Making the blockchain civic

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Making the Blockchain Civic

Insights

- Blockchains promise to decentralize administrative systems and invite us to consider distributed civics and the roles of algorithmic governance.
- Interaction designers should explore the embodied and social experiences of interacting with abstract data transactions, smart contracts, and automation.
- Making the blockchain civic requires thinking across philosophical, political, interactional, and social layers.

To what extent can the application of blockchain technologies be employed toward civic empowerment, organizing local civic and circular economies, reinstating trust in civic institutions, or, perhaps, creating entirely new types of institutions?

In May 2018, researchers from the Amsterdam University of Applied Science's Faculty of Digital Media and Creative Industries, Northumbria University's interdisciplinary NorTH Lab, and local—Amsterdam-based—professional partners gathered for a speculative design charrette to explore the opportunities and challenges of designing for futures of civic good with blockchain technologies.

This design charrette was intended to broaden these discussions and introduce a value-driven perspective to debates around blockchain. We see an important role for the design community in linking the design and application of blockchain technology toward matters of public and social concern. While blockchains raise suspicions as instruments of market-driven "financialization" (e.g., [1,2]), they may also be configured to radically regulate and distribute common resources. Specifically, we set out to ask what these emerging technologies could mean for the organization of civil society and civic practices. What future imaginaries and design trajectories can we envision that could shape these new technologies from a civic perspective?

Our charrette asked participants to reverse engineer a future scenario they developed, in which civic technologies in Amsterdam were underpinned by blockchain technologies. What would

this future look like, and what events, policies, technologies, and cultures could have led to that future?

As a kickoff assignment, we worked in groups to rapidly create fictional news headlines, each of which reported aspects and issues related to imagined civic blockchain projects in 2030 (Figure 1).

Provocative and playful, revealing both excitement and wariness, these headlines were a creative tapestry of researchers' interests and imaginations regarding civic blockchains. In groups, we discussed and developed outlines of speculative design artifacts that might explain or expose the underlying sociotechnical systems and technologies.

Over the course of the day, this envisioning was captured in imaginary design workbooks [4], which ultimately depict all manner of speculative artifacts, including physical things; diagrams, logos, and text from imagined services; ads; newspaper articles; and first-person narratives (Figure 2). Each of the resulting four workbooks reflects designers' and researchers' attempts to get to grips with what it means to do design in relation to complex, slippery technologies like blockchain. However, collectively they also create a platform to reflect on the emergent issues in making the blockchain civic. We introduce each workbook briefly now, before turning to these wider emergent issues.

SPECULATING ON CIVIC BLOCKCHAINS

Managing multiple identities. While passports and state ID cards privilege formal centralized identities, the first workbook explores the implications of blockchains that facilitate a proliferation of formal digital profiles and identities. Regulation is envisioned where citizens are granted up to 10 legally valid identities that could be tailored to different contexts and situations. Aspirationally, this workbook suggests that the concept of a single identity has been used as a mode of reinforcing inequalities, stigmas, and social divides. Hence these new laws may be seen as a way to embrace pluralities and navigate

Figure 1. A spread of fictional news headlines from 2030.

Blockchains and distributed ledgers are an emerging infrastructural technology that arguably has the potential to fundamentally transform the ways in which people transact, trust, collaborate, organize, and identify themselves [3]. Most debates around these technologies have focused on their technical functions and the affordances of blockchain to organize monetary transactions and trust in new ways. There is a claim that these technologies will promote new modes of decentralized organization and lead to the "disruption" of traditional institutions, whether large banks and corporations or central governments. Despite the envisioning of blockchains to support new forms of citizenship (BitNation), social currencies (D-Cent, Commonfare), renewable-energy exchanges (Jouliette), conditional giving (Alice), voting mechanisms (Voatz), and distributed licensing and registry (Resonate, Maecenas), there has been little attention to their implications for digital civics.

physical, digital, and cultural borders. Yet in practice, the workbook questions the extent to which the disintermediation of identity services is practical and manageable for individual citizens, and when and how centralizing or delegating identity management would prove valuable (Figure 3).

