York Convention due to the international nature of the transactions. This is different from the situation where the parties have agreed to a form of on-chain arbitration and the platform's design provides the possibility for awards to be enforced automatically via smart contracts. Similarly, there are certain platforms that automatically executes the outcomes of on-chain crowdsourced voting. However, I am of the opinion that due process remains relevant, precisely because the automatic execution of

awards deprives parties from the opportunity to seek redress or get their awards and outcomes scrutinized by a court. This gets even more critical when parties do not know each other's identity, or may not reverse the transaction on blockchain. In other words, automatic execution combined with other features of the technology on the one hand, and a lack of adherence to the standards of due process on the other hand, may lead to intolerable injustice. If platforms cannot provide a certain level of due process, this will diminish the legitimacy and reliability of the overall BDR system.

This chapter unravels the terminological confusions around blockchain arbitration and addresses how the common notions of procedural due process in these processes might be challenged by the salient features of blockchain applications. The chapter draws the contours of due process, however, it does not lay out different interpretations of due process or exhaustively lists due process requirements. Within this scope, Section 2 investigates due process issues that may arise during traditional (off-chain) arbitration procedures dealing with blockchain disputes. Section 3 delves into BDR or in other words blockchain-based ODR platforms and addresses due process for on-chain processes. Section 4 discusses how off-chain enforcement decisions can be transferred to blockchain for execution after on-chain arbitration or off-chain arbitration resolving blockchain disputes. Through this exploration, the chapter contributes to a clearer understanding of due process within the evolving landscape of blockchain arbitration.

2 Challenges to Due Process in Off-chain Arbitration for Resolving Blockchain Disputes

When blockchain first emerged, there was optimism that it would eliminate disputes. Contrary to expectations, blockchain architecture has not proven immune to conflicts, underscoring the inescapability of disputes in human interactions.[18] Traditional (off-chain) arbitration is proposed as a means to address these disputes. To understand any challenges that may be posed by off-chain arbitration while resolving blockchain disputes, Section 2.1 analyses the choice of forum clauses included in the conditions of the blockchain platforms and discusses recent blockchain disputes.

Section 2.2 focuses on how certain features of the technology and its application may threaten due process in arbitration.

2.1 Platforms' Choice of Off-chain Arbitration for Blockchain Disputes

There is not an agreed-upon definition for blockchain disputes.[19] Types of disputes concerning blockchain may include disputes related to the breach of legal contract,[20] or interpretation of the smart contract terms.[21] The disputes may be related to blockchain governance such as online voting, updating the blockchain protocol and data structure, transparency concerns, disputes between wallet providers and users such as the amount of currency in their wallet, denial of access due to lost passwords and inheritance of cryptocurrencies.[22] The disputes may also relate to hacking of accounts,[23] copyright disputes[24] and fraudulent misappropriation of cryptocurrencies[25] or any other issue that may arise from the use of a blockchain application.

Traditional (off-chain) arbitration is considered to be a good option to resolve these disputes due to being more delocalized compared to courts while having an enforcement mechanism with international effect as a result of the New York Convention.[26] Although this perspective oversimplifies the enforcement procedure for awards regarding blockchain disputes for the reasons detailed below, we see that the New York Convention still forms the backbone even for on-chain arbitration.[27] The other argument for off-chain arbitration is that it is a private and institutional mechanism providing a neutral platform and expertise.[28] While it is true that parties can select arbitrators with special expertise, the judges in some jurisdictions like the UK have been dealing with blockchain disputes and developing expertise in the area; hence, expertise may not automatically make arbitration a better forum as it is dependent on the circumstances of each individual arbitrator's experience in the field.

Contrary to the belief of supporters of off-chain arbitration for blockchain disputes, relying on the New York Convention standards may not be relevant at all. Even though blockchain technology is known to be inherently cross-border, facilitated by the computation power of the nodes around the world, a blockchain application may be restricted to users within a cer-

tain jurisdiction, or the choice of forum clauses may refer to the courts; hence, it may not provide for international arbitration to trigger New York Convention enforcement.

Due to its potential benefits, many blockchain platforms may select institutional arbitration to resolve their disputes.[29] However, it is wrong to assume that all blockchain platforms or other platforms adopting blockchain technology for some of their operations opt for arbitration as their preferred dispute resolution mechanism. For instance, users of Meta products that access the platforms with their business and commercial capacity agree to the exclusive jurisdiction of the US District Court for the Northern District of California or a state court located in San Mateo County.[30] When accessed within the UK, the terms state that Meta may bring any claim against users that are consumers "in any competent court in the UK that has jurisdiction over the claim."[31] Meta currently is not on-chain but Meta's (or Facebook's) metaverse is likely to support and use blockchain transactions like the NFTs or merely move to blockchain for increased security.[32] Unless Meta comes up with other governance standards for its blockchain operations, these provisions will become relevant.

Similarly, although it is not on-chain, Roblox, a metaverse platform with its native digital currency and future mediations to implement blockchain, has a "Mandatory Informal Dispute Resolution" step that requires all users to apply before escalating the dispute to arbitration.[33] Roblox's "Terms of Use" emphasizes that the arbitration agreement is only for US residents.[34] Arbitration is administered by FedArb per FAA.[35] Parties can choose to go to a small claims court but the users waive their right to class action and jury trial.[36] Users are given the chance to opt out of arbitration by sending a written notice within 30 days of signing up to the services of the platform.[37] Roblox has provisions for consumers and in particular EU consumers.[38]

Even the BDR providers may prefer litigation and state courts over arbitration to resolve any disputes that may arise with their users, let alone any of the BDR platforms or procedures.[39] On one hand, this makes sense as the independence of the jurors or arbitrators may become controversial while evaluating a case against the platform. On the other hand, this may indicate distrust of the BDR platforms of their own mechanisms, especially the

crowdsourced voting in which the platforms advertise that anonymous jurors remain impartial and independent, and reach honest and fair outcomes through crypto-economic principles.[40] It should be noted that one of the crowdsourced voting platforms, Aragon Court, refers claimants to its platform first, with the option to bring a claim against it before the Court of Zug in Switzerland.[41] As detailed further below, although referring to another forum for dispute with the platform prevents the potential conflicts of interest with the users, it is unusual to see involvement of state courts instead of another BDR platform. Subjecting themselves to the jurisdiction of a state court that they heavily criticised shows that BDR platforms are parting ways with the blockchain's decentralization discourse, which was the ideology behind their creation.[42]

