A Legal Cadastral Domain Model

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1. INTRODUCTION

This paper is an introduction to an article submitted for review to the *Nordic Journal of Surveying and Real Estate Research*, expected to be published during 2005. The purpose of this presentation is therefore not to give a detailed approach and analysis of a legal cadastral domain as this will be done in the forthcoming article, but to give a general overview of the model.

2. LEGAL CADASTRAL DOMAIN MODEL

During the last decade numerous attempts have been made to describe and discuss the cadastral domain on both national and international level. In this paper the term "legal cadastral domain" is used as a common term for laws and regulations regulating the content of traditional cadastre, multipurpose cadastre and land register storing legal real property information, regardless of any national differentiation between these registers. A problem towards description of the domain is that real property and cadastre are not homogeneous and standardised terms and different definitions are presented by several authors, see e.g. (FIG, 1995); (Kaufman and Steudler, 1998); (Silva and Stubkjær, 2002). Such standardisation efforts are in addition primarily orientated towards technical storage environment of cadastre and other (software) solutions, but have, in my opinion, minor focus on legal aspects, even if the importance of the legal cadastral domain has been addressed by several authors, e.g. (Lemmen et al, 2003) and (Kaufman and Steudler, 1998). So, surprisingly little has been done to describe the legal issues of standardisation of real property information and cadastre.

Real property rights are special rights that differ from other rights in human society. Many rights in land are not found in goods or differ from those that are; and naturally they often last longer. These rights regulate the access to land. The access can be regulated by means of privately agreed rights or officially imposed regulations.

The access to land can be divided into 3 categories with different theoretical connections between man (subject) and land (object). 1. The direct connection between object and subject, 2. connection through right or obligation and 3 connection through ownership.

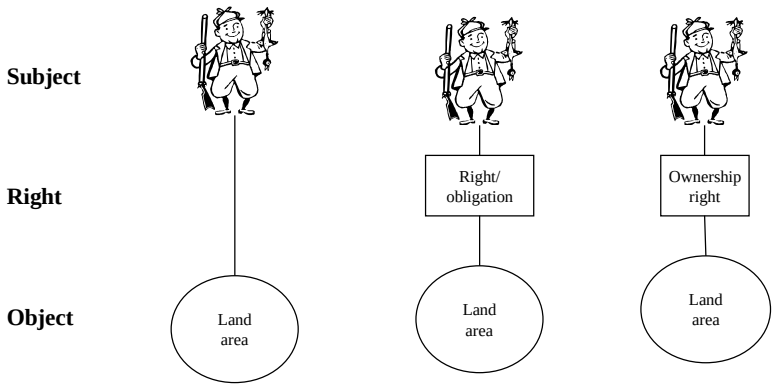

Figure 1. Theoretical connections between man (subject) and land (object) through rights. 1. Direct connection, 2. Connection through Right/obligation and 3. Connection through Ownership right (Mattsson, 2004).

Rights and restrictions are a result of cultural, social and political activities in each country and it might seem difficult to describe the variety of existing rights and restrictions in a common model describing the cadastral domain. The result seems to be that detailed modelling of rights and restrictions has been avoided when producing cadastral models. Rights might even be bundled together with restrictions in a common group, e.g. (Lemmen et al, 2003). However, the legal aspects of rights and restrictions are too complex to be handled as a common group in a legal model. An example is a recent Swedish attempt to model the cadastral domain from a legal perspective, which indicates that a nation's legal cadastral domain is extremely complex and that the legal context of the cadastre is of major importance with regard to standardisation of the cadastral domain (Paasch, 2004).

In conclusion, there is a need for a legal cadastre model which focuses on the right of ownership (to a property) in relation to appurtenances (benefits) and encumbrances (burdens) reducing the extent of the ownership. This presentation will focus on the modelling of real property rights, or to be more exact rights of ownership and granted rights, and including official and private regulations imposed on real property. A better understanding of the legal and logical aspects of property rights might increase the possibilities of producing standards towards the cadastral domain. One of the basic reasons for the employment of logic in law is that it makes it possible to determine criteria for the validity of arguments by means of investigating the form of these arguments.

