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Blockchain Technology in Parliamentary Voting Procedures

by
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Abstract

Covid-19 pandemics showed us that the functionality of in-person assemblies can be severely challenged by health restrictions. This paper aims to study the feasibility and constitutional implications of applying blockchain technologies to improve security and integrity of operations in parliamentary voting, thus allowing for remote voting under specific circumstances.

Keywords

Blockchain; Distributed Ledger Technologies; Political Representation; Remote Voting; Parliament..

1. Introduction

The use of blockchain technology for remote parliamentary voting represents a fascinating and still largely unexplored topic in the field of public law[I]. Applying blockchain to political decision-making may foster legal innovation and requires scholarship consideration. To this end, it is important to consider a fundamental premise.

As a matter of fact, the COVID-19 pandemic amplified an already ongoing trend: the progressive marginalisation of parliaments in the public decision-making dynamics. The need for physical and simultaneous meetings of representative members stress-tested their functionality (Lippolis and Lupo, 2021; Directorio Legislativo and ParlAmericas, 2020; Inter-parliamentary Union, 2020).

During the lockdown, many elective assemblies turned to remote voting procedures using digital tools to counter the emergency. However, strong opposition was raised often preventing the full adoption of this measure, in favour of alternative solutions. Blockchain technology and other forms of distributed ledger technology (DLT) offer a number of potential advantages that institutions and governments could exploit in different ways to promote democratic participation and ensure transparency, overcoming scepticism towards new machineries.

After briefly recalling the various strategies adopted by parliaments to deal with the health emergency, in the remainder of this paper remote voting with blockchain technology is the main focus. Particular attention is devoted to the Italian case, as an intricate puzzle of opinions emerging in scholarship provoked a remarkable debate.

Subsequently, blockchain technology is unpacked to hypothesise its application to remote parliamentary voting procedures in a way as to tackle critical issues highlighted by experts.

Thirdly, the constitutional implications arising from the implementation of blockchain are examined, focusing in particular on the guarantees of transparency, integrity of the vote and the protection of the prerogatives of the members of parliament.

Finally, after analysing the challenges related to the technical limitations of a blockchain system and the risks of interference with parliamentary representation, the conclusions -

which can only be provisional, given the rapid pace of evolution of the matter, - strike a balance between the advantages and disadvantages of blockchain technology for secure voting in parliaments.

The aim of the paper is to contribute to a better understanding of blockchain for its use in a way that strengthens, instead of weakening, representative democracy[II]. In particular, the question is whether or not it is desirable for virtual deliberation via blockchain to become an ordinary way of voting for an increasingly "virtual" parliament.

2. Skepticism on Remote Voting in the Italian Scholarship Debate

The post-pandemic phase has witnessed tremendous impetus to the digitisation of parliaments[III]. Since the outbreak of the crisis to the present day, more and more parliaments have started to ponder how to swiftly switch to new technologies[IV].

Many assemblies have shown a marked opposition to unconventional solutions, given the sensitive nature of parliamentary activities. This mistrust has led to the maintenance of in-person meetings during the lockdown, even at the cost of endangering the health of parliamentarians and staff[V].

Some assemblies quickly embraced innovative technical solutions to ensure the continuity of their functions but had different outcomes. While, for example, the Spanish *Cortes* extended the application of the *no presencial* vote, a mechanism already in place to allow absent members to vote[VI], the European Parliament introduced *ex novo* a remote vote, both in plenary and in committee, prompting the effort to innovate[VII].

In Italy, it was necessary to reconcile "the need for the validity of deliberations with the need for a limited number of presences in the hemicycle" (Servizio Studi del Senato, 2020) during the period of the entry into force of social distancing rules. In order to do so, practices from other parliamentary systems were borrowed, such as pairing, which consists of informal agreements between parliamentary groups to manage absences in a way as to ensure the proportionality between the political forces and, at the same time, to mitigate the scarce attendance in the chamber (Lattanzi, 2022, 745).

