The Land Code –
Future aspects from a Swiss perspective

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Dr. Daniel Steudler
WEF 2016: The Fourth Industrial Revolution

<table>
<thead>
<tr>
<th>Revolution</th>
<th>Year</th>
<th>Information</th>
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<tbody>
<tr>
<td></td>
<td>1</td>
<td>Steam, water, mechanical production equipment</td>
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<tr>
<td></td>
<td>2</td>
<td>Division of labour, electricity, mass production</td>
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<td></td>
<td>3</td>
<td>Electronics, IT, automated production</td>
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<td>4</td>
<td>Cyber-physical systems</td>
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Social and economic context today and tomorrow

Increased participation, closer cooperation between producers and consumers, decentralization:

- sharing economy with sharing platforms: AirBnB, Uber, Wikipedia, car sharing, bike sharing, handicraft web, Tripadvisor, Facebook, Twitter, eBay, booking platforms, OpenStreetMap, etc.
- music industry and bookselling trade did undergo revolutions
- finance sector: Bitcoin, digital transactions, mobile payments (Apple Pay, Android Pay, etc.)
- supply is not happening any longer from a few central supply points, but will be much more decentral with shorter distances and closer contact between suppliers and consumers
The four revolutions in land information

1st | 2nd | 3rd | 4th

Triangulation, Orthogonal methods, Plans | EDM, Photogrammetry, Maps | fully digital format, GIS, thematic layers | "Smart", Land Code

The four revolutions in land information
4th Revolution in Land Administration

What is Land Administration all about?

- it is about **documenting objects**: land objects
- it is about **connecting** these objects to other data and information, eg. land parcels to rights and people
- it is about **transactions** that these objects and connections are undergoing

Developments in the "smart" world:

- **Land objects** → Big Data, Data Mining, Deep Learning
- **Connections** → Linked Data, Internet of Things, Meta platforms
- **Transactions** → Blockchain technology
Objects – Land Objects

- Sensors everywhere
- Big Data, Data Mining
- Machine Learning, Deep Learning
- Neural Networks
- etc.
Connections – Linking Data, Information, and Services

• Linked Data
• Internet of Things

• **Meta platforms** (eg. Google, Apple, Facebook, Amazon, etc.)
Meta Platforms

Providing products and services on one contextual environment with the same or similar user interfaces.

Existing examples:
- App stores: App Store (iOS), Google Play (Android), Windows Store, etc.
- Map services: Google Maps, Apple Maps, Bing Maps, Here, MapBox, etc.

The basic idea is to provide a common platform (with the same look-and-feel), where market participants can "plug-in" their services.

A whole new way of setting up value chains.
Meta Platform – The Google Way
Transactions – Blockchains

Description of Blockchain on Wikipedia.org:

- A blockchain is a distributed database that maintains a continuously growing list of records, called blocks, secured from tampering and revision. Each block contains a timestamp and a link to a previous block. By design, blockchains are inherently resistant to modification of the data – once recorded, the data in a block cannot be altered retroactively. Through the use of a peer-to-peer network and a distributed timestamping server, a blockchain database is managed autonomously. Blockchains are "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".
Areas where Blockchains are or might be applied

- digital currencies: Bitcoin, Ethereum, etc.
- booking platforms: AirBnB, Uber, booking.com, etc.
- airplane industry: management of plane parts
- car industry: transactions and management of spare parts
- to protect genuine products from counterfeit products
- flower auctions: to manage transactions and to proof origin
- medicine: protection against false medicine
- container shipments: logistics, customs, deliveries

➢ to keep the certificates and transactions secure, to decrease mistakes, and to eliminate corruption in business processes

Features:
- trust is placed on a distributed/decentralized system
- transactions can be monitored by all
- no central system or institution is required
Examples of blockchain applications in land administration

Sweden
• potential risk of a central register → central point of failure
• in the digital age, trust may be shifting from central DBs to decentralized systems

Georgia
• long and complex process involving many agencies, undetermined parcel boundaries, disputes, court decisions, delays due to flawed title documents
• blockchain is tamper-proof with verifiable transactions
• sharp increase in registration numbers, growing interest of citizens

Ghana
• Bitland project with Cadastrals
Conclusions

• it will not be us documenting the land in the future, the land will "document" itself through sensors, smart devices, etc., all creating computational code;

• legitimate needs and the law might be derived from such codes and be implemented in administrative services of the future;

• Code + Algorithms ➔ The Land Code

➢ the future role of governments could be to provide platforms that are open to the establishment of (computational) land codes;
➢ and the different stakeholders and parties of land management then can "plug in" to such meta platforms.