The "Terms of Service" of OpenSea, a non-fungible token (NFT) platform, includes a dispute resolution clause providing that any disputes that a user might have with the platform will be resolved by binding arbitration, administered by JAMS under the US Federal Arbitration Act (FAA).[43] Depending on the amount in dispute, parties may also go to a small claims court, and they may seek injunctive or equitable relief in a court.[44] The user releases the platform of any claims, damages, or demands concerning any disputes that may arise with other users and the users waive their right to class actions and jury trials.[45] This mechanism has been triggered by an OpenSea user who filed a claim against the platform for failing to protect their accounts from hacking, which led to the stealing of their NFTs from their wallets.[46] In response to the claims, OpenSea filed a motion to compel arbitration triggering the arbitration agreement, which was granted by the court.[47]

Coinbase, a cryptocurrency exchange platform, on the other hand, has a tiered mechanism. If the disputes against Coinbase are not resolved via internal complaint procedure, users accept the exclusive jurisdiction of courts of England and Wales at their domicile.[48] This choice of forum is without any prejudice to mandatory consumer laws.[49]

These examples indicate that the blockchain platforms may prefer litigation and domestic arbitration to BDR when concerning their actions.

An example of an international arbitration agreement is found in Binance's Terms of Use.[50] Binance, another cryptocurrency exchange platform, requires users to go through their internal complaint mechanism before commencing arbitration, administered by the Hong Kong International Arbitration Centre (HKIAC) per the HKIAC Rules.[51] Almost seven hundred crypto users triggered the clause and brought arbitration against Binance, claiming that the platform was unavailable at a time when cryptocurrency values plummeted, which caused users to lose millions.[52] The unknown identity of the operators of the platform is the main obstacle to the arbitration proceedings.[53] It is pointed out that the class action waiver in the agreement was added after arbitration proceedings commenced.[54] Binance in its terms of use recognizes that users might have other forum options as per applicable law, which protects consumers.[55]

Having provisions for the consumer gains particular importance as jurisdictions may consider disputes involving crypto transactions as consumer disputes.[56] However, it may not be easy to define the legal relationship between the parties. A user bringing claims against the platform may be considered a consumer through buying cryptoassets such as tokens or cryptocurrencies offered by the platform to access its services. The same user could be using the platform to sell a certain type of digital asset to another user of the platform. In such user-to-user transactions, it is highly unlikely that the selling user would be classified as a consumer, while the buyer might be. As a result, different agreements may be needed based on the roles of the users. All users need to conclude an agreement with the platform, which may be classified as a consumer agreement. A personal buyer would be a consumer against the seller, who might be considered as a consumer against the platform. Their status will be determined per the classification of consumers and micro-enterprises under the applicable rules. The status of the users may alter the exclusive jurisdiction requirements and cause users to end up in different forums based on their role in the transaction. A single "Terms of Use" presented on the website may not be sufficient to cover the intricacies of this tripartite relationship.

Even if a platform includes an arbitration agreement, arbitration may not be international; thus, relying on the New York Convention may not be an issue at a first sight. However, it should be noted that the standards and principles of the New York Convention are often reflected in national leg-

islation. The parties may easily end up before the courts if the dispute relates to a small claim, or consumers may prefer the exclusive jurisdiction of the courts at their residence. Pre-dispute arbitration agreements may also become unenforceable against consumers from certain jurisdictions such as in the EU member states.[57] The fragmentation among the platforms' choice of process and forum impacts determining the due process standards. The forums change from litigation to tiered processes involving internal dispute resolution or complaint mechanisms, and national, international, and consumer arbitration.

Despite the cross-border nature of the technology, the application may not trigger international arbitration. The standards may change based on the process selected by the platforms to resolve blockchain disputes. However, there are common basic notions of due process under the New York Convention, arbitration rules and national arbitration laws.[58] These include notification of the parties about every stage of the proceedings, independence and impartiality of arbitrators and the opportunity to present one's case or right to be heard. The next section addresses the tension points between the basic due process requirements and the blockchain applications.

2.2 Obscured Due Process – Anonymity and Other Beasts

During an off-chain arbitration, features of blockchain technology may challenge the application of ordinary procedural steps. These challenges, if not navigated adeptly, may jeopardize the enforcement of awards by breaching due process guarantees. The primary hurdles arise from the anonymity of users, the irreversibility of transactions, and the inherent transparency of the blockchain.

The anonymity of users and non-traceability are stated among the main features of blockchain.[59] At face value, this is problematic for satisfying certain due process requirements such as notification of the parties and respecting their right to be heard via hearings. However, except for some decentralized autonomous organizations (DAOs), the majority of the blockchain users are not anonymous but rather pseudonymous, which means that users sign up to platforms with their emails and additional ID details, and have avatars, usernames or alphanumeric keys which can be

traced back to their real-life identity.[60] In almost all instances, the users access the platforms via some sort of intermediary such as exchanges or wallet providers, where they need to provide certain ID information. Pseudonymity is therefore a better term to describe the concealed identity of most blockchain users. As part of their ID controls, some blockchain platforms have warnings for parents in their "Terms of Use" about the use of the platform by minors.[61] This is not any different than users of any other online service provider such as consumers on an e-commerce platform. Therefore, the pseudonymity of the users is not exactly an obstacle that prevents satisfying the due process requirements.

Even if the parties are purely anonymous, there has been a line of cases where the courts experimented with different modes of notification (or alternative service) such as service via an NFT airdrop, hyperlink, or via email,[62] and social media accounts.[63] Considering arbitration to be more flexible than court procedures, it can be assumed that tribunals may easily get creative to reach the end goal of duly notifying the parties with the condition that the public policy is observed in the relevant jurisdiction.

