

Code and Norms in Smart Cities

Magnus Eriksson

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1 I. State of the Art

1.1 Purpose

The purpose of my research is to adapt the theory of Lessig's "code is law" — as it has been used to analyze information systems on the internet — to deal with phenomena such as "smart cities" where information systems are interacting with their environments in the form of social and material systems. This adaption will be done with the help of Luhmanns theory of interacting social systems and in particular his sociology of law.

1.2 Theory

1.2.1 Code is Law

Lawrence Lessig's theory is that code today acquires law-like regulatory capacities, hence the popular expression "code is law". While Lessig is enthusiastic about the possibilities that the internet offers in terms of freedom of expression, access to knowledge and tools for creativity, he emphasizes that code runs the risk of over-regulating behavior compared to an interpretive legal system. The idea has received some critique. Wu and Goldsmith has shown how the law does not lose power to code but are able to influence the architecture and the operation of the internet. Wu also shows that code is not only able to regulate behavior but is also used to escape law, for example with file-sharing networks.

1.2.2 Luhmann

Of central importance to this research proposal is Niklas Luhmanns theory of social systems and especially his theory of law as a social system. On the surface, his theories share some similarities with that of Lessig in the sense that Lessigs theory could be expressed as code being an autonomous self-referencing system that views the world only on its own terms. Luhmanns goes further than Lessig though with a theory of how different systems interact.

1.2.3 Other Sociology of Law

Erllich concept of "living law" challenges the centrality of state law in understanding social order and opens up for a plurality of investigations into of how it is achieved. The emphasis on code also underscores the distinction of "law in action" and "law in books" that the legal realism tradition has long emphasized. David Nelken states that how this gap is handled should be the departure for sociology of law. Here too, code is one way that this gap is being bridged (or for that matter extended).

Finally, Teubner puts on emphasis on the generative aspect of social order through communicative events and self-organising processes as opposed to sanctions and regulation. Since he is a sociologist of law that by large is following Luhmanns theory, Teubners theory can potentially be reconciled with a broadened understanding of "Code is Law".

1.2.4 Other Theories

Other important fields are Science and Technology Studies (STS) where several theorists have developed an understanding of information systems as always being "socio-technical" systems that in practice always contain a human component as well. To paraphrase legal realism, STS studies "code in action", rather than "code in books".

In order to bridge Luhmanns social theory with Lessigs theory of information systems, I would also enlist the help of Friedrich Kittler who had a different view of communication systems than Luhmann and one much more grounded in the technical realities of those systems.

It would also make sense to relate to the field of urban studies and the challenges that face cities in the future and particularly studies of networked cities and the role of telecommunications and digital technologies in contemporary cities.

2 II. Research Proposal

My research proposal is a theoretically driven investigation that would proceed in several steps as follows.

2.1 1) Merging Code is Law and Luhmann

Can Lessigs concept of "code is law" be expressed in terms of code being an autopoietic system similar to how Luhmann perceives law? This would also include the critiques of Lessigs concept as put forward for example by Tim Wu.

2.2 2) Expanding Code is Law to contain generative and regulative

Is it possible to broaden and nuance the understading of law that Lessig applies with the help of Luhmanns theory and other sociology of law? With Luhmanns social theory and also with the help of Teubner, it is possible to understand how code operates not just as a limiting force but also a generative force that generates self-regulation by communicative acts.

2.3 3) Using framework to illuminate ICT use in smart cities

Does the addition of Luhmanns theory bring about a new understanding of how code influence normative behaviors within smart cities?

2.4 Method

The first steps will consist of theoretical work. Here I will do a close reading of the theories of Luhmann, Lessig and related theories and critique.

The application of the theoretical insights empirically will first be an analysis of the discourse of "smart cities" as well as a literature study of the research of smart cities and as ICT and cities in general.

2.4.1 Case study copenhagen

Finally, I will apply the theoretical framework to a case study of a particular "smart city" initiative. For this I have chosen Copenhagen, Denmark. Copenhagen is already considered one of the most livable cities in the world, has high penetration of mobile internet and has an ambition to be CO2 neutral by 2025 in which smart city technology is considered a key factor.

It has ongoing projects to create "smart infrastructure" where energy and waste management are being connected with network technology, for example in the new sustainable district "Nordhavn". Copenhagen also has a number of "softer" initiatives, for example "Skab din by" (create your city) for citizen participation and the "Copenhagen Wheel" developed by MIT as an add-on to bicycles that collects environmental data and integrated and networked public transportation.

The purpose of the case study in Copenhagen would be to get a richer picture of the effects of ICT on normative behavior in the city, especially regarding mobility and sustainable life-choices by looking at the intentions on behalf of the municipality and companies that are involved in Smart City Copenhagen, analyzing the actual software systems and what functions they implement as well as the actual effects of these systems in use. The method employed would be a combination of the analysis of written sources such as vision documents, software specifications and news articles as well as interviews and observation of systems in action.

2.5 Project plan

- Year 1

Literature studies of theory
Theoretical work to merge theories
Preparing case study

- Year 2

Analysis of discourse of smart cities
Case study: Data gathering

- Year 3

Case study: Data analysis
Thesis writing

3 III. Expected Results

3.1 Theoretical relevance

My hope is that the thesis will be successful in bridging the two theories of Luhmann and Lessig respectively. By doing that I would also bridge two field of study – sociology of law (in the Luhmann tradition) and legal studies of code and internet.

This merger and the empirical study would be an attempt to establish a framework that would allow internet studies of law, norms and code to tackle phenomena of ICT use in networked cities.

It is also my hope that the thesis would bring insights from of sociology of law — both in the Luhmann tradition and the broader understanding of legal pluralism and living law within the field — to the community of researchers that study smart cities and other aspects of networked cities.

3.2 Applied relevance

Outside of academia, the thesis has the potential to bring new perspectives on changes in norms and behavior inflicted by software system in urban environments, relevant to software engineers and interaction designers as well as to policy makers, urban planners and citizen activists.