However, being pairing a mere informal agreement, it can be effective only if all political parties in the house comply with it. Interestingly enough, in the Italian Chamber of Deputies,

this agreement was broken when a political party (Fratelli d'Italia) announced the day before that all its members would be present for the next session. As a result, the other parties' members rushed to attend the session to avoid being underrepresented. It is worth noting that, in keeping with parliamentary fairness, the party chose to notify the other members of the Chamber during the conference of group leaders, which is the body responsible for scheduling parliamentary work.

In the rich debate on remote voting, several critical issues have emerged (Biondi and Villaschi, 2020, 39 and, concerning Italian Regional Councils, Drago, 2020). While taking them into account, an analysis of the feasibility of using blockchain in parliamentary voting may help refute some of the arguments against it (Boucher, 2016).

The first contrary argument concerned the apparent irreplaceable value of physical presence (Pacini, 2022, 55). For some authors, the requirement of the "majority of those present" enshrined in Article 64(3) of the Constitution for the validity of the deliberations of each chamber and of the Parliament in joint session is insuperable[VIII]. According to Luciani (2020, 121), one would have been an "acrobat" to accept such an interpretation as it would certainly have led, during the emergency phase, to a "rupture of the Constitution (an authentic *Verfassungsdurchbrechung*)". Moreover, such an outcome, if normalised, would legitimise the reduction of Parliament to a "virtual room" even in ordinary times.

According to this line of thought, while some norms must necessarily be interpreted taking into account their evolution, such as the one guaranteeing the freedom and secrecy of private correspondence, other constitutional provisions serve different purposes and cannot undergo the same level of openness. This is particularly true of those provisions that guarantee the integrity of the parliamentary mandate, as enshrined in Article 67 of the Constitution.

Those in favour of the thesis that rejects the evolutionary interpretation of Article 64(3) of the Italian Constitution refer to the fact that in the parliamentary Rules of Procedure, echoing the terminology of the Constitution, it is not infrequent the occurrence of the words "presence". For instance, Rule 2 of the Chamber of Deputies' Rules (also, CDR) requires that, at the opening of each legislature, it be ascertained whether Vice-Presidents of the previous legislature are "present".

Yet, in parliamentary law, the concept of presence is not always self-evident. Rather, various usages of the term reflect its flexible nature. On the one hand, according to Rule

46(2) CDR parliamentarians on mission are always considered "present" for the purpose of calculating the legal minimum quorum for the functioning of the assembly. While for the purpose of establishing the quorum, senators abstaining on a vote shall be considered "present" (Rule 107.2*bis* of the Italian Senate of the Republique Rules, hereinafter, SRR). On the other hand, according to Rule 107 SRR, "All decisions in the Senate shall be decided by a majority of the Senators present" and in this case only Members "voting for or against" can be considered "present", while those who abstain do not count (same in Rule 48.2 CDR).

An "intermittent" presence is that of the practice whereby parliamentarians are "present" in the chamber only to vote, but exit the chamber during debates.

Then, we can identify an "absolute" presence of those MPs "requesting verification of the quorum" who, for this purpose, are "always" considered to be present (Rule 46.6 CDR).

Finally, it shall be recalled the long-standing difference between the Chamber and the Senate on the way of counting abstentions, contributing to further blurring of the concept of presence even among the Chambers themselves. This was true until the 2017 reform of the Senate's Rules that adjusted the counting method with the Chamber's one concerning the method for the verification of the quorum[IX].

Scholars who support the introduction of remote voting believe that interpreting constitutional norms according to the evolution of practices is possible. They argue that the 1948 fathers of the Constitution could have never anticipated the technological changes that would have influenced our society in the 2020s, leading us to perform numerous functions with the fundamental support of personal computers and ITC.

Whether or not this is a tacit modification of constitutional and parliamentary law (Tosi, 1959, 84-85), one may consider acceptable the solutions that, departing from the mere literal interpretation of the Constitution, allow technological developments to influence procedures and fundamental rules of organization of public institutions, with the aim of protecting their functionality.