The legal cadastral domain model outlined here is an abstract model based on the hypothesis that it is possible to classify property rights regardless of their emergence in different legal traditions. The model focuses on the legal classification of the benefits and burdens regulating the right of ownership and not on a detailed classification of the holder of such rights (Person) or the spatial component describing the expansion or geometrical representation and topology of a property (Land). Related objects like "boundary" and "source document" are not described in this first stage of the model. However, a legal description of these and similar objects are important to address all legal perspectives of the cadastral domain.

The legal cadastral domain model is a theoretical approach to the classification of real property ownership. The model is submitted to the Swedish real property legislation in the forthcoming article to see if it covers all legal issues relating to the ownership of real property. However, the model needs to be analysed in relation to other national real property legislation to ensure that it is a general model.
The legal cadastral model illustrated in figure 2 is based on the theoretical model illustrating the connection between subject and land through the ownership right in figure 1. The model is centred round the Ownership right and attached with classes that benefit or limit the right of ownership.

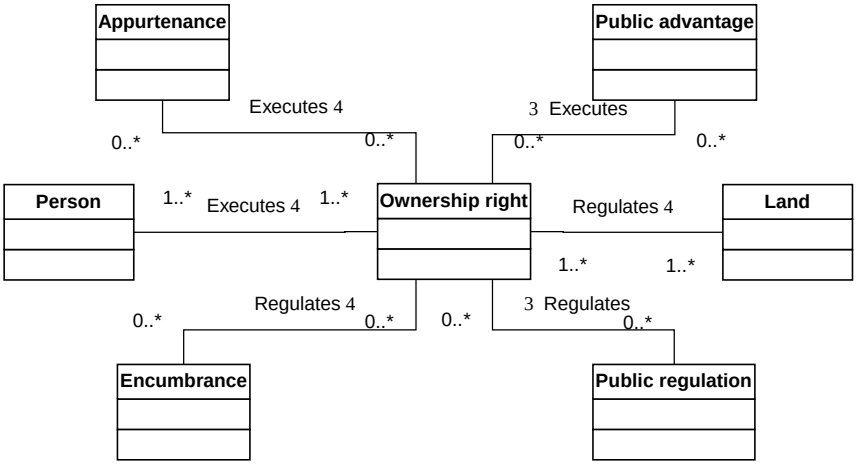

Figure 2. A basic legal cadastre model focussing on ownership right, describing the relation to the Appurtenance, Encumbrance, Public advantage and Public regulation classes (Paasch, 2005*).*

In order to achieve an increased standardisation of the cadastral domain it is necessary to classify of the legal content of a cadastre, focussing on the right of ownership and restrictions connected with ownership. Effort must be taken to focus on the legal aspects and not the technical environment in which the information is stored or processed. Classification of the legal context and discussing the legal ontology and semantics might further the process of establishing a general classification and description of property rights.

Applying object-orientated analysis and design on legislation focuses on the adequate description of the problem domain, e.g. the description of property legislation and cadastre. An adequate description must be based on communication. Any successful communication requires a language that is based on common concepts. However, the description, classification, hierarchy and description of objects and the difficulties of standardisation of a cadastre must not be underestimated. Focussing on the legal aspects and constructing a legal cadastre model is a way of applying ontology to the cadastral domain and can be a step towards a future standardisation process. A better understanding of the legal aspects of

property rights might increase the possibilities of producing standards towards the cadastral domain.

If a standardisation of the legal aspects of the cadastral domain has to be achieved, it is necessary to develop a legal core model which can be applied to any real property legislation, regardless of its cultural or historical legacy. The model briefly illustrated in this paper is an attempt to establish a general classification and description of property rights and make a scientific approach towards the construction of a legal cadastral system.

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BIOGRAPHICAL NOTES

Mr. Jesper M. Paasch is a Danish chartered surveyor. He has a M.Sc. degree (Surveying, Planning and Land Management) and a Master of Technology Management degree (Geoinformatics) from Aalborg University in Denmark. Since 1990 he has been employed by the National Land Survey of Sweden and is currently undertaking Ph.D. research at the Royal Institute of Technology in Stockholm, Sweden regarding the standardisation of the cadastral domain. The research is sponsored by the National Land Survey.

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