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Blockchain and Tokenization of Good Governance

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ABSTRACT: From the financial services sector to the management of sustainable supply chains, energy markets, and intellectual property, the world of business is hyped with the use of blockchain to carry its processes. Blockchain's promise is to reduce agency costs and increase connectivity across markets. A sustainable blockchain ecosystem inevitably relies on factors of good governance including participation, rule of law, transparency, inclusiveness, effectiveness, and accountability. A workable governance model for a blockchain-based economy composes of monitoring, enforcement, and compliance mechanisms provided both by the technology itself and the government. This article is a reflection on the role of the private sector as well as the administrative state in regulating decentralized blockchain-based market.

KEYWORDS: blockchain, good governance, GDPR, Securities and Exchange Commission

Introduction: Regulatory and Governance Issues Associated with the Distributed Ledger Technologies (DLTs)

Milton Friedman said once, "I think that the Internet is going to be one of the major forces for reducing the role of government. The one thing that's missing, but that will soon be developed, is a reliable e-cash, a method whereby on the Internet you can transfer funds from A to B without A knowing B or B knowing A. The way I can take a $20 bill, hand it over to you, and then there's no record of where it came from. You may get that without knowing who I am. That kind of thing will develop on the Internet and that will make it even easier for people using the Internet. Of course, it has its negative side. It means the gangsters, the people who are engaged in illegal transactions, will also have an easier way to carry on their business" (Coin Republic 2013). Today, with the rise of digital currencies, it seems that we have reached where Friedman once predicted. Would these decentralized distributed networks reduce the role of the government in regulating markets? In a broader sense are we departing from the representative democracy by providing tools enabling direct forms of involvement in decision-making?

Blockchain first appeared in the form of Bitcoin (Nakamoto 2008), yet, its use goes way beyond digital currencies. Blockchain has the potential to deliver productivity gains across industries from the financial services sector to energy markets, sustainable global supply chains, and intellectual property (IFC 2019, 6). The primary value of blockchain is its capacity to enable a cryptographic process of reaching consensus among members of a distributed network allowing them to transfer value or information without need of a central authority or intermediary (IFC 2019, 10). The peer-to-peer control of transactions allows any two willing parties transact directly with each other without any need for a trusted third party. This peer-to-peer, tamper proof friction free cooperation network without central authority expands exponentially the skills and resources of an average citizen and transforms profoundly means of direct participation in public life. As such, blockchain is a modern process that advances the dominant paradigm of our politics today, the demand for more direct forms of citizens' involvement in public decision making (Dalton, Burklin, and Drummond 2001, 143, 146).

With every new technology comes the risk. Blockchain is no exception. Like internet in its early years, the inherent risk in blockchain enabled networks is to identify who holds the ultimate liability, accountability, and legal responsibility. Innovation, after all, complements with the commitment to help ensure financial markets are sustainable, and offer average investors and traders a level playing field free from manipulation and with adequate legal

protection (Crenshaw 2021, 10). Regulations, enforcement mechanisms, and a sound governance framework provide essential safeguards to the least powerful participants of the decentralized networks.

Regulators are mainly concerned with the lack of transparency and the issue of anonymity in blockchain transactions (Crenshaw 2021, 8-9). Taking the example of Decentralized Finance (DeFi), despite the fact that the coded activities are publicly available, relevantly small group of people understand the code, and those investors who get to hire experts will be advantaged to those retail investors who themselves must be the interpreters of complex codes in order to secure their investment against risks (Crenshaw 2021, 9). The mere accessibility of coded transactions on blockchains does not fulfill the transparency obligations or release defendants from liability for damages. Transparency is about access to data to enable investigation and judicial review of non-compliance claims.