AImsterdam: The algorithmic and self-licensing city. This second workbook departed from a headline taken from a newspaper in 2030: "Stallman vs. Thiel: Algorithms Running for Office Divide Community." The headline envisions a future in which citizens no longer elect a single person or party to govern a city, but rather choose between different algorithms that autonomously run a number of city services—what this group came to term AImsterdam.

The radical assumption underlying AImsterdam is that the rise of blockchain and smart contracts facilitates the functions of a city to be expressed as a number of licenses to provide services that can be auctioned off to citizens, companies, or organizations (e.g., parking, housing, energy, etc). In practice, the city depends upon a set of distributed autonomous organizations (or DAOs) that run these licensing programs themselves, administering these temporarily granted rights and cryptocurrency payments on a blockchain. As the headline suggests, the frontline of politics focuses on programming the rules and conditions for these DAOs that govern the lives of Amsterdam's inhabitants. (Figure 4)

Automacracy: Governance as a service. The third workbook explored a world where self-service governance and local decision making have become both a societal ideal and an economic necessity. In 2030, centralized authorities have largely withdrawn, and as faith in central authorities and global commercial forces has eroded, a greater culture of self-determination and local, collective organization has evolved. By 2030, Automacracy has become an influential technology company, providing a range of decentralized tools to support trustworthy digital governance at global, local, and even individual scales.

In practice, this workbook grappled with how algorithmic and blockchain-based governance would manifest physically in citizens' lives and social circles. To make sense of the cryptographic protocols and assurances of "smart contracts," Automacracy is envisioned to appropriate traditional forms of making and confirming decisions. Crypto-governance products may hence rely on analogies to coin tosses, magic eight balls, attestation, and signatures. As such, symbolism, ritual, and metaphor emerge as critical ways for people to make sense of what to many will remain a mysterious set of processes and systems (Figure 5).

Tokenizing Tourism. The final workbook revolved around the establishing of a tourist quota in the city of Amsterdam in 2030. Like many European capitals, Amsterdam is struggling to keep up with an increasing influx of tourists. In the future, citizens of Amsterdam are envisioned to vote for the kind of tourists they want to attract to their city and neighborhood. As such, visiting tourists are assigned to particular areas of the city and are incentivized to use particular currencies. Set in 2031, the workbook follows the story of Pål and Inger, a couple from Sweden on holiday, where they face multicurrency spaces, data-based constraints and privileges, and blockchain-based voting.

This voting system is envisioned to give citizens agency to influence their highly local environment as part of a larger city. The workbook deals with questions around the balancing of individual needs and larger social ideals in algorithmic decision making. How can individual voters relate to the consequences of their preferences when the system calculates an outcome from many atomized variables? Using multiple complementary currencies, the tokenized tourism imagined here would categorize visitors, giving them special deals while constructing digital limits to their movement and spending (Figure 6).

REFLECTIONS

As an exercise, the workbooks helped us to consider the broad philosophical ideals of civic life and specific touchpoints through which blockchains might be understood and materialized. While each workbook raises its own questions, reflecting across them, we drew three core insights that highlight opportunities for carefully considered design research for making the blockchain civic.

Decentralized and distributed civics. Back in the 1990s, the rise of the Internet promised decentralized information production, distribution, and processing. More recently, we observe a recentralization of these processes in a platform society. In line

The workbooks helped us to consider the broad philosophical ideals of civic life and specific touchpoints through which blockchains might be understood and materialized.

with these past and present developments, blockchains promise to decentralize administrative systems.

For example, Automacracy imagines blockchains and self-service governance as a response to an ineffective or retrenched centralized state. While many blockchain applications envisage global networks and interplanetary file systems, the focus on civics and the city of Amsterdam investigates their qualities as instruments of localism, which could be a tool to resist faraway centralization.

