Validation rules for blockchain research
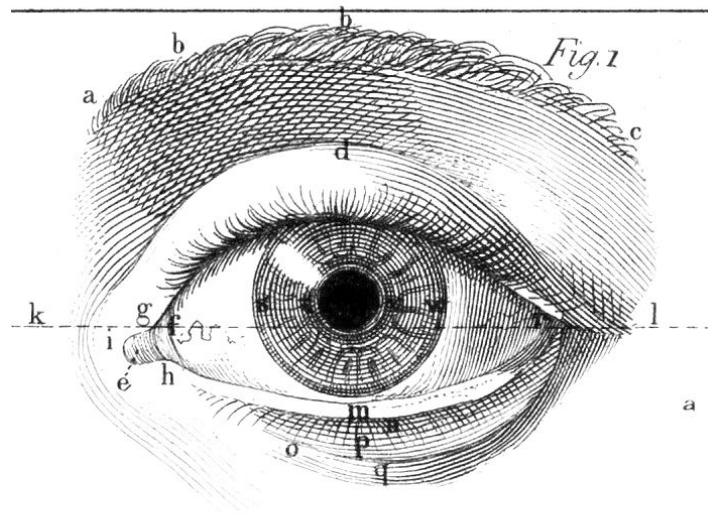# International workshop on scholarly blockchain research priorities

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Report

University of Amsterdam

Institute for Information Law

Blockchain & Society Policy Research Lab

Research Nodes 2019/1

A. Giannopoulou*, B. Bodo* V. Ferrari*, J.P .Quintais*,
Blockchain & Society Policy Research Lab, Institute for Information Law (IViR), University of Amsterdam (UvA)

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The Blockchain and Society Policy Research Lab organised a two-day workshop dedicated to blockchain scholarly research on 4-5 December, 2018. The workshop brought together teams from four different projects: the **Blockchain and Society Policy Research Lab** from Amsterdam (https://blockchain-society.science/), **P2P Models** from Madrid (https://p2pmodels.eu/), **MoneyLab** from Amsterdam (http://networkcultures.org/moneylab/) and Weizenbaum Institute's **Trust in Distributed Environments research group (**https://vernetzung-und-gesellschaft.de/rg17/) from Berlin. The workshop's overall goal was to incite interactions between the projects, to explore common research possibilities intersecting between distinct projects, and to provide a breeding ground for discussions on each project's research focus.

Highlights

- (Dis)trust in institutions and the abolishment of intermediaries present issues of particular legal, governance and technological interest; knowledge transfer for interdisciplinary scholarly research in these topics is necessary.
- Decentralized technological infrastructure and cryptocurrencies could be used in the context of commons-based communities. The preconditions, effects, and implications of this model require further attention and empirical research.
- Translating legal norms into code and creating autonomous governance systems on-chain is a particular research challenge; it is related not solely to smart contract regulation but also to decentralized platforms with potential to create enforceable agreements.

Day 1 Academic Semi Open Workshop

The workshop was kicked-off with brief overview presentations of all the projects by teams present. The director of MoneyLab, Geert Lovink, introduced his project, which is largely comprised of artists exploring financial democratization and cryptoeconomics. After MoneyLab, Dr Samer Hassan introduced the P2P Models project of which he is the director. P2P Models is a research project focused on creating new collaborative economy organisations and on exploring whether we can use blockchain or other decentralized technologies to build online platforms that rely on decentralized infrastructure, democratic organization, and distribution of profits. Professor Björn Scheuermann, principal investigator of the research group "Trust in distributed Environments" working within the Weizenbaum Institute, explained that the goal of the project is to examine whether it is practical, feasible, or even appropriate to seek the abolishment of trust anchors and intermediaries in distributed environments. Finally, Dr Balazs Bodo introduced the **Blockchain and Society Policy Research Lab**'s research focus on legal, policy and technology issues related to the development and applications of decentralized technologies. Also present for commentary was Immaculate Motsi, the primary Research Associate for the University of Birmingham-based Wellcome Trust [Blockchain for Healthcare](#) research project led by [Prof Karen Yeung](#).