Some concerns have also been voiced against pseudonymity within the scope of arbitrators' independence and impartiality, as this would prevent arbitrators from satisfying their disclosure obligations.[64] The pseudonymity may only present additional concerns if arbitrators had a way of knowing the real identities of the pseudonymous parties and did not disclose conflicts of interest. Mere pseudonymity, if the parties wish to remain as such, should not be a concern since arbitrators will also be blinded to the parties' identities.

The pseudonymity could also be a problem for hearings, impeding parties' right to be heard. The platform and the parties agree on the permissions given to each individual involved in the proceedings. It is highlighted that pseudonymity does not provide confidentiality *per se*, if the participants in the proceedings including the arbitrators, transcribers, and case managers may have access, and know the parties.[65] The parties may also agree not to have any hearings in their arbitration agreements or may agree on a videoconference, where they can be more comfortable.[66] The physical hearings are not considered mandatory in most jurisdic-

tions.[67] The videoconference option may also increase the accessibility of arbitration for the parties that are transacting online and on-chain.[68]

As seen in some court cases, the judges can order retraction of certain information to preserve privacy.[69] For privacy and confidentiality purposes, arbitration is known to be a better process. However, not only the process but what can be transferred to blockchain is important; thus, arbitrators should be cautious in their award about their instructions on what information can be put on-chain. This is a crucial point as it indicates that the decision-makers need to consider features of blockchain while handling these types of disputes. For our purposes, these features are transparency and being irreversible (tamper-proof).[70] On the other hand, these features may also help with evidence-taking as everything is recorded on-chain and they are trusted to be original.[71] Hence, the technology itself may contribute to the parties' opportunity to present their cases.

The parties are naturally more tech-literate than parties to off-chain disputes as they are already involved in blockchain transactions. However, challenges may arise that impact parties' right to be heard, and raise concerns about impartiality. For instance, hardware or software may not be available to all parties, which could hinder their access to the process.[72] Additionally, the parties may live in different time zones, so holding hearings may require additional considerations.[73] Cybersecurity breaches may compromise confidentiality and evidence-taking, potentially leading to challenges of arbitrators or the final award.[74]

Most importantly, as detailed above, some jurisdictions may define crypto owners or users as consumers.[75] Arbitrating these disputes would require special treatment of consumers and any other 'weaker' parties pursuant to the applicable law, such as avoiding pre-dispute agreements or having additional procedural protections removing language and technology barriers, providing more information about the procedure, availability of opting out of the process and a redress mechanism.[76]

Pseudonymity may also affect enforcement. The Digital Dispute Resolution Rules (DDRR) released by the United Kingdom Jurisdictional Task Force (UKJT), require the tribunal to protect pseudonymity unless revealing the identities is necessary for "the fair resolution of the dispute, for

the enforcement of any decision or award, for the protection of the tribunal's own interests, or if required by any law or regulation or court order".[77] Whether parties will be willing to comply with the decision to reveal their identities to the arbitrators or the court for enforcement or whether a blockchain platform may be ordered to give information about the parties' identities is yet to be seen.

To conclude, when it comes to arbitrating blockchain disputes, tribunals need to be more flexible than usual. The pseudonymity of the users makes it difficult to follow regular procedural steps when it comes to notification, hearings, and arbitrators' disclosure obligations to ensure independence and impartiality, privacy and confidentiality, and enforceability of the awards or arbitration agreements. The involvement of consumers may require additional considerations in terms of the agreement and the special procedural requirements for consumers. However, looking at the adaptability shown by some courts, blockchain disputes should not create concerns for the tribunals but rather call for creative approaches while rendering an enforceable award.

3 Adjudicative Blockchain Dispute Resolution (BDR) and Due Process

The other interpretation of blockchain arbitration could be the use of blockchain for dispute resolution. The use of blockchain to resolve disputes triggered an initial negative response against the BDR processes as they seem to threaten the core values of due process. It is not easy to respond if we should follow traditional due process requirements in the new BDR setting, need brand new rules for due process or change our mindset completely while dealing with BDR.

To find our north, it is essential to rely on legal standards as a compass. To figure out what legal standards are relevant, it is a must to understand and define adjudicative BDR. Being a newly developing area, arbitration and crowdsourced voting are mostly and wrongly used interchangeably. At this point, it becomes important to contour the lines between these two adjudicative processes. Section 3.1. addresses the dilemma between decentralization and due process, which requires regulation or applica-

tion of legal concepts on-chain. Section 3.2 defines on-chain arbitration and tries to clarify the terminological ambiguities with crowdsourced voting that are explored in Section 3.3.

3.1 Decentralization of Justice and Due Process

Ensuring that the platforms respect due process rights requires introducing governance to the BDR platforms that offer adjudication processes. This may sound against the main idea of blockchain which is regulation-averse and aims to escape intermediaries and the state's autocracy, creating a more democratic and decentralized society online.[78] Due process can and should be observed in adjudicative BDR for a few reasons.

First, BDR is not an ordinary blockchain application, but it is a judicial activity. Second, BDR has a limited enforcement capability within the system. It is less problematic when the subject matter of the dispute is already on-chain, such as cryptocurrency, NFT or other digital assets. It is easier to execute the decision about a subject matter that is already on-chain. There are some initiatives to represent rights over off-chain assets on-chain. For example, property rights on real-life assets can be represented on blockchain via technologies such as digital twins.[79] You can enforce the property right and enable the transfer of the digital representation, but this does not guarantee the debtor's physical transfer of the property.

At this point, you may need state involvement to either decide the case again and/or to execute the decision. To bypass the first step and to avoid court proceedings, it is good to have the procedure recognized as legitimate and in compliance with the due process requirements. A futuristic but very possible scenario would be denying a debtor's access to the off-chain real property through mechanisms such as smart locks.[80] As it is unlikely to apply this scenario to all real-life disputes, state intervention will be necessary for some time at least for situations when the subject matter of the dispute is off-chain, and the debtor is noncompliant. Self-sufficient mechanisms, which are recognized to be reliable and legitimate, are important to minimize the state's intervention and expedite the process when such intervention cannot be avoided.

