

3D Property Research – a survey of legal topics in publications

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Outline

- Background, problem description, etc.
- 3D property terminology
- Theory - Legal aspects of 3D property
- Survey - selected publications, classification, results
- Conclusions
- Future research



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Background

- Several publications on technical/data registration issues
- Few publications on legal issues
- However, the interest in legal issues seems to be increasing



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Problem description

- The legal interest seem to be only slightly increasing,
- Lack of a clear, main terminology for 3D property
- Difficult to describe what is meant by "3D Cadastre"



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Aim

- To investigate the field of 3D property in research, as evidenced by conference papers and other publications
- Not a final study, but a study to show trends within the field of 3D property research



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Hypothesis

"Non-legal aspects are more researched than legal aspects"



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Method and delimitation

- Literature survey
- Last 10 years (2001 – 2011)
- Only English language publications
- No master theses (due to difficulties obtaining them)



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3D Property Terminology

Inconsistent terminology, e.g.

- 3D cadastre
 - 3D property
 - Multi-functional
 - Space, volume
 - Horizontal subdivision
 - Stratum, strata title
 - Three-dimensional property unit
-
- Apartment/flat ownership, condominium, ownership of storeys, sectional ownership, unit ownership
 - Division of houses according to storeys and apartments, community of houses divided by storeys



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Legal Aspects of 3D Property

- Internationally different types of 3D property
- Broad range, developing with time
- Structure and principles similar, practical problems more specific
- Key factors related to legal issues
- Comparative studies demand consideration of legal and non-legal context



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Forms of 3D Property Rights



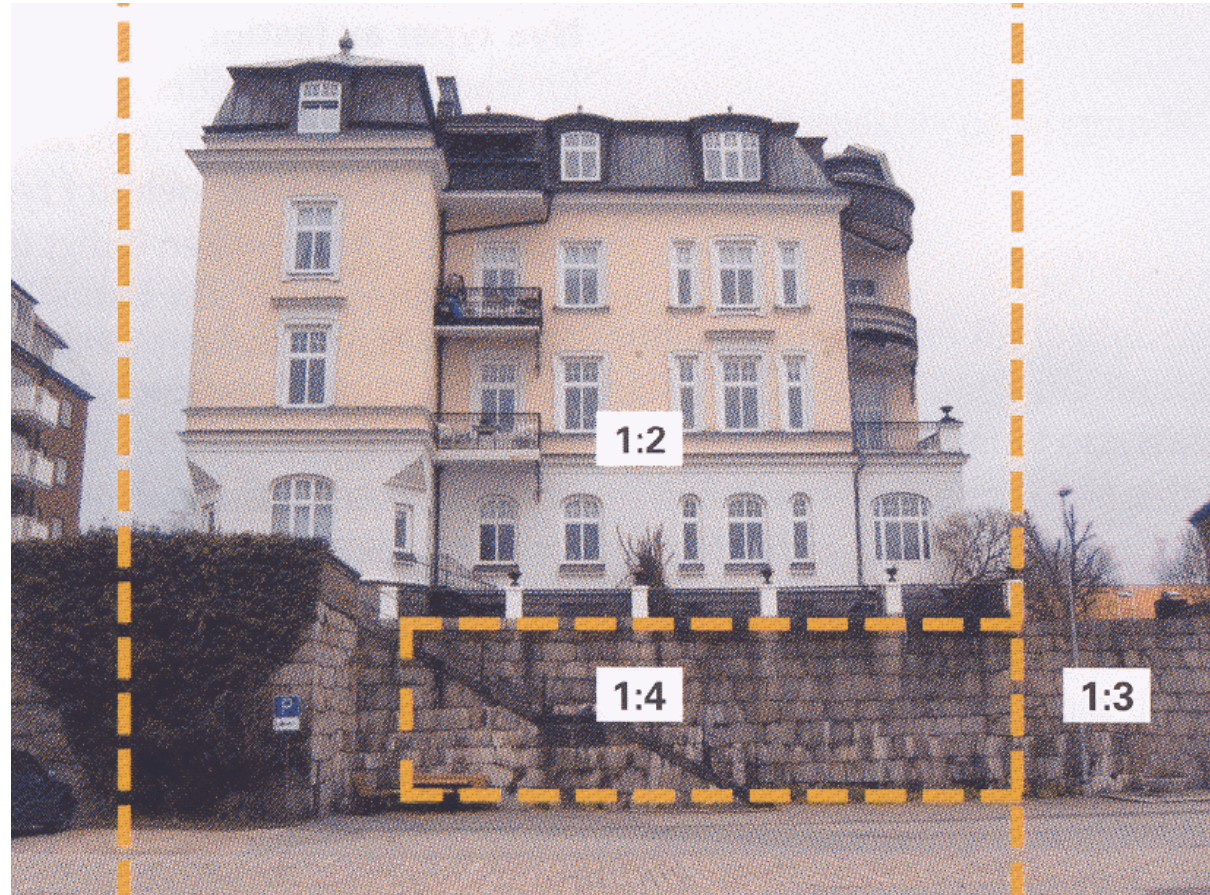
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(1) Independent 3D property	(a) Air-space parcel
	(b) 3D Construction property
(2) Condominium	(a) Condominium ownership
	(b) Condominium user right
	(c) Condominium leasehold
(3) Indirect ownership	(a) Tenant-ownership
	(b) Limited company
	(c) Housing cooperative
(4) Granted rights	(a) Leasehold
	(b) Servitude
	(c) Other rights