The remainder of the first day was divided in three separate sections, giving the opportunity for the different teams to present their current research and to get feedback: the Madrid session, the Berlin session, and the Amsterdam session. The first one was comprised of three presentations: David Rozas presented [a working paper](#), examining how the Ostrom principles apply to governance by blockchain technology applications. Antonio Tenorio-Fornés gave an

overview of the process of creating and sharing a participatory design tool for building blockchain-based solutions for community organization. Finally, David Llop explained the current state of the spectrum of DAO frameworks available to use.

The Berlin session started with a talk held by Martin Florian, research group leader, who gave an overview of the research done by the different members of the group whose presentations came shortly after. Namely, Ingolf Pernice presented his work on current monetary policies in cryptocurrencies, how they compare to traditional central banks and what lessons can be learned from economics. Next, Sebastian Henningsen's talk on network security gave insights on resilience against attacks on cryptocurrencies, with the example of eclipse attacks on Ethereum. The legal presentation by Sophie Beaucamp on automation in private law relationships focused on the consumer welfare point of view. Finally, the governance research done by Moritz Becker focuses on how decisions about protocol changes are negotiated within blockchain systems and how they compare to traditional open source development processes.

The first day came to a close with the Amsterdam session, which included presentations by the team members of the Lab on their recent work. Joao Pedro Quintais presented the recently published paper on copyright, Alexandra Giannopoulou presented her work on the relation between data protection and blockchains, and Valeria Ferrari presented her PhD research proposal on enforcement issues in blockchain environments, focused on the role of intermediaries. Finally, Inte Gloerich from MoneyLab explained how art approaches questions related to the future of these emerging decentralised blockchain technologies and she showcased examples of art projects such as one about the materiality of cryptocurrency.

Day 2 Planning, Breakout and Business

The goal of the second day was to design practical venues of cooperation between the four teams. This included finding the topics we want to cooperate on, identifying the interested parties, and planning cooperation activities such as reading groups, papers, events, grant applications, etc. The breakout sessions served to identify shared research interests in the following topics:
- trust;
- ethnography on communities;
- Blockchain intermediaries;
- using cryptocurrencies in order to finance commons-based communities;
- means of governance of/by the technology; and
- translating rules and laws into code.

Split into groups, the participants were expected to prioritize research questions and issues as well as to propose action plans and activities related to these topics. Inciting the establishment of routines of collaboration and of knowledge sharing was a central point on which the participants of each group had to reflect on. The outcomes of the discussions are expected to set the ground for collaborative efforts, such as building a common vocabulary for this interdisciplinary area of study, or join forces for grant applications and conference organizing.

Trust

The session focusing around trust explored various issues among which was the question of the social conditions related to the production of trust. The participants also discussed the operationalization of the trust, the risks of overusing the concept of trust and trustlessness as well as the different types of instilling trust in social processing such as through institutionalization or through the gradual creation of interpersonal reputation-based trust. There is a difficulty in conciliating the different definitions of trust in different disciplines (such as those in law, computer science, economics, and social sciences). Beyond definitions, the session participants pointed out the ongoing transformation of the existing networks of trust and the process of scaling interpersonal trust. Finally, and even though trust is interconnected with the concept of reputation, the relationship between the two concepts requires more attention because of the societal risks involved in managing reputation scores on a big scale. The participants of the group agreed to establish a mailing list for the regular exchange of papers and related research. They also formulated ideas about papers to pursue such as on trusting trust and on reputation systems in p2p networks. The organisation of a workshop on the questions raised was the final action plan proposed by the group.