Finally, like the manifestations of decentralization when the Internet first emerged, blockchain decentralization has become moot.[81] Similar to most blockchain applications, BDR platforms are not decentralized as they were advertised initially.[82] BDR platforms are backed by governments, the same people fund/invest in different BDR platforms or BDR platforms are established as corporations operating under the state's law.[83] The power over the code is not transferred to the community in most platforms, so governance decisions are rarely made by the users or the computing power is dispersed unequally among the users.[84] This results in a code that determines the procedure in an undemocratic way.

As part of the "decentralization" discourse, the BDR platforms aim to "bring power back to the people" almost demonizing the state power.[85] In contradiction with this stance, the platforms declare to be in compliance with the requirements of state authorities and rely on audit reports.[86] This is a good effort on the side of the platforms for increasing transparency, but accepting state regulation on one side and trying to follow it religiously while denying it on another is conflicting. Enshrining minimum due process rights is in fact less contradictory to the philosophy behind decentralization as these rights are essentially developed over the centuries to preserve people's right to fair trial and right to be heard against the arbitrary use of the state's power.[87] Due process in on-chain arbitration is particularly relevant because the platforms claim to render awards that are enforceable under the New York Convention. Platforms, by referring to state-made rules, confirm that decentralization is not the goal.

On the flip side, due process rights would also protect users from the arbitrary governance decisions made by the platform developers, who are replacing legislation with the code without any legitimate explanation about why we should trust the blockchain democracy that is currently overseen by the developers more than the state democracy. Therefore, due process and a level of formality may be introduced to BDR. While doing so, it is important to consider the advantages of these processes as they can be effective, especially for blockchain/smart contract disputes.[88]

3.2 On-chain Arbitration

In contrast to the resolution of disputes concerning blockchain transactions via traditional, off-chain arbitration,[89] the term on-chain arbitration is used to refer to the arbitration procedure facilitated by blockchain and smart contracts. There are not many examples of on-chain arbitration as it is mainly at the design stage or has been conceptualized but never materialized by some initiatives.[90] Due process standards in on-chain arbitration depend on how the platforms are designed and how they will operate.

In the procedures that are described as on-chain arbitration, blockchain is used to create an infrastructure that is generally referred to as "hubs" or, exacerbating the terminological confusion, "courts", that can be developed by arbitrators, institutions, or communities to facilitate the arbitration procedures.[91] Arbitrators and community members acting as arbitrators can resolve disputes based on their established rules. Some platforms situate themselves as an arbitration institution or an appointing body that facilitates dispute resolution.[92]

From their descriptions, it is understood that these groups will provide services for their communities following the rules they establish, which will be written into smart contracts to self-execute. These procedures are designed by coders allowing anybody to create hubs to have absolute freedom over their rules and procedures leading to self-executed outcomes. Parties to arbitration typically have autonomy over the procedure, but in these systems, they are restricted by the platform's design and the rules provided to them. As in traditional arbitration, parties do not need to have the same procedural rights as in court litigation.[93] However, if the parties cannot alter the procedure, they must be made aware of the process, understand the extent of their procedural rights, and voluntarily submit their disputes to that platform.[94] In most respects, on-chain arbitration is a form of online arbitration with similar issues that may come to light such as the seat of arbitration, delocalization of arbitration, validity of arbitration agreement, and uncertainty over the applicable law.[95] Because these debates are not specific to on-chain arbitration, they are not addressed in this chapter.

What is striking about on-chain arbitration is the enforcement of awards. If the design of the platforms allows, the parties may opt for automatic execution of the award by amending the underlying smart contract. However, in the UKJT DDRR, the New York Convention is mentioned to be the enforcement mechanism instead of the smart contract execution.[96] Mattereum stated that they will adopt the UKJT DDRR in their arbitration procedures.[97] Therefore, some platforms offering on-chain arbitration will have to observe due process requirements per the New York Convention interpreted by the court at the jurisdiction where the enforcement will be sought. This will need careful selection of the jurisdictions. The same due process issues in off-chain arbitration addressing blockchain disputes are relevant for on-chain arbitration as well. These include pseudonymity's impact on notification, ensuring the right to be heard via hearings, having unbiased decision makers, ensuring privacy and confidentiality, and enforcement of decisions.[98]

It should be noted that having the procedure on-chain while relying on court enforcement seems counter-intuitive and redundant.[99] On-chain arbitration could be useful for parties to a dispute concerning an asset that is already on-chain when they want to have a procedure conducted by experts and based on legal rules that are more formal than crowdsourced voting. The parties should be able to agree that their award will be implemented on-chain. Following the New York Convention standards may act as a safeguard to guide arbitrators to meet the due process requirements as interpreted at the seat and render enforceable awards.

In a forward-looking scenario, the case might concern an off-chain dispute without any digital assets involved. It is good to remember that some platforms initially set out to resolve traditional disputes alongside blockchain disputes.[100] The parties may wish to have on-chain arbitration to utilize certain functions of the technology such as for record-keeping, automated appointment of arbitrators, and increased security via cryptographic keys. It is unlikely that parties to off-chain disputes will prefer on-chain arbitration as self-execution would not be relevant or applicable at this stage. Ultimately, the explanations about implementing the enforcement or refusal of enforcement decisions will need to be considered for parties to on-chain arbitration relying on the New York Convention enforcement and/or trying to resolve off-chain disputes.[101]

3.3 On-chain Crowdsourced Voting

As noted, crowdsourced voting is different from the blockchain arbitration process, even if it is occasionally conceptualized as arbitration. It is not sufficient to consider crowdsourced voting as arbitration just because it was labelled as such by the BDR platform.[102] Crowdsourced voting can be considered a form of adjudicative out-of-court process, as a result of which the jurors decide the case and the outcome self-executes via smart contracts. BDR platforms gather anonymous jurors to decide on a dispute by incentivizing them with cryptocurrency rewards following game theory principles, specifically Schelling Points.[103] The game theory principles, crowd wisdom, anonymity and self-executing outcomes have already been used in ODR before they were implemented on the blockchain.[104] Blockchain and smart contracts enable platforms to combine all of them creating a unique process that threatens due process from different angles.