Traditionally, the corporate structure has been associated with an inherent tendency to create a category of confidential or secret information which is held within the corporate person and is the object of '*executive privilege*' and by its nature is not open to public circulation but is subject to internal control (Glenn 2014, 17-8). Ubiquity of transparency obligations as one of the pillars of western democracies and its appraisal as the ultimate solution for provision of effective public control over corporations and efficiency of markets is a principle of governance in legislation, regulation, judgment, and contract (Glenn 2014, 15-6). While transparency is primarily related to access to information, the essential goal it secures is to enable public scrutiny, provide the aggrieved with access to justice, and ensure accountability of those liable for violations of laws. This explains the underlying provisions of the Securities and Exchange Act and further SEC regulations on disclosure and compliance requirements including registration and reporting of beneficial owners of certain classes of securities (15 U.S.C. § 78l; 15 U.S.C. 78m(d)(g); 15 U.S.C. 78p; 17 CFR § 240.13d-1, 13d-3). The Securities and Exchange Act further prohibits trading for the purpose of giving the false appearance of market activity or to manipulate the price of a security (15 U.S.C. § 78i).

DeFi removes the protection regime and screening process offered by the intermediaries in traditional finance. It has the potential to create a dichotomy between inside and outside investors in access to information and to threaten the overall democratic objective of facilitating competitiveness among all. Transparency is not, after all, just about provision of data and information. The mere fact that the data is publicly available does not wipe out the liability of those who inflict damages on the members of the network. The Securities and Exchange Commission (SEC) recently investigated the largest cryptocurrency exchange, Coinbase, over the launch of its new digital asset lending product, Lend. Lend would have allowed customers to earn an annual percentage yield starting at 4% by lending their holdings of a Stablecoin, USDCoin, to other users. The SEC considered Lend to involve a security and claimed that there was not enough investor protection in crypto finance yet. Cryptocurrencies and decentralized finance may evolve to threaten the financial system much the way credit default swaps did ahead of the 2007-08 financial crisis. Coinbase is not the only crypto company whose interest-bearing accounts are under scrutiny. State regulators have previously ordered BlockFi Lending LLC (BlockFi) to stop selling that type of account to state residents, on the grounds that the product represents an unregulated security (Ennis 2021). SEC recently charged BlockFi for failing to register the sales of its crypto lending product (SEC 2022).

Another issue is the anonymity and pseudonymity character of identifiers on blockchain (Crenshaw 2021, 9-10). Anonymous person is someone who operates or speaks in a way that makes them unidentifiable. Pseudonymous person operates or speaks in a way in which they can be identified, but their identification shields who they actually are. Some cryptocurrencies are designed with anonymity yet others such as bitcoin wallet is pseudonymous since it generates an address that is traceable to the real-world identity of their holders (Cryptopedia 2021).

While transactions on public blockchains are recorded, immutable and available for all to see, the identity of the person who controls it is either anonymous or pseudonymous depending on the blockchain type. When the actual identity of the owners of smart contracts are not traceable, it is hard to screen price manipulation, collusion, and manipulative trading of the digital assets (Crenshaw 2021, 9). This will impact the market integrity and information reliability.

The anonymity or pseudonymity of identifiers further complicates matters when a dispute arises out of transactions concluded on open blockchains, such as Bitcoin and Ethereum, where everyone can read, write, and commit (IFC 2019, 67). When the defendant is a decentralized autonomous organization (DAO) the difficulty for the court is to determine who is liable for the damages and must return the assets (Hinkes 2021, 23-4). It is burdensome to find the ultimate owner or controller (mastermind) of an unincorporated DAO for liability purposes. On such platforms each individual nodes on the blockchain can potentially be held liable for any damages caused to a member of the network (Hinkes 2021, 24). In public blockchain systems nodes are located everywhere making several laws and jurisdictions potentially relevant to the disputes. While such decentralization can bring benefits, it also poses a legal challenge regarding applicable law and jurisdiction.

Blockchain may also converge with Artificial Intelligence (AI) for automatization of business processes. For example, smart contracts embedded with AI models can execute transactions on blockchain, process payments, or stock purchases and resolve disputes. In the health sector, the convergence of blockchain and AI enables data integrity, transparency, patient tracking and consent management. In supply chains and financial services, it facilitates tracking data, accelerating transactions, increasing visibility for intellectual properties, and enhancing security and privacy of data (IBM n.d.). AI algorithms empowered by machine learning systems (MLS) aid decision-making by providing predictions based on historic data.