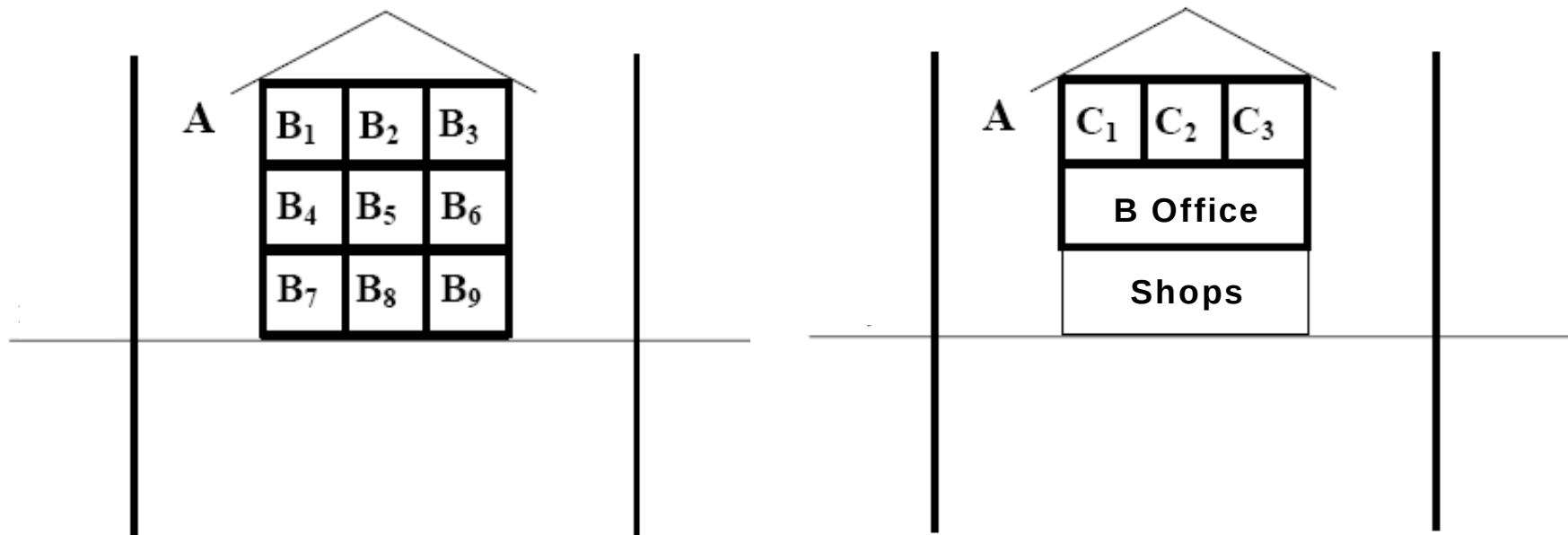
(Paulsson, 2007)

