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A Theoretical Basis for Cadastral Development

Lectured 1.-3. December 2009 in the context of
The Master's Programme in Land Management,
Unit for Real Estate Planning and Land Law,
The Royal Institute of Technology, Stockholm, Sweden

Summary and outlook

1. Dec.	2. Dec.	3. Dec.
<ol style="list-style-type: none"> 1. The cadastral system 2. Analysis of society 3. Inequality and 'convergence' 4. Society, state and ownership 	<ol style="list-style-type: none"> 1. Components of Spatial Data Infrastructures 2. Public information services 3. Organisation and institution. 	<ol style="list-style-type: none"> 1. Development strategies 2. De Soto (2000) 3. Understanding institutions 4. Institutional transactions 5. Why did Denmark develop?

Overview: Society, Ownership, and Development Factors (1/2)

1. The cadastral system and its function in society
2. Analysis of society:
 - Organisations and institutions;
 - Levels of analysis
3. Inequality (in the economic sense)
 - Global overview
 - Two cases: Denmark, Botswana
4. Overcoming inequalities ...

Overview: ... Development Factors (1/2)

1. The cadastral system
2. Analysis of society
3. Inequality (economic)
4. Overcoming inequalities
 - Technology, education, sharing of news
 - Quality of institutions -> Protection of property; Direction of surplus
 - The role of property rights; and of Cadastral Development
5. Society, state and ownership: Types of society and implications for ownership
 - Family and clan dominant; State weak
 - Family and State dominant; Market restricted
 - Market dominant; State and Family weak

Land Registry and Cadastral Systems

- Land Registry: The administrative system used to record real property rights
- Cadastre: The administrative-technical system used to identify and locate units of property rights
- Cadstral System/ Land Administration System: Land Registry and Cadastre combined
- Land Management: CS + property taxation + land use planning + environmental management + ..

Silva M A, Stubkjær E (2002) A review of methodologies.... CEUS 26, 403–423

Functional Requirements of a Cadastral System (1/2)

- Property units are identified and located, and shape and physical attributes are recorded
- Rights in property units are classified, adjudicated, and recordings are preceded by *official check* of the powers of the signer of contract, the priority of liabilities, and further rule compliances
- Disputes on property title and boundary, as well as foreclosures, are of limited amount and handled in socially responsible and *predictable* ways
- Professionals are available, offering competent and independent advice, complying with general rules and encumbrances, balancing public planning measures with owner initiatives, and compensate in case of occasional errors.
- Mortgage credit or similar is general available at a reasonable price

Stubkjær (2008) The Cluster Ent. of Re. Prop. Bus.ness *Kart og Plan* 68, 30-40

Functional Requirements of a Cadastral System (2/2)

The following procedures shall be completed within 'short time', less than a few months:

- Purchase of a property unit
- Mortgage in a property unit
- Subdivision and other cadastral cases
- Foreclosure (compulsory sale) in case of default

In general, *functional requirements* define what a system is supposed to *do* whereas non-functional requirements define how a system is supposed to *be*.

http://en.wikipedia.org/wiki/Non-functional_requirement

Non-functional Requirements of a Cadastral System: The 'culture'

The Cadastral System shall grow more

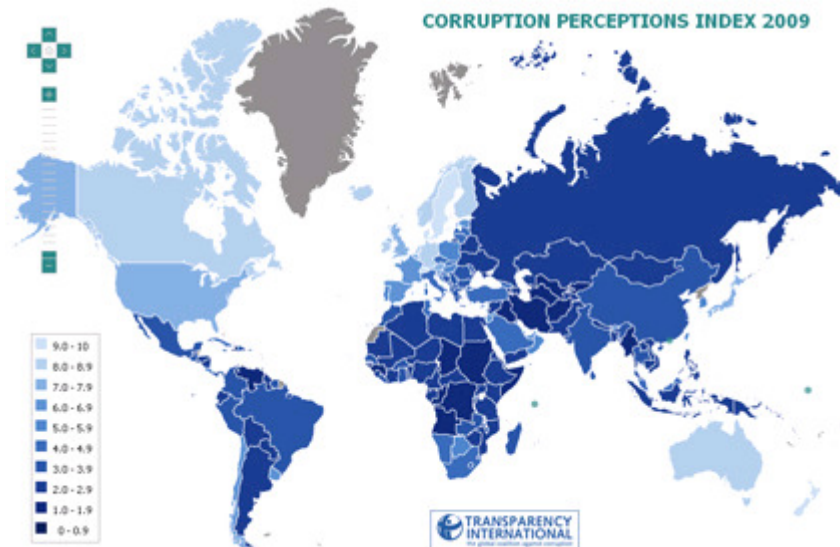
- correct (mirror principle),
- consistent,
- cost effective
- transparent and understandable to the customer (end-user)