Conversely, the opposite line of thought refuses that recent developments can radically change the meaning of the written rules of the Constitution, therefore the interpretation of the notion of "presence" cannot be forced into artificial meanings. However, according to Lupo, (2020a) the real problem is not whether or not Article 64.3 of the Italian Constitution can tolerate an evolutionary interpretation, but rather that parliamentary procedures shall be

"re-engineered" in line with the power of each Chamber to autonomously interpret and implement its own rules.

The relevance of parliamentary autonomy, moreover, is crystallised in two important judgments of the Constitutional Court that Lupo recalls: Judgment No. 78 of 1984, in which the Cort refrained from examining the methods of counting abstainers in the Chambers, deeming acceptable the differences existed at that time and stating the "exclusive competence of each Chamber" in interpreting the contested requirement. To this, we must add Judgment No. 379 of 1996 on the so-called "pianist parliamentarians" in which the Court, while warning the Parliament, once again safeguards parliamentary autonomy by stating that only the competent internal bodies of each Chamber have the power to address offences related to a material failure of parliamentary voting procedures.

Given the autonomy of the Parliament in establishing its own rules and given that the arguments in favour of an evolutionary interpretation of the constitutional notion of "presence", as we have seen, are convincing, it appears to be legally feasible that a House amends its regulations to allow remote voting in case of urgency. If this can be deemed necessary in many cases, it is, on the other hand, also evident that similar reforms are not pondered within the context of an emergency.

The need to preserve parliamentary debate is inevitably challenged by the other need for swift parliamentary decision-making, even though these two dynamics must be balanced. The Italian Constitutional Court pursues this objective with Order No. 60/2020, stating while legislative procedures were originally designed to foster adversarial debate, they also had to accommodate the efficiency and timeliness of parliamentary decisions over the years. This is particularly evident with financial and budgetary matters, requiring rapid decisions, especially to comply with the European deadlines.

Various expedients could be taken to this end: for example, a partially "decentralised" parliament could function by deflating the workload of the plenary and devolving part of the procedures in the Committees which could work more expeditiously in light of the reduction in the number of parliamentarians.

On the other hand, as Lupo points out, political representation requires "physical presence" and "simultaneity" in order to carry out informal conversations alongside official gatherings (*Ibid.*). Real presence is sometimes indispensable for fostering political exchanges and agreements. Similarly, swift decisions should be avoided in some cases which allowing

time to pass can help soothe heated passions and cool political disputes. Physical presence is not seen as a formal requirement for deliberations but rather as an essential qualitative element that promotes wiser consideration of decisions[X].

In this regard, the emphasis given by some scholars (Dickmann, 2020, 3) to the intensity of debates between the majority and the opposition in the Parliament is to demonstrate that online debates discussions would certainly be "softened" by the distance, lacking all those personal elements such as body language, which complement a speech.

A third argument focuses on the risks inherent to online voting, whose security and integrity may be compromised by hackers that "could falsify the result" or alter the "features of secrecy (when required), personal nature, and freedom of the vote" (Pertici, 2020, 383). Obviously, the respect of these principles cannot be monitored when deputies or senators exercise their functions in private, unsupervised locations.

Another argument put forth is that remote voting, if used only for parliamentary voting, might "create the impression that the Government is the indispensable organ, and that Parliament, on the other hand, can be ousted out" (Pertici, 2020, 384).

However, I am more convinced that, when compared to the Council of Ministers' meetings, "the exercise of judicial and legislative functions obeys to principles in part different, despite some suggestive analogies, that do not apply in the case of government functions" (Pinelli, 2021, 229). As demonstrated by Constitutional Court ruling 1/2014, the continuity of the State, as a fundamental principle, is realized through the equal and parallel permanence in office of all constitutional bodies, "starting with Parliament" (Point 7). Therefore, it is crucial to find a solution that maintains Parliament's functionality while also while not depriving the Parliament of its functionality, allows for "safeguarding the moment of discussion which constitutes the authentic hallmark of Parliament's identity" (Pinelli, 2021, 229). And this is not precluded by the introduction of remote voting: on the contrary, it can be strengthened.

Finally, less effective is the reasoning according to which allowing remote meetings and voting in the Parliament would ultimately amount to "a substantial abdication of the Parliament from its already threatened position at the centre of the constitutional system" (Calvano, 2020, 21)". Without much elaboration, the author explains its conclusion by saying that "digital technology […] cannot be considered neutral" (Ibid.).