Categorizing blockchain crowdsourced voting is an important exercise to derive the applicable standards and expectations from such procedures in terms of due process rights they need to guarantee. There are different views on crowdsourced voting. Some argue that it can be regarded as arbitration because it satisfies the main requirements of the process and assert that decision-making through crypto-incentivization does not diminish its standing compared to traditional arbitration.[105] The majority opinion, however, opposes that view for various reasons. The first reason is that crowdsourced voting does not follow well-established international commercial or investment arbitration practices.[106] Another argument is that crowdsourced voting is not arbitration because it is less judicial due to fundamental procedural discrepancies among the two procedures such as "problematic" incentivization of the voters and lack of reasons.[107] On the other hand, Model Law for Decentralized Autonomous Organizations prepared by the Coalition of Automated Legal Applications (COALA) does not categorize crowdsourced voting but states that any outcomes rendered on-chain will receive the same status and treatment as an international arbitral award without the requirement of following due process standards.[108] This statement is conflicting if not concerning because parties to an international arbitral award expect to enjoy certain procedural protections.

Not having an agreed-upon definition of arbitration makes the classification more difficult. When compared to existing mechanisms, crowdsourced voting shows similarities with adjudication (e.g., construction adjudication), mandatory administrative proceedings (e.g., ICANN's UDRP) and baseball arbitration. It is also argued that the outcomes should be considered like a consent award.[109] However, on-chain crowdsourced voting diverges from these mechanisms as it restricts parties' ability to resort to a court due to automatic execution via smart contract, although in theory parties still have the option to seek redress.[110] This means that parties to on-chain crowdsourced voting should consent to the procedure and determine whether the outcome will automatically execute or not, as this may significantly impact redress options. On-chain crowdsourced voting is more restrictive in terms of party autonomy to shape and determine the procedure. The jurors are asked a yes/no question, and a variety of choices are generally not available. As the outcome is to resolve the dispute, in other words, as it is a zero-sum game, the parties are not forced to think about the best possible outcome or put themselves in the shoes of the counterparty as would be the case in baseball arbitration. The decision-makers do not apply legal rules and in most of the platforms they lack expertise.

This reveals that although on-chain crowdsourced voting does not exactly follow established procedures, it shares some common grounds with existing alternative procedures and that we are still in the ODR/ADR realm. On the other hand, the way the technology combines different principles and techniques may require tailoring due process standards to the respective BDR procedure, and may call for more *sui generis* thinking.

As much as it is one of the fundamental principles of adjudication, due process does not have a single definition. It is interpreted differently across jurisdictions, procedures, courts, and tribunals. There are various elements to consider while defining the due process requirements applicable to each process or circumstance. Factors such as the binding and non-binding nature of the outcome and the availability of redress mechanisms determine the extent to which due process requirements should be observed.[111]

While crowdsourced voting does not replicate traditional arbitration procedure, it may converge to arbitration in terms of the severity of the outcome's implications. For example, if the parties agree that the decision will be binding and it will self-execute, then due process should be observed more strictly. Whereas if parties agree that they will not be bound by the outcome and it will not self-execute, they may enjoy less strict formalities.[112] The latter is unlikely to be preferred by the parties as it undermines all the advantages of going to BDR in the first place. There is no need to qualify this procedure as an arbitration that fits within the scope of New York Convention as the process itself aims to become self-standing. Consequently, blockchain crowdsourced voting can be categorized as a *sui generis* form of adjudicative ADR and part of the myriad private adjudication procedures that fall outside of the scope of the New York Convention, while benefitting from similar due process standards. With respect to crowdsourced voting the interpretation of due process under the New York Convention may come in handy to understand the rights that are aimed to be protected.

Introducing due process standards and the associated level of formality does not mean that adjudicative BDR processes should be subject to procedural rules that are as strict as court proceedings. As long as parties voluntarily participate and are aware that they may not get the same protections as traditional mechanisms, especially court litigation, BDR processes may enjoy less strict standards with the caveat that the process provides minimum guarantees that cannot be waived by the parties' agreement.[113] Therefore, there should be a bottom line which ensures that core values are not excluded.

The minimum ground should be established by considering the peculiarities of the process and the use of the technology. These peculiarities include the use of game theory principles instead of legal rules, lack of redress mechanisms due to automatic execution, lack of expertise, and jurors' interest in the outcome. As a first step to determining the due process requirements for on-chain crowdsourced voting, parties should *consent* to the adoption of game theory rather than legal rules and should be *informed* about the procedure including the impact of the outcome, availability of redress and enforceability of the outcome. This requires waiver of certain due process guarantees in exchange of benefits that BDR may

provide such as efficiency and ease of enforcement. Moreover, pseudonymity should not present an obstacle for the notification process neither for off-chain arbitration resolving blockchain disputes nor for on-chain arbitration. Also in terms of independence and impartiality of the jurors, pseudonymity may have a positive impact as neither the jurors nor the parties reveal their identities. If a party suspects any bias, they should be able to raise this concern within the internal mechanism. Some BDR platforms provide for repetition of the same process with an increased number of jurors.[114] Although this is not a judicial redress or appeal in a traditional sense, it reduces the impact of a biased juror's vote in the overall decision, which may be useful. The platforms should be encouraged to have an internal redress mechanism with embedded due process safeguards or allow parties to go to court.

Furthermore, pseudonymity plays an important role in the outcome as game theory principles require each juror to reach their conclusion separately without colluding with each other. Therefore, hearings are against the idea of crowdsourced voting. As it is not considered to be a mandatory right, parties should be informed about the unavailability of the hearings.