Tokenizing Tourism considers whether cities can be algorithmically atomized into distinct neighborhoods, with their own currencies and hyperlocal referenda as a way to maintain a distinctive character in response to overwhelming tourism.

AImsterdam reconceptualizes the administration of a city as a series of licenses; these elements can then be programmed and directed to interact algorithmically, accountable to rules and contracts held in a distributed ledger. In this way, embedding long-term societal goals and principles into technocratic systems might be a way to balance and offset short-term reactions or crises—or worse, a way of imposing past politics on future generations.

However, practically and politically, what are the limits of decentralization? How can citizens locate and hold new centers of power to account? When interacting with a series of interdependent licenses or voting for algorithms, what are the checks and balances, and where is human governance and accountability most crucial? How can citizens and organizations interpret the real-world consequences of expressing particular philosophical preferences through blockchain-based systems?

Semi-autonomous civics. Second, through the decentralization of these administrative systems, the workbooks envisaged how civic life could become tied to (semi-)autonomous actors in the form of smart contracts and DAOs. In various guises, participants presaged non-human actors as having a more significant role to play in mediating how citizens access, use, and experience civic spaces. In particular, blockchains were recognized as a means to embed particular algorithmic functions, manage their operation, and

Figure 2. Spread of imaginary workbooks produced during the workshop.

Figure 3. Concept sketch of delegating identity management to specified authorities.

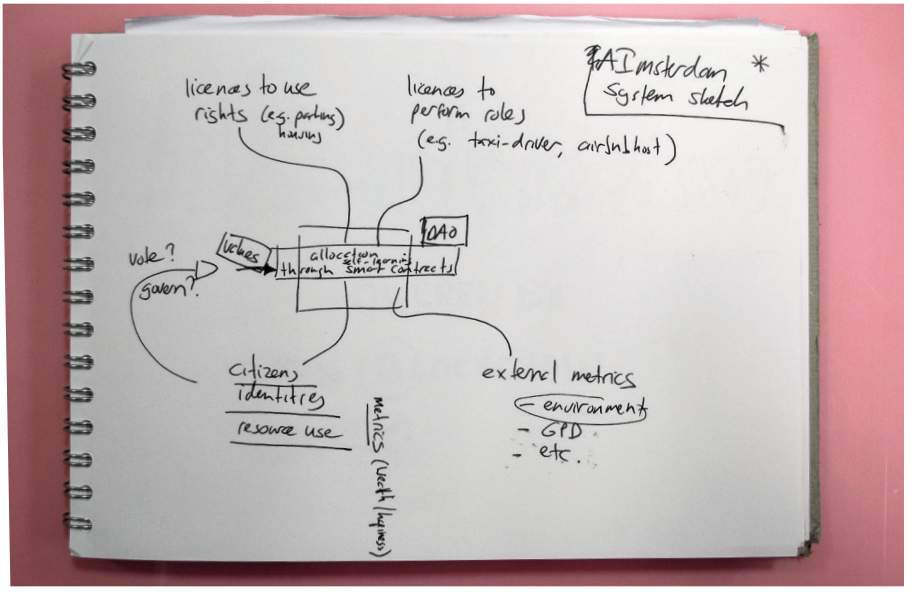

Figure 4. Outline sketch of the envisioned AImsterdam system.

even to extend rights to non-human actors.

For example, Automacracy envisaged cryptographic eight balls and Ouija boards as tools for settling local disputes. AImsterdam considered vastly complex interdependent systems, in a world where home prices might be mediated by smart parking garages that make investments in nearby housing blocks to increase their own capacity. Tokenized Tourism imagined emergent marketplaces for complementary currencies to deal with the pigeonholing of tourists into specific spending patterns.

We might take this further, to ask: What kind of rights could parking spaces, playgrounds, garages, or trees be afforded within a blockchain network? And, as a designer, what would it mean to design civic technologies and interventions that embed the interests of our environment and non-human actors?