3. Blockchain as a Digital Validation Infrastructure

Against this backdrop, it can now be addressed the issue of blockchain technology in public law (Monterossi, 2021) and specifically in remote parliamentary voting. It is paramount to understand whether blockchain adds additional guarantees to voting procedures, allowing for the dismissal of many, or at least most, of the objections raised by scholars.

As mentioned at the onset of this paper, blockchain is a distributed ledger technology (DLT). DLTs allow data to be stored in online archives connected through networks and to make such data transferable from one archive to another. Participants in such networks share all data and enable the synchronized recording of new data without need to rely on a central storage hub. This happens because transmission is peer-to-peer.

Blockchain is a solution designed to securely carry out transactions on the internet (Neloy, 2023; Gastaldo, 2023, 125). Originally created as a digital infrastructure to support cryptocurrencies and smart contracts (such as Bitcoin, Ethereum, Solana), it operates on a ledger known as a distributed ledger that requires a network of perpetually interconnected peer-to-peer computers to record transactions.

Transactions are the most elementary building blocks of a block and contain information at the most detailed level. In addition to the set of data related to transactions – data encrypted through a one-way hash algorithm – each new block contains a specific reference that acts as a timestamp, linking it to the previous block. The "genesis block", which is the first link in the chain, initiates the process of creating a blockchain (Nakamoto, 2008).

The blockchain ledger must adhere to four basic characteristics that make it absolutely unique: a) immutable, b) decentralized, c) public, and d) transparent (Iansiti and Lakhani, 2017).

a) Immutable, because once new data enter the blockchain, it is extremely difficult to modify or delete it. One should imagine the blockchain as an accounting ledger written with indelible ink. Thanks to the individual block hash – the algorithm – if any data were modified, the hashes of the subsequent blocks would also be recalculated. However, every transaction contained in the blocks must be validated by the users who are part of the network, so no one can modify, delete, or alter the data in any way without prior validation. The use of

advanced encryption and a structure of chained blocks protects the data from any manipulative attempt.

b) The blockchain system is also decentralized because, unlike centralized systems, such as a paper archive, in a blockchain there is no single authority that holds control over all the data. Control is shared by the users. Data is distributed among the many nodes in the network, making it difficult for a single party to alter or manipulate the information.

c) Additionally, blockchain is public, because the transaction ledger is accessible to anyone with an internet connection and the necessary software to interact with it. This means that everyone can view past transactions, verify their authenticity, and review the entire history of operations recorded on the blockchain. This is a form of "relative" publicity, as the ledger is accessible to anyone who wishes to participate in the network (not just any web user).

d) Finally, it is transparent because the data is accessible to all participants in the network, further certifying the integrity and immutability of stored information. To successfully alter or, worse, delete it, would require more than massive computational resources since it would necessitate the recalculation of the entire blockchain, let alone, of course, the possibility of human error. Furthermore, users can independently verify the validity of transactions without relying on a central authority. This is because every single block of the blockchain is validated by the peer-to-peer network, preventing the counterfeiting of some transactions.

To sum up, based on the characteristics just examined, blockchain has the potential to provide an immutable, secure, and transparent log of voting operations. It could thus offer a new approach to managing voting procedures, not only for national elections but also, indeed, in the context of parliamentary voting. We will now examine any relevant constitutional aspects arising from the use of this technology.

4. Blockchain, Procedural Guarantees and Security in Parliamentary Voting

As seen, the debate on remote electronic voting in Italian public law scholarship has been marked by a radical opposition of views. However, it is undeniable that no contribution has considered the feasibility of parliamentary voting with blockchain technology[XI]. This is immediately explainable by the fact that, despite being widely used in the field of electronic

payments, its use would be revolutionary in the context of parliamentary decision-making procedures and would therefore require technical solutions that are not easily achievable (at least in the short term and given the urgency of the pandemic).

To understand the theoretical feasibility of such an infrastructure in the parliamentary context just described, it is necessary to combine its advantages with the vulnerabilities related to remote electronic voting and evaluate whether blockchain can help overcome them.