The most concerning issue in relation to due process is the incentivization mechanism as jurors' remuneration depends on voting with the majority, which leads jurors to have an interest in the outcome.[115] Alternative decision-making incentives or remuneration mechanisms can be considered by the platforms. One example is Oath's fee mechanism which pays each juror a standard fee deposited by the parties but distributes credit scores to incentivize juror participation.[116]

On a final note: developing due process standards requires paying attention to the rights of weaker parties such as consumers. Additionally, BDR is likely to hold the users to standard terms. Although on-chain arbitration may provide more flexibility for the users in their agreements, the underlying design of the platform will remain the same; hence the procedure will only be as flexible as the platform allows it to be. On-chain crowdsourced voting is even more restrictive as the procedure is pre-determined and the parties do not have the option to amend the agreement or the procedure in current practice. Therefore, it is important for platforms to be designed or coded in a way to prevent power imbalances, inherent inequalities, or biases.

4 Adapting Traditional Mechanisms to Enable On-chain Enforcement

Due process guarantees are important for off-chain arbitration that handles blockchain disputes as well as for on-chain arbitration procedures that rely on state enforcement under mechanisms like the New York Convention. If the award fails to meet the due process requirements, the court will deny enforcement. Of course, there are other conditions for enforceability, which are addressed in the literature.[117] However, the subsequent legal steps following the court's decisions, which often involve technical considerations, are frequently overlooked. This is unfortunate, because if the court's decision cannot be executed on-chain, then it becomes unnecessary to discuss or even continue innovating dispute resolution systems.

Transposing court's decision on-chain requires legal grounds or guidance to modify the code or smart contract underlying the blockchain transaction. Whether the court granted or refused enforcement of the award is irrelevant in technical sense because both instances require modification of the code. How do we execute an award or how do we take back an already executed award if the enforcement is refused or the award is set aside? This leads us to consider creating the legal grounds to ensure that the courts enforce awards and provide guidance for the arbitrators to render compatible awards.

There are different perspectives on navigating the enforcement procedures involving agreements allowing for partially or fully automated performance via smart contracts. The International Institute for the Unification of Private Law (UNIDROIT) recommends national procedural laws be adapted to facilitate procedures involving digital assets, including enforcement.[118] A few recommendations for adaptations are provided as examples. For instance, if an identified person or a custodian of a digital asset refuses to reveal the password or transfer the key to transfer the possession of the digital asset, the court should be able to order such transfer or "otherwise enable access to that asset."[119] Keeping confidentiality and privacy, the procedural law could be adapted to enable gathering necessary information for effective proceedings or any other process.[120] To avoid loss of the value represented by the digital assets by their quick transfer, it is recommended that the law should facilitate interim reliefs such as

freezing orders or transfer of control to a public authority.[121] The cross-border nature of the transactions and the jurisdictional concerns are flagged to be considered while amending the procedural rules.[122] In this vein, UNIDROIT also calls for international best practices to address enforcement procedures against digital assets.[123]

Interestingly, the Law Commission in the UK found that no reform is necessary with the rules providing for injunctions and enforcement – not only because some provisions may accommodate digital assets, but also because even with law reform, the intended objective cannot be fully realized, rendering such reform redundant.[124] For instance, the Law Commission emphasized that with respect to enforcement by appointment of a receiver/third party, there is no reason to believe that they will transfer their private keys to the public authority, if a defendant is non-compliant with the order in the first place.[125] The law already enables effecting an on-chain transfer by authorising a nominated person (possibly a custodian) to execute the transfer if the defendant refuses or neglects the order.[126] Awarding damages in crypto assets is a debated issue, which is left to be determined by the courts in the UK.[127] Such divergent views on the categorization and treatment of digital assets suggest that coming up with best practices will be a challenging endeavour.

Besides the discussions on reforming procedural rules, the idea of configuring the technology for effective enforcement is explored. The European Law Institute's (ELI) Principles on the Use of Digital Assets as Security recommends an escrow mechanism to overcome the enforcement challenges posed by the non-compliant defendant who refuses to transfer control over the digital asset or transfer the private key.[128] Similarly, the EU Data Act requires all smart contracts to have internal functions that would reset, stop or interrupt to avoid undesired execution.[129] This would aid parties to stop automated execution, resort to arbitration or court, and resume per the outcome of the procedure. Some platforms also have strategies to guide their users. For instance, Binance warns users that it may place a hold on the digital assets in a user's account when it is informed that the user is in unlawful possession of the assets without any obligation to do so.[130]

Another approach would be requiring and enabling arbitrators to attach explicit commands to the award to order coders or the DAO involved to alter the transaction. Alternatively, as provided under the UKJT DDRR, arbitrators could be given the power to "operate, modify, sign or cancel any digital asset" or direct any interested party to do the same.[131] The tribunal may use "any digital signature, cryptographic key, password or other digital access or control mechanism" to reach this objective.[132] It is necessary to clarify the tribunal's discretion with respect to digital assets as it ensures the enforceability of the award and it is equally important that the tribunals with this discretion give clear instructions in the award for its enforcement.

Although arbitration is preferred due to ease of enforcement via the New York Convention, obtaining the enforcement decision does not guarantee the technical implementation of the order on-chain. It is undoubted that relying solely on the New York Convention or other procedural rules for the enforcement of awards will have to be supported by rules or guidelines explaining the technical pathways to transfer the keys, passwords, or digital assets. Likewise, blockchain platforms will also need to have internal technical and governance structures to facilitate the enforcement of awards. This also supports the idea that instead of relying on off-chain mechanisms we need to have on-chain processes and enforcement procedures that respect the due process rights to minimize the reliance on the courts.

5 Conclusion

Discussing due process in blockchain arbitration presents a challenge because of the terminological confusion surrounding the term. Do we mean the resolution of blockchain disputes by arbitration, or arbitration on blockchain or are we using it as a catch-all term to describe all mechanisms that utilize blockchain for dispute resolution? When due process in blockchain arbitration is discussed, it is done so by only referencing the New York Convention. To address this ambiguity, this chapter analyses each interpretation and explores the relevant due process standards for each process. Beginning with off-chain arbitration for blockchain disputes, it is seen that not all blockchain platforms opt for arbitration but

when they do, it may not be international arbitration. This restricts the application of the New York Convention.