There is an ongoing concern with regards to potential discriminatory outcomes of MLS. An increasing body of research suggests that AI solutions might have disproportionate impacts on groups that are already socially disadvantaged, particularly people of color. Examples include systems that disproportionately identify people of color as being at higher risk for committing a crime or excluding people with mental disabilities from being hired (World Economic Forum 2018). In 2015, users discovered that Google's photo app, which applies automatic labels to pictures in digital photo albums, was classifying images of black people as gorillas (Simonite 2018). Another example of a data bias emerged in Nikon's camera software, which misread images of Asian people as blinking, and in Hewlett-Packard's web camera software, which had difficulty recognizing people with dark skin tones (Crawford 2016). Google showed more ads for lower paying-jobs to women than to men, and Amazon's same-day delivery bypassed black neighborhood (Gholipour 2018). An AI algorithm called COMPAS, used by law enforcement agencies across multiple states to assess a defendant's risk of reoffending, was found to falsely flag black individuals almost twice as often as whites, according to a ProPublica investigation (Gholipour 2018). Another example is facial-recognition technology empowered by AI to collect citizen's personal data without their consent or knowledge in breach of privacy rights (Hudson 2017). MLS is known in public as 'black box.' The 'black box' problem refers to the situation where people don't know how AI comes up with its decisions, therefore, they won't trust it (Bloomberg 2018).

These challenges are either related to the data itself or to the way algorithms are designed, developed, and deployed (World Economic Forum 2018, 7). An average human without training cannot understand their flow, they are not transparent and auditable and are almost entirely developed by small, homogenous teams most often of men (Crawford 2016). Unchecked, unpredictable and inscrutable systems with error-ridden and poor data that lack human oversight at both level of historical data used to train the predictive model and in the new data used by that model to make future decisions endangers the stakeholders' rights

(Redman 2018). Risks are high in low or middle-income countries where existing inequalities are often deeper, training data are less available and government regulation and oversight is weaker (World Economic Forum 2018, 6).

AI that makes wrong decisions or allocates resources improperly would potentially be breaching the laws. Sprint and Time Warner have both incurred multi-million-dollar fines for such issues from the Federal Trade Commission (FTC). Facebook has faced charges from the National Fair Housing Alliance and other organizations for its advertising platform that enabled landlords and real estate brokers to discriminate against several classes of people, preventing them from fairly receiving relevant housing advertisements (Smith 2018).

Blockchain has also become a source of concern in terms of data protection and privacy. In a permissionless public blockchain system, with no single party responsible for the availability or security of a particular blockchain network, all users of the system may have access to the data on the network. This is in contrast with privacy laws that require the party controlling personal data of an individual to safeguard the security and privacy of data on behalf of the "data subject." (IFC 2019, 69).

Given the above, regulations might not be seen much as barriers on the development of new technologies and potentials they have for social and economic advancement. Instead, they provide a governance framework that considers the rights and obligations of all the stakeholders and prevents abusive behaviors that can distort the market. The risks associated with the use of blockchain suggest a governance deficit plaguing its applications and demand for re-evaluation and development of a proper regulatory framework to secure market integrity.

Governance and Regulatory Framework Revisited

The solutions to address the above concerns are two-tiered: one is to influence the procedure. This is a bottom-up approach that focuses on internal governance framework of the new technology. Allowing all members of the network to influence the decision-making process by limiting the role of the government to those tasks that cannot be performed effectively by direct involvement of the citizens provides for social equity, non-discrimination, and inclusiveness. The other solution is a top-down approach that focuses on ensuring that Distributed Ledger Technologies (DLT) are interpretable, explainable, and accountable for liability concerns once a flaw is detected. This is more the position of the regulators focusing on the traceability of the chain of liability on blockchain.

The right to understand the decision-making process by having access to information, and a human authority to explain it, and access to redress when members of the network are aggrieved or affected by disparate impacts, together creates a comprehensive governance framework for blockchain. The role of regulations cannot be undermined while not overemphasized. Governance as a bottom-up approach and regulations as a top-down solution mitigate risks associated with the independent peer-to-peer networks. While new technologies are changing the face of the government and altering the way it engages with the people, the government remains an important player for ensuring transparency, public participation, and accountability of the DLTs.