Human interaction with blockchain-based systems. Beyond the political discussions of new civic infrastructures, the workbooks also considered the design of actual interfaces and rituals that could give shape to and humanize our interactions with these systems. Civic blockchain and rights-management schemes concern abstract, trust-based data transactions. It is here in particular that interaction designers should focus. For example, how do we give form to data-driven transactions in everyday life when we possibly no longer need handshakes or signatures? In what ways will they replace these and other ritualized and embodied forms of interaction that have traditionally confirmed agreements and the transaction of rights?

Automacracy considered the appropriation of traditional symbols and metaphors of agreement and decision making as a way to weave abstract data and algorithms into local social fabrics. Tokenizing Tourism envisaged the enactment of multicurrency spaces, but how could such spaces be practically and materially negotiated? Or what would a political campaign for an algorithm actually look and sound like?

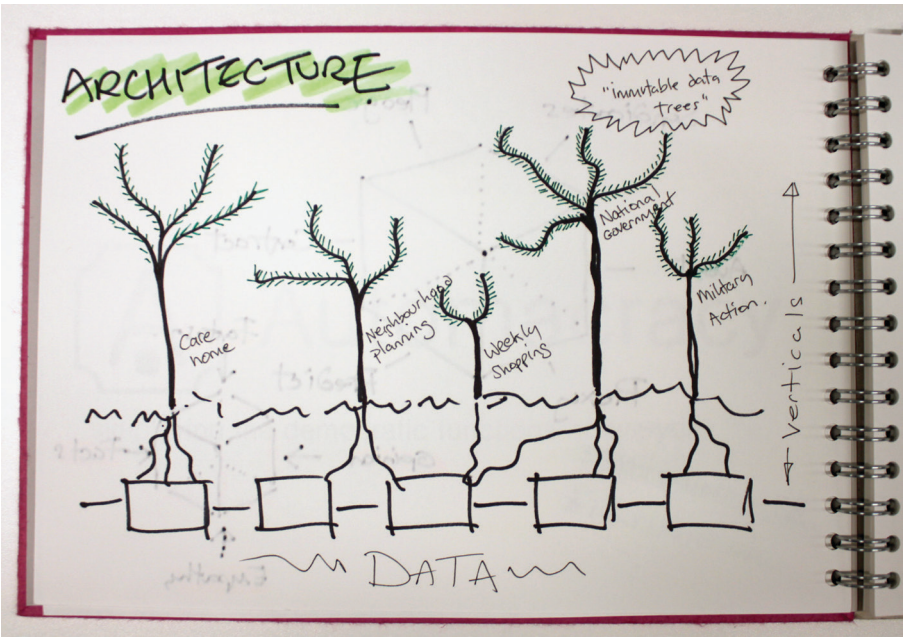

Figure 5. Envisioning the use of blockchain in Automacracy to anchor different databases.

These kinds of questions indicate the need to explore designs that consider the embodied and social experiences of interaction with quite abstract data transactions, smart contracts, and automation.

A PROVISIONAL FRAMEWORK FOR DESIGN

Considering these reflections, discussion of the workbooks led to the development of a provisional framework that we propose could focus speculation and drive forward future work around the blockchain for civic good. The framework is organized around four layers—the philosophical layer, the political layer, the interaction layer, and the social layer—each of which can provide an avenue to critically investigate making the blockchain civic.

Philosophical layer. This is a foundational layer, relating to the overriding conceptual dimensions of a civic blockchain. This layer concerns philosophical ideals and commitments made by different civic blockchains, from radical disintermediation of centralized systems to formalizing collective rights and membership of a network. For example, AImsterdam presents the "city as a license" as a driving philosophical concept: a future in which (semi-)autonomous digital systems administer rights and access to a broad variety of urban resources.