We have highlighted how physical presence is considered by part of the doctrine as irreplaceable, both from the perspective of the formal Constitution and from the perspective of the quality of deliberation. This dual aspect, regardless of the reader's stance, cannot be solved with the recourse to blockchain, since the latter facilitates not so much the entire voting procedure but rather its final phase, namely the moment of expressing suffrage and counting votes, in view of proclaiming a result.

Blockchain, instead, would allow for secure and certain deliberation during remote sessions. The sequences of blocks, according to supporters of this innovation, would ensure that the vote-counting operations are secure, free from any possible error or human interference, rendering even the use of physical voting stations superfluous. This, of course, does not eliminate another compelling issue, which is digital identity[XII].

Indeed, it is necessary to pre-identify each voter, exercising a task that pertains to the preliminary phase of voting and requires additional technical measures[XIII]. For example, setting up voting platforms that allow not only videoconferencing but also the verification of the identity of participants for a dual purpose. Given that it is a parliamentary body, it is necessary to both ascertain the existence of the structural quorum and, at the end of the votes, verify each time the attainment of the deliberative quorum to validate the positive outcome of each vote. It goes without saying that, in this way, the rule whereby the existence of a legal number is always presumed would no longer apply, since this number could be quickly ascertained in real-time.

Therefore, concerning the technical security of the vote, blockchain seemingly provides sufficient assurances, given that we accept a minimum percentage of human error inherent in any technology. However, it is necessary to severely ponder whether it is tolerable that, as a consequence of remote debate, the discussion will always lack that qualitative element provided by the copresence of MPs. To compensate for the tendency to avoid intervening

in a remote discussion, one could imagine parallel virtual rooms with less members, informal working groups, or even "virtual corridors" where parliamentarians could meet to discuss free from the procedural constraints of the Committee meetings, the Plenary, and other bodies. In this situation, obviously, blockchain would have no role because, once again, it only concerns the moment of expressing suffrage. However, recording the votes subsequently cast on the blockchain could speed up the vote count and the publication of results, reducing waiting times and, conversely, extending those of the debate.

Similarly, the last argument put forward, concerning the loss of centrality of Parliament, can only be partially refuted: blockchain, in fact, is still a formal means through which substantial content must be conveyed. Regarding this, therefore, other avenues should be explored to propose valid alternative solutions. Nevertheless, it is undeniable that enhancing parliamentary voting procedures with technological innovations that allow the expression of suffrage even outside the parliamentary buildings would favour more efficient proceedings, regardless of the function actually exercised.

The third argument, according to which online voting should be avoided to prevent hacker attacks and would not ensure a minimum standard of compliance with the constitutional principles of freedom, secrecy (when required), personality, and equality of voting, deserves specific consideration. The threshold of this standard, in fact, is to be considered higher if the votes pertain to the functioning of the parliamentary institution.

5. Blockchain Constraints Over Parliamentary Representation

When we analyse blockchain technology with regards to the constitutional principles related to voting, freedom comes up as the most problematic issue (Birch and Watt, 2004). A vote is free when the parliamentarian's choice is possible without undue pressure, be it direct or indirect (Lanchester, 1993, 1126). The Italian Constitutional Court, in ruling 42/1961, specified that "the expression of the vote represents the free and genuine manifestation of will" (point 3, law). Undue pressure on voters includes, for example, those caused by the particular framing of a referendum question or, in some electoral systems, specific voting registration requirements, not to mention practical difficulties in accessing the voting station.

In the context of the functioning of the Parliament, examples of undue influence might include an erroneous or altered order of amendments, a limitation of the timeslots available for examining the act before voting, or a hasty calendar for voting operations.

If votes were submitted and certified with blockchain, the first risk would be surveillance by the developer of the source codes, which is undesirable in sensitive institutional contexts, such as the functioning of a constitutional body. Moreover, it could also be mentioned a risk of interference from third parties, malfunctions, bugs, or human errors impacting the principle of freedom of voting[XIV].