The chapter then turns to BDR mechanisms. It is seen that in most instances blockchain arbitration is used to refer to crowdsourced voting that renders self-executing outcomes relying on blockchain and smart contracts. Blockchain is in fact used for facilitating arbitration that is similar to off-chain online or traditional arbitration. There is no need to label crowdsourced voting as arbitration since the term evokes specific rules and formalities. Comparison with similar off-chain procedures indicates that on-chain crowdsourced voting can be broadly described as an adjudicative ADR process, and it is seen that the New York Convention is not directly applicable to on-chain crowdsourced voting. Due to the adjudicative nature of the juror's decision, self-executing outcomes, and the difficulty in reversing transactions, it creates the effect of binding decisions that are enforced without the need for judicial redress. Consequently, due process requirements for arbitration may become relevant for crowdsourced voting to the extent that they help us understand the due process rights and the values that need to be protected.

For on-chain arbitration, platforms and rules describe two different enforcement mechanisms. The first one is automatic execution of arbitration decisions via smart contracts and the second one is enforcement under the New York Convention. If the platform provides and the parties agree to self-execution of on-chain arbitration awards, the court enforcement will be bypassed. The second option of court enforcement seems futile as it renders the self-enforcement that might be the most advantageous feature of BDR obsolete. However, enforcement under the New York Convention is mentioned by the rules and platforms. In this case, on-chain arbitration can still be preferred due to increased transparency, security, anonymity, and record-keeping properties.

What is common for both on-chain arbitration and crowdsourced voting is that if the outcomes automatically execute, the parties will not have the option to seek redress. Even if it is legally possible to appeal to a court, the court's decision will likely not have any practical effect as the subject matter of the dispute will already have been transferred to the counterparty as an irreversible blockchain transaction. It is essential to have a system where

parties' due process rights are respected. On the other hand, if the outcomes are not self-executing and parties need to seek court enforcement, due process becomes important for such outcomes to be enforceable.

Consequently, it is important to understand what is relevant for blockchain adjudication and develop due process standards considering the needs of the users and why they would choose BDR in the first place and protect the weaker parties rather than aggravating power imbalances. Ensuring compliance with the standards may require introducing formality and state involvement with BDR. As much as it may be against decentralization, which is subtly overthrown by the platforms themselves, respecting parties' due process rights must be the priority.

Notes

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3 *See* for example United Nations Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 10 June 1958 (hereafter New York Convention); United Nations Commission on International Trade Law (UNCITRAL), 'Model Law on International Commercial Arbitration'(1985) UN Doc A/40/17, Annex I; United Nations Commission on International Trade Law (UNCITRAL) (hereafter UNCITRAL Model Law on Commercial Arbitration); 'Arbitration Rules' (2021) UN Doc A/31/98 (hereafter UNCITRAL Arbitration Rules); London Court of International Arbitration (LCIA) (hereafter LCIA Arbitration Rules) https://www.lcia.org/Dispute_Resolution_Services/lcia-arbitration-rules-2020.aspx; International Chamber of Commerce (ICC), '2021 Arbitration Rules' (hereafter ICC Arbitration Rules) https://iccwbo.org/dispute-resolution-services/arbitration/rules-of-arbitration/.

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5 For related concepts and definitions, *see* e.g. Chapter 3, p. 75-78 & Chapter 7, p. 139, 148.

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7 China Supreme Court, Judicial Interpretation [2018] No 16 (7 September 2018) https://www.court.gov.cn/zixun-xiangqing-116981.html; Dubai International Financial Centre (DiFC), 'Courts of Blockchain' www.courtsofthefuture.org/#courts-of-blockchain.

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9 Buchwald, Michael. "Smart Contract Dispute Resolution: The Inescapable Flaws of Blockchain-Based Arbitration" (2020) 168 *University of Pennsylvania Law Review* 1369, 1393; Metzger, James. "The Current Landscape of Blockchain-Based, Crowdsourced Arbitration" (2019) 19 *Macquarie Law Journal* 81, 81.

10 *See* for example, George, William. "Kleros Cryptoeconomics: Towards a Theory of Decentralized Justice" Kleros, *Dispute Revolution: Kleros Handbook of Decentralized Justice* 78 kleros.io.

11 UNCITRAL Arbitration Rules.

12 UNCITRAL Model Law on International Commercial Arbitration Annex I.

13 UNCITRAL Technical Notes on Online Dispute Resolution (2017) (hereafter Technical Notes).

14 Committee of Ministers of the Council of Europe, 'Guidelines on Online Dispute Resolution Mechanisms in Civil and Administrative Court Proceedings' (16.06.2021) (hereafter CoE ODR Guidelines).

15 New York Convention.

16 *See* for example, LCIA Arbitration Rules; ICC Arbitration Rules.

17 European Commission Directive (EU) 2013/11 of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC [2013] OJL 165/63 (hereafter EU ADR Directive). Note that his directive is proposed to be amended to facilitate cross-border ADR better.

18 Rabinovich-Einy & Katsh 55-57; Soares, Francisco Uribarri. "New Technologies and Arbitration" (2018) 7 (1) *Indian Journal of Arbitration Law* 84, 90 (hereafter Soares).

19 This is already evident from this book, where different authors use various terms, each with their own nuanced meaning (*see* e.g. Chapters 1, 3 and 7).

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22 Rabinovich-Einy & Katsh 55-57.

