General Exam

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2020-08-19 0:00

1 The City DAO

Urban planning has traditionally been a top-down process controlled by experts who operate behind closed doors, with only sporadic opportunities for the community to comment through public hearings. Over the past decade, many online platforms have emerged that promise to boost civic involvement by streamlining communication between citizens and government officials, but it is unclear that they actually facilitate meaningful engagement and collective decision-making. Sidewalk Lab ' s Quayside Development in Toronto proposed innovative systems for the city, but the project was canceled in large part due to difficulty in creatively engaging with the public, and failure to build the level of trust necessary for community acceptance and approval [1] . More effective platforms for collective design and community participation are arguably even more important than any technology embedded in such development projects.

Urban design is a complex and iterative process. Too often, important information is lost as the project evolves, both by designers and in the public presentation of the results. The community sees a coarse snapshot at discrete points in the process, and how one got there is lost when consensus is crutial in any techonological intervention.

Github, a social coding platform based on the content tracker tool Git, is often a place where people discuss and build consensus on software development direction. Here the code base is a public good.

We see discussions about the similarities between the way Git manages data and the blockchain's data structure, but there is anticipation that blockchain technology is applicable within the process of governance.

Related to this, we see attempts to collectively decide on topics related to software development through delegated voting using "Governance tokens" operated on the blockchain.

I want to consider whether these attempts are helpful in the consensus-building process in the context of city planning. We believe that this tool for collaboration allows (1) consensus building where one authority is not required, (2) a transparent process with accumulated history (3) deliberation without division.

My research is aimed at developing this model as a real tool for urban design. In my prior work, I have shown how simple version control concepts a la Github can be applied to create families of related designs [2] where the evolution can be traced, validated, and discussed. Additionally I have been developing a computation module for calculating votes based on Liquid Democracy. This module was tested in 2019 using the form of surveys in a workshop held for the cabinet office of Japan simulating the decision making process with younger career goverment administrators. The senario was a hypothetical emergency case in 2030 with a bio military intervention from a foriegn country.

Now we can start to use automated consensus mechanisms and machine-based versioning to elevate the planning methodology to include the public in a constructive way.

The basis for this research is mastery of three areas: [1] public consensus and participation in planning and design, [2] technical support for machine-mediated consensus, discussion and governance, and [3] how we learn, build, and incorporate innovation, using techniques that align with governance using blockchain such as voting and remixing. In subsequent doctoral studies, I will build on this premise and consider ways to enable collaborative versioning with citizens about their city.

1.1 Reference

[1] Ben Green. *The smart enough city: putting technology in its place to reclaim our urban future*. MIT Press, 2019.

[2] Yasushi Sakai and Daisuke Tsunoda. "Implementation of Decentralized Version Control in Collective Design Modelling". In: *Modelling Behaviour*. Springer, 2015, pp. 383–395.

2 Primary

Researchers in the City Science Group have been thinking about collective consensus building in cities mainly through a project called CityScope. Within this system, I have been developing and maintaining CityIO, a software layer that acts as an intermediary between simulations, physical tables, and the front end visualization.

An extension of this system could allow citizens to edit their design proposals. This method and the tool supporting it is a kind of collaborative editing that involves citizen participation.

I will pursue methods to organize these examples while addressing concerns about the existing democratic process.

Ultimately, I contend that tools that help the city adopt and revise a master plan over time better reflects the needs of an agile, changing world. With sufficient community input, these plans will also come to better support the values of the residents as the community grows together.

2.1 Questions

- Who is saying urban planning process are slow? Why?
- What is the right size of a community?
- Does the current method have enough deliberation?
- What are the recent examples of community engagement in cites?
- What worked? How are we evaluating?

2.2 Reader: Kent Larson

2.3 Reading List

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3 Technical

There are two perspectives from which I will explore the technical aspects of this idea. The first perspective lies in the scope of Distributed Consensus. There are a variety of consensus mechanisms that are being used in a variety of circumstances from auctions (which agree on value) to automated means that support a currency. These are formalizations of voting systems that are especially given that machine-based mediation can channel the noise of low-friction participation in potentially useful ways. The second perspective is knowledge of the technologies that support collaboration in the software industry, which is one of the most successful industry for collaboration currently taking place. These emerged as a combination of version control for software development and community participation in the evolution of a system.

3.1 Reader: Andrew Lippman

3.2 Reading List

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[2] Muneeb Ali et al. “Blockstack: A global naming and storage system secured by blockchains”. In: *2016 {USENIX} Annual Technical Conference ({USENIX}{ATC} 16)*. 2016, pp. 181–194.

[3] Pablo Aragón et al. “Deliberative Platform Design: The case study of the online discussions in Decidim Barcelona”. In: *International Conference on Social Informatics*. Springer. 2017, pp. 277–287.

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4 Contextual

The act of creating something new by quoting and combining what others have done is not only essential to scientific pursuits, but is also found in a variety of cultural and creative activities. There are two reasons to explore this.

The first is to look for concepts that underpin collaboration in the other media mentioned above, and explore how they might apply to collaborative work in city and town planning.

The second reason is to confirm how these creative activities, which are premised on others' intervention, can be established as a community and, by extension, a regional identity, and how this can affect each other in planning and thinking about the neighborhood.

4.1 Questions

- Define "collaboration", effort has been put to define cooperation. How do other words or techniques share this characteristics. e.g "remix", "curation"
- How can we categorise different ways to "remix"?
  - syncronized? async?
  - vertical? horizontal?
- How do current planning methods use collaboration among stakeholders?
- There is another similar word "bricolage" from Levi Strauss, what other aspects that this word enrich?

4.2 Area Reader: Gesa Ziemer

Gesa Ziemer (Prof. Dr. phil.) is Professor for Cultural Theory and Cultural Praxis and Vice President Research at the HafenCity University Hamburg. She is currently a fellow of the Humboldt Foundation (Feodor-Lynen Program) at the Harvard Kennedy School, Cambridge, MA, USA. Her research foci are: the digital city, new forms of cooperation, urban public life, and

artistic research. She holds a Guest Lectureship at the Lucerne School of Art and Design in Switzerland. She is a member of the Accreditation Committee of the Scientific Council of Germany. Moreover, she is a member of the Supervisory Committee of Hamburg Innovation, a community for the transfer of knowledge in Hamburg, and a member of the Advisory Boards of Lucerne School of Art and Design and the Choreography Centre PACT Zollverein Essen. She regularly serves as an evaluator, i.a. for the Deutsche Forschungsgemeinschaft, the Swiss National Science Fund, German federal ministries, and private foundations (e.g. Volkswagen, Robert Bosch).

4.3 Reading List

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