Non-functional requirements are often called qualities of a system. Other terms for non-functional requirements are "constraints", .. Evolution qualities, .. are embodied in the static structure of the .. system.

http://en.wikipedia.org/wiki/Non-functional_requirement

Social Preconditions for Operation of a Cadastral System

- People (owners, directors, parliament) commit themselves in writing
- Behavior (dispositions of assets, political decisions) is reflected in economic terms
- Opportunism is moderated by law and order (CPI ~European level)
- Professionals with vocational attitude are available
- Government and professions improve CS where economically justified



2. Analysis of Society, based on Institutional Economics (1980s-)

Institution: The "rules of the game", consisting of both the formal legal rules and the informal social norms that govern individual behavior and structure social interactions

Organisation: by contrast, are those groups of people - and the governance arrangements they create - to coordinate their team action against other teams performing also as organizations.

Organisations include:

- Companies, including 'financial institutions', ..
- Associations, including NGOs, trade associations, workers' union,
- ..
- Governmental units (departments, offices, agencies, ...)

The concept of 'institution': Use of the term

- Financial institutions; educational institutions; social institutions; institutions like the IMF and the World Bank;
 - Here 'institution' means ~= organisation
- 'Promoting Institutional and Organisational Development in Surveying and Land Management', 'sound land administration institutions', 'professional institutions'
 - Again, 'institution' means ~= organisation
- Capitalist institutions; [The institution of property](#) (appears e.g. as title of a book: C. Reinold Noyes, 1936, who discusses the exchange of rights rather than the exchange of goods or services against money)

'Institution' from Douglas C North's Nobel Prize lecture:

"Institutions are the humanly devised constraints that structure human interaction.

They are made up of

- formal constraints (rules, laws, constitutions),
- informal constraints (norms of behavior, conventions, and self imposed codes of conduct), and their
- *enforcement* characteristics, e.g.
 - violence, social exclusion
 - military, police
 - regulation:
 - Preceding, though application for permissions, spatial planning, ..
 - Subsequently, e.g. through court cases

'Institution' from Douglas C North's Nobel Prize lecture:

"Institutions are the humanly devised constraints that structure human interaction. ...

Together they define the *incentive structure* of societies and specifically economies.

Institutions and the technology employed determine the transaction and transformation costs that add up to the costs of production."

http://nobelprize.org/nobel_prizes/economics/laureates/1993/north-lecture.html

(to be further developed in subsequent section 3)

Levels of social analysis according to O. Williamson (2000)

Levels of social analysis L1..L4	Frequency (Years)	Examples
L1: Informal institutions: Traditions; religion	10^2 to 10^3	Proclamation and change of belief systems; reformations.
L2: The institutional environment: Who is authorized to change rules	10 to 100	Constitutional changes. Redesign of government, e.g decentralization. Implementing or changing of property rights, e.g. restitutions.
L3: Governance: Play of the game - changing rules	1 to 10	Change of rules for processes and information flows. New organisations. <i>Institutional transactions</i>
L4: Resource allocation and employment	Continuous	<i>Transactions in assets:</i> e.g. purchase of house; Change of property unit: e.g. subdivision

3. Global economic inequality from year 1000 to 1998 (GDP pro capita)

Table 1. Per capita gross domestic product and its interregional spread 1000–1998 (Berger 2007, p 10, source Maddison 2001, p 126)

	1000	1500	1820	1870	1913	1950	1973	1998
Westeuropa	400	774	1232	1974	3473	4594	11534	17921
Westliche Ableger	400	400	1201	2431	5257	9288	16172	26146
Japan	425	500	669	737	1387	1926	11439	20413
Asien (ohne Ja- pan)	450	527	575	543	640	635	1231	2936
Lateinamerika	400	416	665	698	1511	2554	4531	5795
Osteuropa und frühere UDSSR	400	483	667	917	1501	2601	5729	4354
Afrik	416	400	418	444	585	852	1365	1368
Die gesamte Welt	435	565	667	867	1510	2114	4101	5709
Interregionale Spreizung	1.1:1	2:1	3:1	5:1	9:1	15:1	13:1	19:1

Berger, J (2007) Warum sind einige Länder .. reicher als andere? Zeitschrift für Soziologie 36 (1): 5-24

Denmrk: Changes in Constitution and Property Registration

co-occur

Constitutional changes	Changes in property registration
Absolutism 1660	Cadastre 1688
General suffrage 1838, 1849	New cadastre 1844
Parliamentarism 1901	New taxation method and new property system 1903
	New land registry law and file system 1926
Municipal reform 1970	Register of buildings and dwellings 1976

Co-occurrence asks for an explanation. Do we have a causal relationship?

Change in political power -> Change in the incidence of taxation. Yes, 1660 and 1901.