General Data Protection Regulation (GDPR): A European Solution

The European Union General Data Protection Regulation (GDPR) mainly addresses the data protection and privacy concerns and provides an enforceable regulatory framework for accountability (GDPR 2016/679). The GDPR addresses transparency rights around automated decision-making and profiling. It provides for the right to object, the right to rectification, data protection by design and by default, and the requirement of data protection impact assessments

(Kaminski 2019, 4-6). Companies must implement suitable measures to safeguard the data subjects' rights and freedoms and legitimate interests (GDPR Article 22). These provisions require disclosure of meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing. This framework ensures communicating effectively the data to the data subject (Kaminski 2019, 21-2).

The controllers (the party that determines the purposes and means of processing particular personal data) and processors (a party responsible for processing personal data on behalf of a controller, such as an outsourced service provider) of data have distinct obligations under GDPR. Many blockchain systems are operated by all the users in a peer-to-peer network environment, which makes it difficult to define whether users are controllers or processors. Participants who submit personal data to the blockchain are more likely to be considered controllers under GDPR, as they determine the details of processing, whereas nodes that only process personal data are more likely to be processors, as they simply facilitate the blockchain network's operation (IFC 2019, 69).

The right to explanation contains, a series of individual notification and access rights specific to automated decision-making. Article 13 establishes notification rights and requirements when information is collected directly from individuals. Article 14 establishes notification rights and requirements when information about individuals is collected from third parties. Article 15 creates an individual right of access to information held by a company that can be invoked "at reasonable intervals." All three Articles contain an identical provision requiring disclosure of "the existence of automated decision-making, including profiling." Additionally, this provision requires disclosure of meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject. Individuals must have access to data used in an algorithmic decision-making process, and an explanation of why data are considered relevant, their respective 'weight' in an aggregate level, how a profile used in decision-making including any statistics used in the analysis and the sources of the data in the profile (Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation) OJ 2016 L 119/1, 2016).

The GDPR establishes due process safeguards including human intervention by a reviewer with the appropriate authority and capability to change the decision when required (Kaminski 2019, 13-4). This systemic accountability involves internal and external third-party auditing, and quality assurance checks. According to Recital 71 of the GDPR the requirements for suitable safeguards include specific information to the data subject and the right to obtain human intervention, to express his or her point of view, to obtain an explanation of the decision reached after such assessment and to challenge the decision. This includes all levels of internal auditing, quality assurance checks, and external third-party auditing. The European Data Protection Board's Guidelines support this interpretation of the Recital 71 (Guidelines on Automated Individual Decision-Making and Profiling for the Purposes of Regulation 2016/679, 2018, 32).

A "right to explanation" ensures the right of all to demand an explanation for any significant decisions made by machines at all levels (when data is obtained, when a decision is made, when an individual's consent is obtained, or when an individual requests information), and enables victims of "discrimination-by-algorithm" recourse to human authorities, thereby mitigating the risks. Facebook and Equifax have already faced fines for non-compliance and violation of GDPR (Fefer and Archick 2020). In July 2020, Belgian Data Protection agency (DPA) levied € 600.000 fine on Google Belgium for not complying with the "*right to be forgotten"* of a Belgian citizen (Belgian DPA Decision No. 37/2020). An individual can challenge a particular decision only if she understands "how it has been made

and on what basis." The right to explanation in fact enables individuals to invoke their other rights (Kaminski 2019, 12-3).

Smart contracts in blockchain nets are driven on data. The right to explanation is a primary safeguard that protects data subjects from designers and operators of such data on blockchain. The final liability must remain with these designers and operators not with the mathematical structures and the technology itself.

Administrative Agency Role: A U.S. Solution

While Europe initiated a comprehensive regulatory effort by passing the GDPR, the U.S. has reemphasized the role of agency regulation and oversight in dealing with blockchain legal risks. A quick look at the involvement of SEC in screening, investigating, and charging blockchain activities confirms the American approach to apply current laws and regulations to DLTs by way of expansion and interpretation (SEC 2022) (SEC 2021) (Ennis 2021). The history of American administrative law development demonstrates the important role the agencies play in the process of democratic and participatory public policy decision making. Blockchain would rather reinforce than reduce such role.