Intermediaries

The intermediaries acting around the blockchain space are multiplying. Therefore, the workshop dedicated a session engaging in discussions about making a typology of the different actors in order to further address the liability schemes that could be applicable. Which are the main blockchain intermediaries? What are the elements of definition from a legal and technical point of view? How to identify core actors and their activities? The participants agreed that the envisioned typology should not be based on a purely technical or a legal one but that it needs to position itself in the intersection of the technical, legal role of each actor as well as the governance models applicable. The discussion group outlined a preliminary map of blockchain intermediaries in order to reflect on research method approaches to the questions raised. On a methodological level, research on actors and their activities can be structured with either an ex

ante or an ex post approach. The participants discussed whether it would be preferable to do an ex ante research, meaning the conceptualization of intermediaries that would lead to a prescriptive suggestion of applicable legal rules or an ex post one in order to first observe existing regulation on the field and then envision the obligations and responsibilities of each related actor. Further knowledge exchange is needed in the form of either informal discussion or structured panels in both technical and legal events in order to address the issues emerging. The creation of an online collaborative instrument such as a glossary is a defined goal that was agreed upon by the majority of the participants as an example of doing blockchain research "post-hype".

Support for commons

The discussion explored how cryptocurrencies can be useful for marginal, subversive, communal or commons-based informal communities. The participants' interest was in exploring blockchain beyond fintech. They distinguished between the use of cryptocurrencies as a peer-to-peer revenue source and the use of blockchains as a collective form of administration. Researching the projects on the field that could be useful for the two distinctive uses can also contribute to showcasing the difference of effects between applied voting models in such communities, from futarchy to liquid democracy. At the same time, the design of consensus mechanisms for blockchain projects is restricted by the technological limitations. Starting from the core concept of the non-accumulation of power, and after considering the limits of available technology, modular governance models could emerge in order to correspond to the needs of diverse communities.The discussants agreed that besides exchanging information through mailing lists, artistic projects and workshops on the theme of governance versus law for the commons could be an interesting outcome for the thematic session.

Governance

How governance of blockchains is essentially different from governance of large free/open source projects? This session focused on technology governance. The participants started by pointing out that based on Ostrom's work on governance, blockchain networks (unpermissioned, open) are commons. There is a difficult but essential difference in separating the questions of governance by and governance of blockchains. The first question is susceptible to relate to the question of governance of open source projects. One of the differences between open source project governance and blockchain governance that was pointed out by one of the participants, is that of the power of miners because their role could be expanded: for how long will they stay out of development? Will miners finance and drive code development for mainstream applications and infrastructure? Also, differences in blockchain technological

models produce differences in governance structures and the pace of the evolution the project. Several examples were brought up to illustrate this argument: on the one hand, Bitcoin is governed in a way that produces conservative, spartan code because the participants cannot establish agreements on more and on the other, Ethereum, EPR and Tezos constitute innovative and fast moving blockchain implementations; similarly, Hyperledger is an open source project for private blockchains which is both effective and very goal oriented. The ultimate question that the discussants of the session were able to identify is how successful the code base that each governance produces can be, compared to others. When it comes to the second question, that of the governance of the blockchain, some of the practices related to the governance of the Internet were brought up as a parallel to the question at hand. The standards' agreements that relate to the governance of emerging technologies (IEEE, ISO) could be used as a baseline to create standards around blockchain technology through institutional agreements. The session participants agreed to produce a workshop in June or July 2019 and to further elaborate on all the aforementioned issues.

Translating rules and laws into code

The final session adopted a more technical approach towards examining how to translate rules and laws into code. More specifically the participants explained LegalRule ML and its ecology as an attempt to facilitate the process of passing from legislation to computational models of it. However, it was pointed out that end-to-end modeling process is not without limitations (e.g. because it is based on deontic logic, no position of power) and admittedly, it becomes apparent to the participant specialists on the field that a complete modeling of law is plausibly not achievable. Aragon was used as an example that applies a form of automatized enforcement through its court mechanism on contracts and collateral. Even if the constitutional issues that the scaling of this system could bring up are not negligible, the current judicial system could benefit from such progressive partial automation because computational models of contract could end up reducing the number of litigations. The session participants agreed to continue the discussion and collaboration through the exchange of ideas and papers by email.

The shortage of time did not permit the further exploration of the numerous issues identified over the course of the intensely rich two-day-workshop. However, during this two-day workshop, the participating teams managed to not only present already published work but also to engage in meaningful discussions and research collaborations for the future.