Political layer. The political layer refers to the degrees of scale and power at which civic blockchains might operate. The rise of non-human actors in such a system in particular raises political questions about decision making, transparency, and accountability in relation to democracy. Perhaps administration empowers local citizens with regular polls and referenda on all manner of issues, or it is delegated through varying degrees of elected licensing and automation. The governance of identity-management schemes equally presents such a political question: Who—or what—identities are recorded in such a system, and what power and rights does this extend to them?

Interaction layer. The interaction layer relates to the ways in which people may actually interact with

How do we give form to data-driven transactions in everyday life when we possibly no longer need handshakes or signatures?

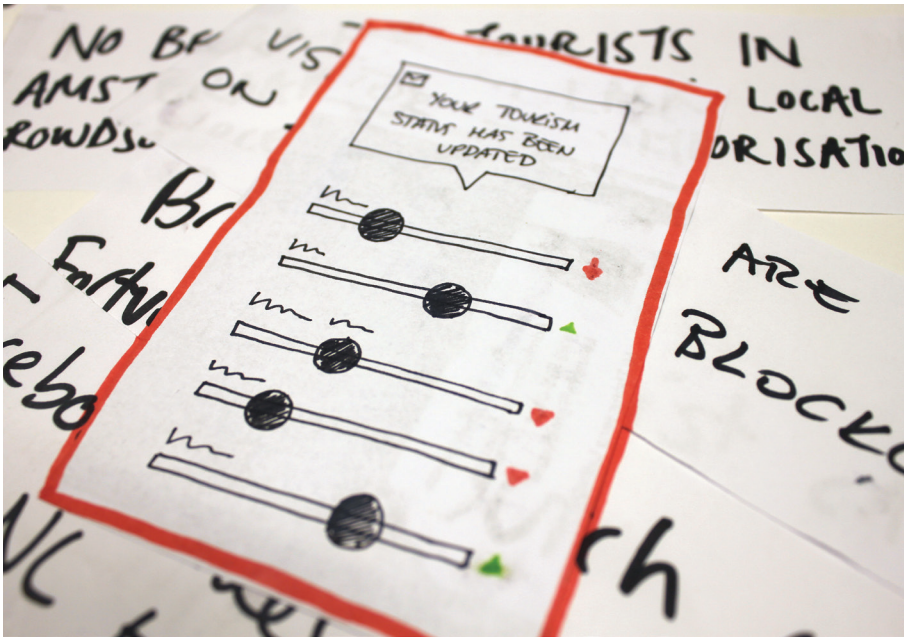

Figure 6. Configuring of algorithmic preferences for a neighborhood's tourists.

blockchain-enabled services. This might include exploring designs that facilitate embodied rituals for abstract data transactions and exploring the symbolic dimensions of smart contracts and automation. In the contexts of civics, a particular concern is how these interactions will be inclusive of all citizens, not just an elite or those who are easiest to serve. As a design provocation, the interaction layer invites a specific focus on the touchpoints people have with these services, how they are materialized, and how people make sense of them.

Social layer. Finally, the social layer relates to the emergent social phenomena that might emerge through civic blockchains—especially as they tend to aim to extend or impose certain sets of rules or agreements. To what extent would people comply? What kind of civic hacks or criminal cracks would be thinkable to improve or undermine these systems? How would often vital gray economies fare or interact in a multicurrency space or strict civic licensing structure? This layer demands attention to the potential emerging practices of individuals and groups, how social spaces and communities may become organized in new ways, and the societal implications of these technologies.

Through this workshop and article we aimed to develop a design space to consider the opportunities and challenges of blockchains as a civic technology. The imaginary design workbooks offer provocations—wild ideas and nuanced glimpses for making the blockchain civic. Stepping back, we have drawn reflections and a provisional framework in an effort to emphasize the multitude of human and social considerations in the design of such technologies. These are early efforts, but we hope that through these, others can explore and critique the emergence of blockchain technologies in civic life.

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