When we talk about good governance, we must inevitably talk about the administrative regulatory state. From SEC to Environmental Protection Agency (EPA), and FTC critical aspects of American socio-economic life is regulated by the administrative agencies. But what is the role they play in advancement of principles of good governance? why agencies must regulate blockchain and what does such regulation and oversight represent?

The origins of principles of good governance are traced back to the American administrative law. In 1929, the stock market crashed that led in the following months to a tidal wave of deflation and economic decline not only in the United States but worldwide. In the aftermath of the Great Depression, President Franklin D. Roosevelt initiated a national economic recovery plan later known as the New Deal. This initiative consisted of series of government actions, legislation, and social reforms, including emergency relief bills for unemployment, the Agricultural Adjustment Act, the Glass-Steagall Act (Banking act of 1933), the Securities and Exchange Act, and the National Industrial Recovery Act. FDR put a limit on the power of business in American life, institutionalized the collective power of big business as a whole and "saved capitalism from itself" (Ferguson 1989, 3-5). The New Deal (1929-1980) shaped a modern concept of administrative regulatory state.

Congress later enacted the Administrative Procedure Act (APA) in 1946 (5 USC § 551–559) as a continued effort to further public interest and policy meanwhile to create safeguards against administrative agencies' arbitrary exercise of delegated authority and encroachment on private rights (Bressman 2003, 472 n.44). The APA had an impact on the design of the international economic order in the aftermath of the World War II, reflecting American values of administrative regulatory state. The FDR's Secretary of State, Cordell Hull, was a strong advocate of a legalistic approach that emphasized legal commitments, procedures, and enforcement mechanisms in international monetary, financial and trade policies (Dunoff 2009, 330). Dean Acheson, the successor of Hull, in an address made before the National Convention of the U.S. Chamber of Commerce equally emphasized "No code of laws is worth very much without an authoritative body to interpret it and administer it" (Acheson 1949, 626). Ever since, the APA has been an inspiration for an effective, accountable, and inclusive governance framework for international cooperation from realization of Sustainable Development Goals (SDGs) to combating corruption in public administration, international economic cooperation, and multilateral trading system. For example, Article X of the General Agreement on Tariffs and Trade (GATT) 1994 requires national trade related measures be promptly published, and administered in a uniform, impartial and reasonable manner (*General Agreement on Tariffs and Trade 1994, Apr. 15, 1994, Marrakesh Agreement*

Establishing the World Trade Organization, Annex 1A, 1867 U.N.T.S. 187, 33 I.L.M. 1153 1994). This article was originally proposed by the United States during negotiations of GATT 1947 reflecting the American perspective on transparency obligations of member states influenced by the APA concurrent enactment by the Congress (Ala'i 2008, 779-80). The APA has also influenced Principles of Effective Governance for Sustainable Development by United Nations Committee of Experts on Public Administration, endorsed by United Nations Economic and Social Council (UNCEPA 2018).

Later in the 70s, Milton Freidman advocated minimal governmental intervention in social matters and neo-liberal economic policies that favored deregulation. In his essay "The Social Responsibility of Business is to Increase Profits" published at the New York Times Magazine in 1970, Friedman associated "social conscious of the business to take seriously its responsibilities for providing employment, eliminating discrimination, avoiding pollution and whatever else may be the catchwords of the contemporary crop of reformers, preaching pure and unadulterated socialism" (Friedman 1970). He further said "collectivist ends cannot be achieved by capitalist means such as corporations that has only one social responsibility and that is to engage in activities designed to increase their profits short of deception or fraud" (Friedman 1970). His theory gained popularity in American domestic politics since President Reagan took office in 1981 and later expanded into a broader public cynicism about bloated government and federal bureaucracies (Bressman 2003, 487).