Example of 3D Property



(Boverket, 2004)

Example of Condominium



(Based on Prop. 2008/09:91)



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Key Factors

Key factor	Possible problems
Boundaries	Location of boundary: centre/surface Private/joint responsibility for structural parts
Common property	Unclear definitions – what is included
Co-operation between property units	Choice of co-operation form: easement/joint facility Areas included/parties involved
Management	Unclear responsibilities Insufficient and unclear regulations Large, complex developments – need for professional managers
Settlement of disputes	Choice of resolution method: court procedure is expensive, time-consuming
Insurance	What should be included Responsibility: private/joint

(Paulsson, 2007)



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Selected publications

Papers presented at 18 international conferences:

- FIG Working Weeks or International FIG Congresses in 2001-2011;
 - the 3D Nordic Conference in Stockholm, Sweden, 2010;
 - 5th International 3D Geoinfo. conference in Berlin, Germany, 2010;
 - 4th International 3D GeoInfo. Workshop in Ghent, Belgium, 2009;
 - Conference on Cadastral Infrastructure, Bogota, Columbia, 2005;
 - 3rd int. workshop 'Towards a Cadastral Core Domain Model', Delft, NL, 2002;
 - UDMS 2002, 23rd Urban Data Management Symposium, Prague, Czech Republic, 2002;
 - International Workshop on 3D Cadastres, Delft, the Netherlands, 2001
- and

Journal articles, PhD-theses and other publications

In total 105 publications



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Classification

- Legal

Real property rights, restrictions, responsibilities, real property, superficies solo credit, security of tenure, legislation, subdivision, spatial planning, legal objects and legal framework, LADM (the parts describing legal aspects)

- Technical

database, spatial data infrastructure, data model, GIS, visualisation/geometrical representation, LADM (the parts not describing legal aspects), cadastral surveying, geometry, topology, exchange formats, distribution and delivery as well as data management