Related to this issue, to avoid the Assembly from degenerating into a "voting machine" it is necessary that "a full deliberative process develops" (Lupo, 2020b, 132). This is even more true considering that a vote via smartphone sent from any location without any formality would be completely decontextualized. Its significance would be diminished by the ease with which it could be cast. On the contrary, a parliamentary vote should be the result of a deep reflection, requiring time and solemnity.

One might object that in some cases the need to swiftly proceed to the approval of a bill is such that even during in-presence sessions the time might be significantly compressed. However, the final vote on the overall text remains crucial. It is not a mere sum of the votes on single articles but, rather, it forms the normative will of the Chambers thus representing an "autonomous and irreplaceable moment in the legislative process" (Di Ciolo and Ciaurro, 2013, 585).

A more tangible risk to the freedom of voting inherent to any remote voting method is the possible interference on a voter casting their vote from a private, unsupervised location, (Caterina and Giannelli, 2021, 6).

A second constitutional principle is the secrecy of the vote (Trucco, 2013), which, in parliamentary voting, is only exceptional given that the majority of the decisions are taken by means of a transparent suffrage. Secrecy aims to escape "social control" over one's voting choice, which could, again, result in undue pressures on the voter (Lanchester, 1993, 1127) and it is mostly used for votes concerning fundamental freedoms or decisions on personal issues. Secrecy is also a necessary ingredient in highly political decisions, such as establishing the confidence relationship in consensual political systems (like the European Union) or in coalition governments (such as in Germany). It allows political alliances to genuinely resolve issues during the process of forming a new cabinet.

As shown in section 3, all data generated by the use of online voting platforms can be recorded in blockchain ledgers and are verifiable. In most blockchains, users are identified by cryptographic addresses rather than real names. These addresses can provide a certain degree of anonymity, but they are not completely anonymous since transactions associated with a specific address are publicly visible on the blockchain.

Therefore, we have in this case a potential contradiction between the need for secrecy and anonymity of the vote over the verifiability of electoral results by users, as anonymity is not a feature associated with blockchain technology (Gometz and Tawa Folarin, 2018, 327).

In other words, blockchain does not automatically guarantee anonymity. It can offer a certain degree of "pseudonymity"—through the functioning of cryptographic addresses—and privacy can be protected depending on the technical solutions implemented by users. For instance, some cryptocurrencies, like *Monero* and *Zcash*, are specifically designed to offer a higher level of privacy. They use advanced cryptographic procedures to conceal transaction details, such as the amount transferred and the addresses of senders and recipients.

However, it is important to note that complete anonymity can be difficult to achieve, especially if additional measures to protect privacy, like the use of private networks or anonymization techniques, are not implemented on the blockchain. Additionally, authorities might be able to link transactions to individuals through data analysis or collaboration with cryptocurrency exchange platforms.

Regarding the third point, the requirement of the personal nature of the vote and the irreplaceability of the voter can be met with online voting only if facial recognition is accepted for voter identification, with obvious surveillance consequences.

Finally, the requirement of vote non-discrimination is perhaps the least problematic, given that technical measures can be taken to prevent multiple or duplicate votes.

Before concluding this review, it is important to highlight additional risks that could affect the constitutional standards of voting. Notably, the possibility of system malfunctions could have severe constitutional consequences in the case of unrepeatable votes. For instance, we must consider how to prevent fatal errors during the voting process in the body that elects the President of the Republic (for a detailed account of the events, see Pacini 2022, 57). Some scholars argue that these risks are so significant that ICT technologies should never be used for this vote (Luciani, 2022).

Yet, such procedures are the "heart of parliamentary law" (Lupo, 2020a, 27) and it is crucial that the voting methods are designed to avoid interruption of the procedure while allowing at the same time to preserve the integrity, all the more so in case of emergency or crisis.

A parliamentary deliberation system using blockchain should meet additional technical requirements: for example, ensuring that only members of a given committee can vote in the relevant virtual gathering to preserve authenticity of the vote. It shall be guaranteed that each member can cast only a single vote in a limited timeframe, after which the voting is closed. Furthermore, MPs shall not be able to access the voting preferences in case of secret voting and, to avoid nosing in the voting process, no partial results shall be released in advance. Finally, mechanisms should be implemented to identify invalid votes and exclude them from the final results. Making blockchain compatible with these needs may be a daunting task.