The two forces of the New Deal and antiregulatory trends in American politics have created a balanced approach to prevention of administrative discretionary abuse and accountability for both corporations and administrative agencies on behalf of narrow groups or interests. Agencies may choose to make policy through notice-and- comment rulemaking, through adjudication, or through other administrative action. They use informal adjudications or enforcement actions against private parties. They use guidance documents or settlement negotiations. In the meantime, their decisions will go under judicial review and their authority is not unchecked. According to the *Chevron* doctrine, courts defer to agencies' interpretations of law if the statute in question is ambiguous, and the agency's interpretation is reasonable. Plus, as established in *United States v. Mead Corp.* an agency is entitled to *Chevron* deference only if Congress has delegated to that agency the authority to issue interpretations that carry the force of law, and the agency has used that authority in issuing a particular interpretation. The agency may be entitled to *Skidmore v. Swift & Co.* deference, where courts owe deference to agency interpretation to the extent that the deference relies on contextual factors such as consistency, thoroughness of considerations and validity of the reasoning. See *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.,* 467 U.S. at 842-44 (1984); *United States v. Mead Corp.* 533 U.S. at 226-27 (2001); *Skidmore v. Swift & Co.,* 323 U.S. 134, 140 (1944).

The notice-and-comment agency rulemaking is a safeguard designed to prevent arbitrary and capricious rulemaking underscoring the importance of broad public participation. Agencies must choose notice- and-comment procedures, to the extent possible, for issuing standards in advance of applying them to particular facts. This procedure promotes the values of fairness, predictability, and participation important to a genuinely nonarbitrary administrative state. Notice-and-comment rulemaking, by its nature, facilitates the participation of affected parties, the submission of relevant information, and the prospective application of resulting policy. In this manner, the notice- and-comment rulemaking fosters thorough consideration of policy, promotes predictability, and allows affected parties, who participate in the formulation of the rule, to plan accordingly. So far as agencies exercise their authority according to principles of fairness, rationality, and predictability, they act consistently with the broad public purposes of the statutes they implement and promote principles of good governance.

Once designed to stimulate the market in the wake of the economic crisis, the modern administrative regulatory state has become the source of accountability and legitimacy. The

administrative decisions and regulations serve permissible societal goal, promote justice, protect private autonomy, and ensure public participation in the administrative process. Administrative agencies today regulate corporate matters to protect the public against the pervasive character of institutional closure, internal management privilege over information, and overreaching or unfair corporate practice by providing affected parties increased hearing and participation rights (Bressman 2003, 472).

Blockchain neither reduces nor expands the role of the agencies, it rather complements it by providing an effective means to advance principles of good governance. In such manner, blockchain can be utilize by the administrative agencies to incentivize broader public participation in notice-and-comment rule-making procedure. In this manner, citizens play a greater role in administrative decision-making processes that ultimately impact their activities in digital markets. Blockchain may not make the government disappear, but it expands direct public participation and a more democratic agency structure.

Conclusion

Despite Friedman's prediction on the verge of the Internet, the administrative state continues to regulate corporate activities to preserve market integrity in this new age of blockchain enabled transactions. The coming into force of the GDPR and new sets of compliance obligations, and SEC series of actions against crypto lending have taken the air out of the bubble of the blockchain as a purely self-administered, self-regulatory platform with no external intervention from the government.

At the business end, there is a growing interest in socially responsible investing, and funds that consider Environmental, Social and Corporate Governance (ESG) (Tepper 2020). A quick look at the IBM White Paper on use of blockchain in pilot projects to advance solutions for compliance with the GDPR obligations shows how the technology itself can be applied to tokenize elements of good governance by adding accountability and transparency for the participants involved in the value chain, while preserving privacy and confidentiality (IBM 2018). The blockchain, can be used to facilitate the notice-and-comment procedure of administrative rule making by expanding public opinion and participation, transparency, and disclosure. The technology can provide an enhanced governance structure to help control it, meanwhile, to strengthen the oversight by agencies.

Everything can be tokenized on a distributed ledger so does the principles of good governance. Effectiveness (competence, sound policy making, collaboration), accountability (integrity, transparency, independent oversight) and inclusiveness (leaving no one behind, no discrimination, participation, subsidiarity, intergenerational equity) (CEPA 2018) can be linked to tokens to reduce risks and challenges of data breach, and foster trust among members of the network.

The evolution of markets with blockchain requires revisiting rules and governance structure for protection. The developers owe a responsibility to look beyond maximizing profit. Agencies, on the other hand, are required to monitor closely the blockchain driven markets for its risks and sustainability. At stake here is to develop procedures to sustain a world economic order friendly to democratic values. Democracy after all must fight both the public and private means of control. With the internet, we democratized information access. With the rise of new technologies, the challenge is extended.

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