23 *Osbourne v Persons Unknown*, 22 February 2023 High Court, KBD [2023] EWHC 340 (KB).
24 *Hermes International v. Rothschild*, U.S. District Court for the Southern District of New York, No. 1:22-cv-00384; *Shenzhen Qice Diechu Cultural Creativity Co Ltd (Qice) v. Hangzhou Yuanyuzhou Technology Co Ltd (Bigverse)* (22 April 2022) Hangzhou Internet Court Civil First Judgment No. 1008 discussed by Xiao, Baiyang . "Copyright and Non-fungible Tokens: Experience from China" (2023) 30(4) *International Journal of Law and Information Technology* 444, 459-465.
25 *D'Aloia v Persons Unknown* [2022] EWHC 1723 (Ch).
26 Soares 85, 88. The source refers to international arbitration as a "decentralized substitute to domestic tribunals", which can be interpreted as a delocalized procedure somewhat physically detached from a country and do not rely on arbitrators to be appointed by states. The term "decentralization" as used in the blockchain context should be handled with caution as arbitration does not float free from the state-made laws, arbitrators can be appointed by a central authority such as arbitral institutions and the awards are enforced by the courts.
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31 *Ibid.*
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34 Roblox Terms of Use 11(b).
35 *Ibid.*11(b)(ii)/(iv).
36 *Ibid.* 11(b)(x); 11(b)(i).
37 *Ibid.* 11(b)(ix).
38 *Ibid.* 9, 13.
39 Jur, "Terms of Service" 13.2 (states that any dispute arising regarding the Terms of Service will be subject to the exclusive jurisdiction of Court of Zug in Switzerland). https://jur.io/terms-of-service/.
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the Aragon Association, which provides other services besides Aragon Court still has a similar clause in its "Terms and Conditions" referring to Aragon Court. https://anj.aragon.org/terms.pdf. Aragon, "Terms and Conditions" Whether this is about falling behind updating the terms or whether they foresee a possible revitalization of Aragon Court is uncertain. https://aragon.org/terms-and-conditions.

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43 OpenSea, "Terms of Service" https://opensea.io/tos.

44 *Ibid.*

45 *Ibid.*

46 *McKimmy v. OpenSea*, Southern District Court of Texas, No 4:22-cv-00545.

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48 Coinbase, "Coinbase User Agreement" 10(B) https://www.coinbase.com/legal/user_agreement/payments_europe.

49 *Ibid.*

50 Binance, "Terms of Use – United Kingdom" 32.1 https://www.binance.com/en-GB/terms.

51 *Ibid.*

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56 *See* for example the UK cases, *Ang v Reliantco Investments Ltd* [2019] EWHC 879 para 70; *Chechetkin v Payward Ltd and others* [2022] EWHC 3057 para 43.

57 EU ADR Directive Article 10(1).

58 *See* for example, New York Convention; UNCITRAL Model Law; UNCITRAL Arbitration Rules; LCIA Arbitration Rules; ICC Arbitration Rules.

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60 UK Law Commission, "Smart Legal Contracts: Advice to Government" 3.22. For completely decentralized DAOs, where there is no central body like an exchange that can be targeted, it is difficult to follow a litigation strategy. UK Law Commission, "Decentralised Autonomous Organisations (DAOs) A Scoping Paper" July 2024 3.21 https://lawcom.gov.UK/document/decentralised-autonomous-organisations-scoping-paper/.

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62 *See* for example the UK cases, *D'Aloia v Persons Unknown* (n 15) para 38; *Osbourne v Persons* (n 13) para 47-48.

63 *See* for example the US case, *Garrison v. Paffrath*, US Southern District of Florida No. 23-21023-CIV-ALTONAGA (2 May 2023).

64 Chan & Hay 226.
65 Chen 266.
66 *See* for example LCIA Arbitration Rules Article 19.2.; ICC Arbitration Rules Article 14.6(iii), 26.1.
67 Rojas Elgueta, Giacomo, Hosking, James & Lahlau, Yasmine. "Does a Right to a Physical Hearing Exist in International Arbitration: General Report" *ICCA Projects* (2021) 39 https://cdn.arbitration-icca.org/s3fs-public/document/media_document/Right-to-a-Physical-Hearing-General-Report.pdf.
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76 *See* for example there are several instruments to consider in the EU such as the EU ADR Directive; European Commission, Recommendation 98/257/EC of 30 March 1998 on the principles applicable to the bodies responsible for out-of-court settlement of consumer disputes [1998] OJL 115/31; European Commission, Recommendation 2001/310/EC of 4 April 2001 on the principles for out-of-court bodies involved in the consensual resolution of consumer disputes [2001] OJL 109/61. Similarly for UK, *See* Consumer Rights Act 2015.
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93 Kurkela & Turunen 15, 16.
94 *See* for example *Eiffage S.A. and Others v. Switzerland* Application no 1742/05 (ECTHR 15 September 2009) para 12-14.
95 *See* generally Tang, Zheng Sophia. *Electronic Consumer Contracts in the Conflict of Laws* Hart (2015); Kaufmann-Kohler, Gabrielle & Schultz, Thomas. *Online Dispute Resolution Challenges for Contemporary Justice* Kluwer (2004); Wang, Faye Fangfei. *Online Arbitration* Informa Law (2017).
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101 *See* Section 4.
102 Ortolani 657.
103 Lesaege, George & Ast 13.
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106 Chan & Hay 215. *See* also Ortolani 655-661, for detailed discussion on why crowdsourced voting outcomes are not enforced as arbitration awards.

107 Yang 196, 197.

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110 Ortolani 656.

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113 *See* Xandra Kramer and others, *New Pathways to Civil Justice in Europe: Challenges of Access to Justice* (Springer 2017) 6; Hörnle 168.

114 *See* for example, Lesaege, George & Ast 28; Aragon, "What is Aragon Court" https://documentation.aragon.org/products/aragon-court/aragon-court.

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120 *Ibid.*, Principle 18, Comment 18.5.

121 *Ibid.*, Principle 18, Comment 18.6.

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126 *Ibid.*, para 9.95.

127 *Ibid.*, para. 9.100.

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129 European Parliament and the Council Regulation (EU) 2023/2854 on Harmonised Rules on Fair Access to and Use of Data and amending Regulation (EU) 2017/2394 and Directive (EU) 2020/1828 (Data Act) [2023] OJL 22.12.2023, Article 36.
130 Binance, "Terms of Use – United Kingdom" 20.4.
131 UKJT DDRR Rule 11.
132 *Ibid.*