- Registration

Spatial and temporal dimensions, data integration and height representation

- Organisational

Institutional, management and capacity building



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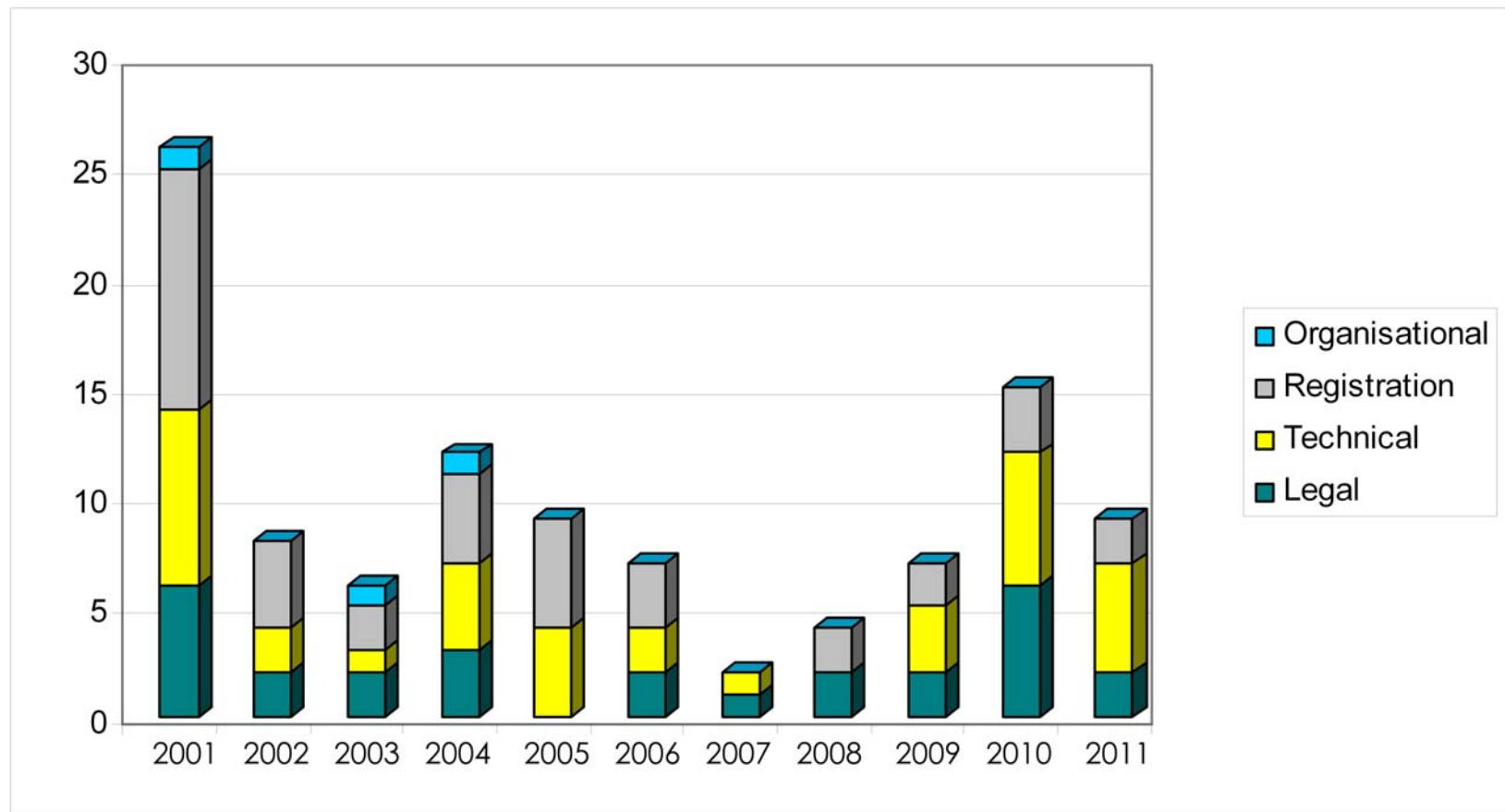
Results

Surveyed 3D conference papers, articles and other publications 2001-2011,
before the 3D-Cadastre Delft conference
()=secondary subjects



Year	Legal	Technical	Registration	Organisational	Total/year
2001	6 (8)	8 (5)	11 (5)	1 (6)	26
2002	2 (1)	2 (2)	4 (3)	0 (1)	8
2003	2 (2)	1 (0)	2 (4)	1 (1)	6
2004	3 (3)	4 (4)	4 (4)	1 (1)	12
2005	0 (2)	4 (1)	5 (0)	0 (0)	9
2006	2 (1)	2 (1)	3 (2)	0 (0)	7
2007	1 (0)	1 (0)	0 (0)	0 (1)	2
2008	2 (0)	0 (1)	2 (0)	0 (3)	4
2009	2 (1)	3 (0)	2 (1)	0 (1)	7
2010	6 (4)	6 (2)	3 (2)	0 (2)	15
2011	2 (3)	5 (0)	2 (5)	0 (3)	9
Total	28 (25)	36 (16)	38 (26)	3 (19)	105 (86)

Results



Surveyed 3D conference papers, articles and other publications 2001-2011

Results (latest news...)

2nd international Workshop on 3D Cadastres

Legal	Technical	Registration	Organisational	Total
2 (11)	15 (3)	18 (4)	1 (4)	36 (22)



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Results (latest news...)