Explanation in Social Sciences draws on *structure*, cf. Williamson, levels 2..3, *actors*, interacting *mechanisms*

Botswana: From poor to high-income country !

Botswana has transformed itself from one of the poorest countries in the world to a high-income country with a per capita GDP (PPP) of \$29,516 in 2008.

Economic growth averaged over 9% per year. Nominal GDP has risen to a comparable level to e.g. Greece and Portugal. Botswana was ranked as Africa's least corrupt country by Transparency International in 2004. (2009: 5.6; better than Italy and Eastern Europe)

Botswana's impressive economic record built on wisely using revenue generated from diamond mining to fuel economic development through prudent fiscal policies and a cautious foreign policy.

..economic development spending was cut by 10% in 2002-2003 Botswana has been hit very hard by the AIDS epidemic. ... Botswana [has] the second highest HIV infection rate in the world.

<http://en.wikipedia.org/wiki/Botswana>

Sir Seretse Khama, the first President 1966- 1980

At the time of its independence (1966), Botswana was among the worlds poorest countries. Tax revenues proved insufficient to cover the costs of government, forcing Botswana into heavy debt with Britain.

Khama set out on a vigorous economic program intended to *transform Botswana into an export-based economy*, built around [beef](#), [copper](#), and [diamonds](#). The 1967 discovery of [Orapa's enormous diamond deposits](#) particularly aided this program, and between 1966 and 1980 Botswana had the fastest growing economy in the world. Much of this money was *reinvested into* [infrastructure](#), [health](#), and [education](#) costs, resulting in further economic development. Khama also instituted strong measures against [corruption](#), the bane of so many other newly-independent African nations.

http://en.wikipedia.org/wiki/Seretse_Khama

Case Botswana: Developing from local institutions

During 1966-1996, Botswana was a world leader with a growth in mean income per capita on 8,2 % pro anno. Why?

In the initial phase of independence, emphasis was on education, provision of (technical) infrastructure, and the transfer of future mining incomes (diamonds) to the new country.

Traditionally, the decision structure was vested with the local tribes. Especially the town councils, kgotlas, made an important forum for deliberation and opinion formation. The decision structures of the new state was built on these. The power of local traditional elites were curbed, and a spirit of cooperation, national identity, and self-reliance was nourished.

Botswana flourishes due to town councils, Svenska Dagbladet, 15 February 2007

4. Overcoming Inequalities: Factors of Economic Development

- Technology, productivity (Child, 1693, in Reinert, 2005; ..Easterlin, 1981; ..Berger, 2007)
 - Machines replacing human labor (wind mills, steam engines, ..), calculations (ICT, ..), ..thereby increasing *productivity*
- Formal education and mass communication; Availability and consumption of news (Easterlin, 1981; Grier, 1999..)
 - Easterlin wants a 'natural science/ rationality' objective
 - Danish Grundtvig rather stresses the need of 'lifting the heart', i.e. develop social creativity, cf. Botswana: 'a spirit of cooperation, national identity, and self-reliance was nourished.'

A Review of Factors of Economic Development (cont'd)

- Technology, productivity
- Availability and consumption of news, ..education
- Existing level of economic development, GDP pr. capita (...
Paldam, 2008)
 - The well informed scholars discuss the direction of causal links
- Quality of *institutions*: Rule of law, property rights, corruption, voice, ..(1993...; Classens, Laeven, 2003; IMF, 2003)



Erik Stubkjær (2009)
Cadastre and Economic Development, in

Navratil, Gerhard (Ed.)
Research Trends in Geogr. Information Science

'Institution' from Douglas C North's Nobel Prize lecture:

- "Institutions are the humanly devised constraints that structure human interaction. They are made up of formal constraints, informal constraints (conventions, and self imposed codes of conduct), and their enforcement characteristics
- Together they define the incentive structure of societies and specifically economies.
- Institutions and the technology employed determine the transaction and transformation costs that add up to the costs of production."

http://nobelprize.org/nobel_prizes/economics/laureates/1993/north-lecture.html

- Organisation, by contrast, are those groups of people and the governance arrangements [articles, decision structures] they create to coordinate their team action against other teams performing also as organizations.

"Institutions define the incentive structure of societies..."

Examples:

- Denmark before Reformation 1536: Go to university to become bishop (and manage bishopric)
- Denmark after Reformation: Serve in Chancellery, working visits at other North European courts to manage royal manors
- Young person before financial crisis 2007- , skilled in mathematics:

Calculate benefit and risk of investments

Hypothesis: Institutions (and charismatic persons) direct the surplus of a society

Why are we struggling with property law, cadastral systems, ..?

What are our incentives ? Decent career ? Given directions? Search for justice ?