6. Conclusions

As seen, the applicability of blockchain technology to parliamentary voting, given the delicate functions performed by the parliamentary body and the necessary respect for constitutional principles regarding suffrage, is an entirely open question (and, for the time being, only theoretical).

It has been noted that the freedom of voting could be challenged by exposing the source codes to potential surveillance, attempting the integrity of choices. At the same time, the necessity to ensure a deliberative process and the ceremonious nature of the decision-making process in parliaments could be threatened by a decontextualized informal voting method, such as one using smartphones. Instead, the use of additional technologies to assess the digital identity of voters and preserve the freedom of voting could help address some of the opposition.

Regarding the secrecy of the vote, – required only in few enumerated cases outlined by the rules of procedure, – it is not certain that blockchain can provide a decisive solution, as the data in it is verifiable and could compromise voter anonymity. Even though there are techniques to ensure a certain degree of privacy, complete anonymity might be difficult to achieve. This aspect, obviously, does not affect public voting, which, on the contrary, is the majority in the parliamentary context.

Finally, the technical requirements to ensure the personality and equality of the vote can be addressed with technical adjustments, but it is essential to ensure that the system is robust and reliable, capable of detecting potential human errors or malfunctions early on to avoid constitutional risks and guarantee the integrity of the democratic process.

Given the highlighted risks, it must be noted that blockchain, as a support for voting procedures in Parliament, can be advantageous if understood as complementary instrument, not intended to replace for good the traditional parliamentary voting processes. Blockchain should be viewed as a "secondary tool," instead of a new means to revitalize Parliament. Thus, imagining blockchain software in a Parliament is a less futuristic scenario if, instead of operating onto a "virtual" Parliament, it is used for enabling remote participation by individual parliamentarians. It could be established that, for an imperative number of reasons, they can remotely vote overcoming their physical impediment, thus allowing them to avoid relinquishing their prerogatives. This would be useful, for example, for representatives who are ill, pregnant, or on maternity leave, or who are away from the chambers to care for a relative in need.

If used in such a limited manner, perhaps blockchain could contribute to strengthening the legislative body, avoiding work inefficiencies, encouraging greater participation by parliamentarians in certain functions, and more generally, promoting the full exercise of Parliament's constitutional prerogatives, which are currently partially overwhelmed by the gradual and inevitable shift of power towards the executive (according to Griglio (2020) this would imply a sort of "return to the roots" of parliamentarianism).[XV]

As Habermas would put it, democracy is not just procedure but also substance. Technology is now crucial and must be prioritized at the top of the institutional agenda, serving as the "grammar" that underpins all other institutional matters (Pacini, 2022, 144).

Nonetheless, improving the efficiency of voting procedures is not enough to "save" parliaments from marginalization (Lanchester, 1980). Nor can we be used to the idea of a Parliament with reduced functionality. What is needed is confrontation, debate, and the dialectical exchange of arguments: activities that, if carried out remotely, do not undermine the constitutional position of Parliament in times when concurrent and unexpected events could jeopardize its proper functioning.

Thus, with cautious favour, these conclusions welcome the prospect of adopting blockchain technologies to make remote parliamentary voting more secure. However, it is

fundamental that their use does not "normalize". Instead, it shall remain complementary and extraordinary, to avoid that the substance, instead of the form, of parliamentary activity is pervaded by shallow automated decisions.

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[I] See Randazzo (2022), who questions the feasibility of electronic voting for elective deliberations in connection with the many unresolved issues arisen during the pandemic. On the blockchain, scholarship focuses mainly on the topic of national elections, while voting procedures in collegiate bodies are still uncovered. See Ladu (2023); Calafato (2023); Caterina and Giannelli (2021); Gometz and Folarin (2018). In general, on blockchain in public law, see the encyclopedic entry by Monterossi (2021). See also Di Ciollo (2017) who delves into the litigation concerning the experimentation of electronic voting techniques in the consultative referendum in Lombardy, called by the Regional Council in 2017.