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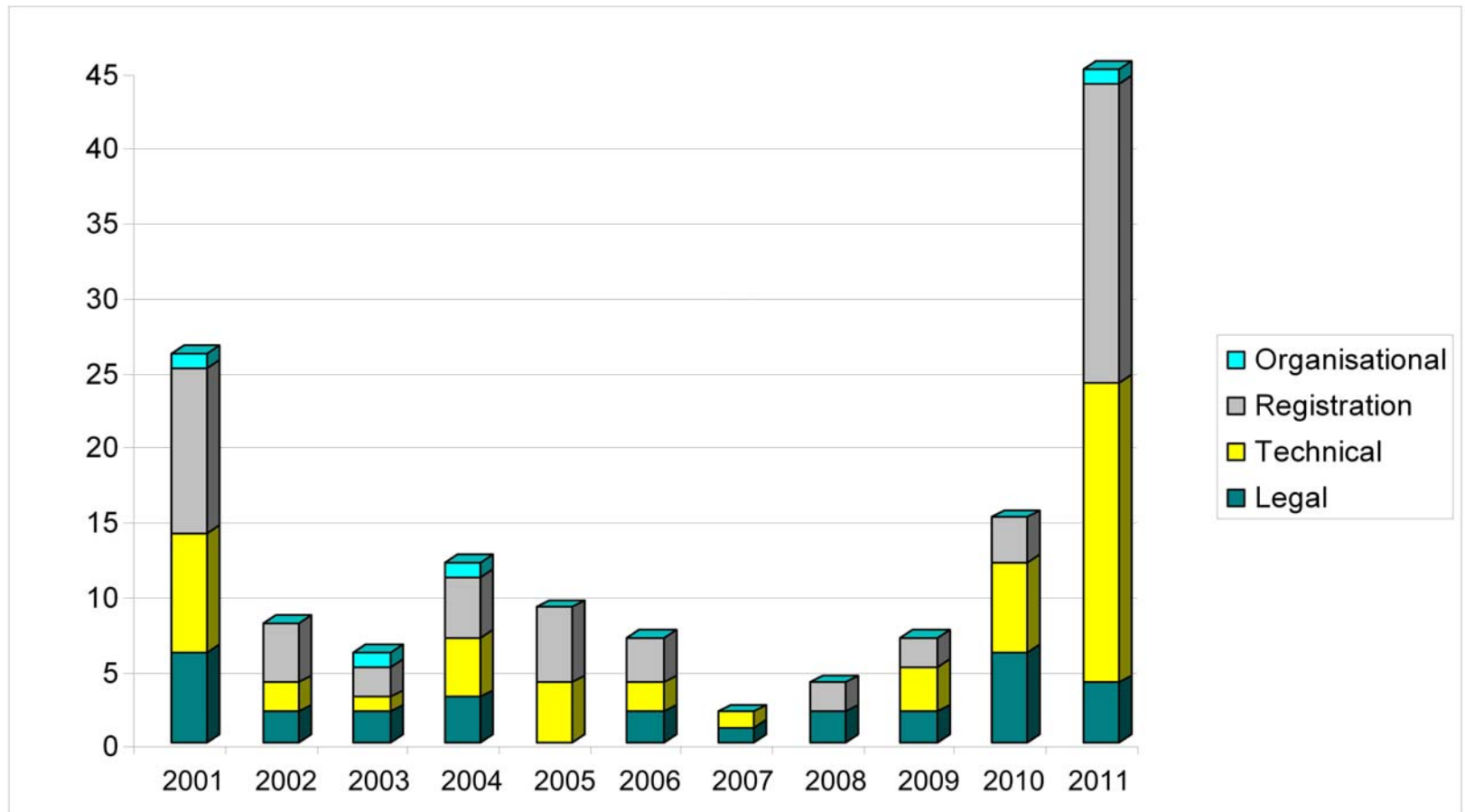


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2009	2 (1)	3 (0)	2 (1)	0 (1)	7
2010	6 (4)	6 (2)	3 (2)	0 (2)	15
2011	4 (14)	20 (3)	20 (9)	1 (7)	45
Total	30 (36)	51 (19)	56 (30)	4 (23)	141

Results (latest news...)



Surveyed 3D conference papers, articles and other publications 2001-2011, including the 3D-Cadastre Delft conference

Analysis

- Legal aspects rather small portion of current research
- Publications covering several areas - difficult to classify
- Few publications on terminology or definitions
- Legal aspects foundation for 3D property
- Hypothesis verified



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Conclusions

- Important research since last workshop in Delft
- Non-legal aspects more researched
- Difficult establishing domain specific key words
- More fundamental research and attention to legal aspects of 3D property is needed
- More consistent and standardised terminology is needed



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Future Research

- Establishing foundation for legal system and terminology
- FIG Working group on 3D cadastre started
- Individual research in different countries needed



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