4. Society, state and ownership

Practice concerning property rights cannot be transplanted from one country/ culture to another without deeper understanding of the societies concerned.

Categories of countries/ economies:

- Family and clan dominant; State weak -> Property transfer is a family business
- Family and State dominant; Market restricted -> Transfer by individual-in-family
- Market dominant; State and Family weak -> Property transfer is an individual business

Combinations of State, market, and family

- 'State' + family amalgamated: **Clan-society**, physical protection by clan leadership
- Combinations of State, market, and family:

State	Authority vs citizen (~Continental European)	Market vs. customer (~Anglo-American, Liberal)
Unit of reproduction	Family Husband, wife, children 'until death parts'	Partnership Contract among adults. Children a 'project'

Shifting views on public administration (Koupus, 1989)

Dominat conception	Before 1970s	After 1970s
Context	Public administration	Business
Source	Germany	USA
Science	Law	Economy
Task	A signed decision according to law	A service or advice
Addressee	Citizien	Client
Quality measure	Decisions in accordance with law	Services according to resource plans
Conception of information	Archive. Paradigms	Data flows. Market in data

Costa Rica - implementing a heterodox reform package

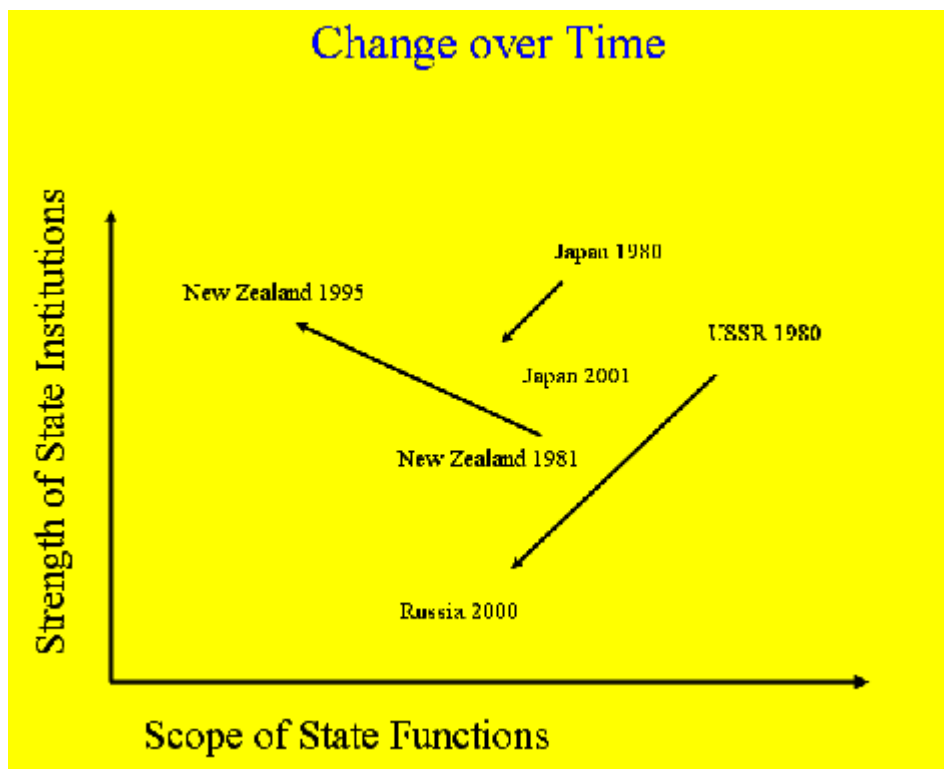
1982-crisis similar to rest of Latin America: state intervention in the economy + a protectionist model offering good short-term results but encouraged rent-seeking behaviour + balance-of-payments probl.

After 1982-crisis: Budget prioritizes expenditures on health, education and the environment, along with the network of safety-net institutions, while total outlays restricted, esp. by postponing investments in infrastructure.

Unlike other countries in the hemisphere, public utilities (water, power and telecommunications) were not privatized; budget for key social services was protected, not cut. [CPI 5,3 ~Botswana, Portugal]

Costa Rica, thus, implemented a rather heterodox reform package which .. matched [read: contrasted] the policy consensus of the time.

The changing role of the state during 1980s and 90s



Fukuyama (2004) State-building. Governance and world order... Figure 6, p. 18

Summary and outlook

1.	2.	3.
<ul style="list-style-type: none"> • A global view on cadastral development • Theoretical basis • Causal factors and country cases 	<ol style="list-style-type: none"> 1. Components of Spatial Data Infrastructures 2. Public information services 3. Organisation and institution. 	<ol style="list-style-type: none"> 1. Development strategies 2. De Soto (2000) 3. Understanding institutions 4. Institutional transactions 5. Why did Denmark develop?