[II] On the new technologies as a means to increase a country's democracy with citizenship participation, see Gratteri (2005); Clementi (2020, 221).

[III] Among the numerous studies that have dealt with the impact of the pandemic on parliaments from a comparative perspective, see Rosa (2020); IPU (2020); Inter Pares (2020).

[IV] Sciannella (2020, 2511 ff.) highlights the technological challenges faced by parliaments to ensure the prosecution of remote activities.

[V] This was the case, for example, in Austria (IPU, Country compilation, cit.) and the Netherlands (Tweede Kamer des Staten-General, *Letter to all members of the House of Representatives*, 9 April 2020, <https://www.houseofrepresentatives.nl/sites/default/files/atoms/files/brief_voorzitter_9april_uk.pdfA>). On the thorny issue of the possible postponement of the vote in the event of an emergency, see. Siclari (2020).

[VI] The *no presencial* vote, regulated by parliamentary rules of procedure, has two features: on the one hand, each Member of Parliament is allowed to log on remotely under certain conditions but is not allowed to speak in the debate preceding the vote. On the other hand, online MPs may not cast their vote simultaneously but must proceed approximately one hour beforehand and the parliamentary Bureau must be able to verify the correct submission of the suffrage (usually by telephone call). See García-Escudero Márquez (2010). The voting system was tested during the pandemics. See García-Escudero Márquez (2023); Marchese (2020, 42); Curreri and Marchese (2020).

[VII] The case of the European Parliament, in particular, was widely discussed because allowing remote voting in plenary and committee was obtained by a permanent amendment to the rules of procedure. In particular, the provision of "exceptional circumstances" was included to derogate from the ordinary functioning of the assembly. Significant decision-making powers were thus given to the President of Parliament. On this regard, see Brack et al. (2021); Díaz Crego (2022); Circolo (2020); Ripoll Servent and De Feo (2022).

[VIII] We must add also the obvious "physical" meaning of the terms "sitting" (Articles 55(2) and 63 Const.) and "meeting" (Articles 61 and 62 Const.), as pointed out by Dickmann (2020). Pushing this interpretation to extremes, according to Calvano (2020, 49), to accept such an interpretation it would be necessary to approve a constitutional amendment.

[IX] See Carboni and Magalotti (2018). According to Calvano (2020, 50), these rules must be intended only as "exceptions" in the parliamentary rules which confirm the general principle of physical presence.

[X] See Lippolis (2020) who in this and other works reiterates that "parliamentary deliberation is the final moment of a confrontation that not only serves to test the different orientations (and, when possible, to find points of mediation), but also to formalize them and make them public". Instead, for the author there would be a high risk of transforming the Parliament into a voting machine.

[XI] Blockchain technologies, developed and most widely used in the context of cryptocurrencies, allow votes to be recorded and counted in an extremely secure manner. For their legal application to voting, see Caterina and Giannelli (2021); Gometz and Tawa Folarin (2018, 323). For a study that aims to inventory all uses of

blockchain in the European public sector, see Bosch *et al.* (2022).

[XII] This problem in Estonia has been solved with the creation of an "e-residency" platform (https://www.e-resident.gov.ee/), allowing all citizens, especially the ones living abroad, to obtain a digital identity and, consequently, to benefit from public services without being in the country.

[XIII] According to Boucher, (2017, 15 ff.) deep learning technologies could be associated with facial recognition allowing each user to log in on the remote voting platform with a simple face authentication, similarly as the one implemented on common smartphones (see Apple's *FaceId*). Each MP could simply benefit from face recognition to vote even without the physical support of a voting card.

[XIV] The "Post Office" scandal in the UK, which occurred between 1999 and 2005, offers an eminent example of the serious consequences that can be produced by software errors. During this period, over 700 Post Office employees were erroneously charged of false accounting and theft. This was due to flaws in the Horizon accounting software which manipulated information provoking the largest miscarriage of justice in British history. This episode highlights the need to ensure the quality and reliability of the software used, especially in sensitive areas (BBC, 2024).

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