

Swedish 3D Property in an International Comparison

Jenny PAULSSON, Sweden

Key words: 3D property rights, 3D property, condominium, apartment ownership, comparison, Sweden

SUMMARY

The aim of the paper is to present the Swedish types of 3D property, how they are designed and related to each other, and to make a comparison with other types of 3D property that can be found internationally. The Swedish 3D property system is presented and compared with the international standard types of 3D property. In this comparison examples are drawn from e.g. Germany and the Australian states New South Wales and Victoria.

It is possible to find a number of different types of 3D property when making an international survey. The main types are the independent 3D property, the condominium (apartment ownership) and indirect ownership. In comparison with these standard types, the Swedish forms of such property are very similar to each other. In the legislation, the condominium unit is even defined as a 3D property unit, but intended only for one residential apartment. The same regulations as for traditional 2D property will apply also to the 3D property, with only a few special regulations added.

The Swedish tenant-ownership type is an indirect ownership form of 3D property right, which is more similar to the condominium type than the Swedish condominium form. The Swedish 3D property unit falls in between the independent 3D property unit and the condominium, e.g. since the boundaries usually relate to a construction and not coordinates and that there often is a formal association managing the common parts relating to the 3D property, similar to an owners' association within a condominium scheme. A condominium property unit can only be formed for accommodation purposes and not e.g. offices, and only in new buildings, or buildings that were not used for accommodation during eight years before the property formation of the apartment units.

Hence, there is a variety of types of 3D property existing in Sweden although differing somewhat from the more standard types. However, it can be noticed that certain elements are needed for all 3D property and the basic construction of the different forms is also rather similar even though the legal systems differ. A comparison of 3D property types may give input to a deeper understanding of 3D property in general and point to new solutions in the development of the concept of 3D property on a national level.

Swedish 3D Property in an International Comparison

Jenny PAULSSON, Sweden

1. INTRODUCTION

Internationally it is possible to find many different types of 3D property rights in different countries and legal systems. Describing these types is often made with focus on national conditions and regulations, with little comparison with other countries and their forms of 3D property (see e.g. Paulsson and Paasch 2011). When making categorisations of these types and trying to fit existing national types into these categories, difficulties may occur since national peculiarities may prevent simple comparisons (see e.g. van Oosterom et al. 2011).

The aim of this paper is to present the Swedish types of 3D property, how they are designed and related to each other, and to make a comparison with the standard types of 3D property that can be found internationally. This is a development and continuation of the research on the categorisation of 3D property as presented in Paulsson (2007) *3D Property Rights - An Analysis of Key Factors Based on International Experience*. It brings a new perspective to this research by showing types that may not quite fit into the standard categories found internationally and includes the Swedish condominium property in the study which did not exist at the time of mentioned research. It also adds to the on-going FIG Working group on 3D Cadastre (see e.g. van Oosterom et al. 2011), which so far just has made a general comparison of 3D property rights, using Australia as an example. No classification of 3D property rights with a comparison of those was made in the FIG study and not all key factors, such as management, from Paulsson (2007) were considered in that study. The FIG study is also more technically oriented than the Paulsson study, which focuses on legal aspects of 3D property rights.

The Swedish 3D property system is presented below and compared with the international standard types of 3D property. In this comparison examples are drawn from e.g. Germany and the Australian states New South Wales and Victoria. These legal systems represent two different ways of dealing with 3D property that fit quite well into the standard categories found internationally. The purpose of the paper is not to describe the current systems or compare their development, but to compare 3D property types and general solutions. The study uses the classification of 3D property rights from Paulsson (2007) and compares the three main forms of Swedish 3D property rights to the corresponding standard types from that classification. The comparison focuses mainly on the key factors for a successful and lasting system of 3D property rights that were presented in Paulsson (2007). Since these factors seem to be important for 3D property (Paulsson 2007), it may be interesting for readers from other legal systems to be presented with examples showing in which way 3D property rights can differ and how new forms can be introduced and adapted to the existing legal system.

2. TYPES OF 3D PROPERTY

There does not seem to exist any internationally valid definition of 3D property (see Paasch and Paulsson 2011), but it usually refers to real property that is legally delimited both horizontally and vertically (Paulsson 2007, p. 31). It is possible to find a number of different types of 3D property when making an international survey. The types have typical features, and there are similarities between the variants of these types that exist in the different countries. However, there are still differences depending on legal system, traditions, society, etc. Even though the specific features for each type of 3D property depend on the legal system in the specific country, it is still possible to categorise them in some main groups. However, there are not always clear boundaries between the categories and it might be difficult to fit the specific 3D property form within a country into one single category. The main types of 3D property rights that can be found internationally, if including the full range of such rights in the broad sense, are the independent 3D property, the condominium (apartment ownership), indirect ownership and granted rights (Paulsson 2007, p. 32). Only the types that are relevant for this study and the Swedish case are described further below.

Table 1. Types of 3D Property Rights (Paulsson 2007).

(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

2.1 Independent 3D property

The *independent 3D property* (1) refers to a volume of space that is subdivided and separated from the rest of the property. It is an independent form of ownership in the sense that it provides for the registration of separate three-dimensional property units (Sandberg 2001, pp. 203-204) independent from the underlying parcel (Mitrofanova 2002, p. 37). Thus, there is no need for any connection with the ground parcel. Neither is there any requirement of common parts for this type of 3D property (Paulsson 2007, p. 33). Often it is a larger unit, including several apartments or offices, or used for facilities and infrastructure, such as tunnels. While the *air-space parcel* (1a) can comprise just a volume of air, the *3D construction property* (1b) has to be related to a building or construction. The relationship between the independent 3D

property units is usually handled through agreements, such as easements, lease agreements or collateral reciprocal agreements, or through the general laws about neighbour relations (Sandberg 2001, pp. 203-204). The independent 3D property can be found in several countries, such as Sweden, Australia and Canada (Paulsson 2007).

2.2 Condominium

A type which is internationally more common than the independent 3D property is the *condominium* (2), or apartment ownership. It is usually defined as consisting of the ownership right to a part of a building, a share in the common property and membership in the owners' association. These 3D properties are not as individual as the independent 3D property type, but relate more to a sharing model with co-ownership and a framework for the relation between the units (Sandberg 2001, p. 204). The condominium is owned like a piece of land as an independent unit that can be owner-registered and mortgaged, but connected to it is a share in the common property (Bejrums et al. 2000, pp. 40, 43). The condominium must relate to a surface parcel on which the building is erected (Stoter 2004, p. 68). This type is mainly used to subdivide a building into several apartment units, which are each owned by separate owners. The condominium in most countries is used for residential purposes, although it can also in some countries, such as Germany, be used for commercial and industrial purposes (Paulsson 2007). Since the condominium apartments share common property, there are certain demands on management and coordination between the owners. Management can be carried out by an association in which all condominium owners are members and do the work together, or a professional manager can be used for this purpose.

The two main condominium types are the *condominium ownership* (2a) model and the *condominium user right* (2b) model. The condominium ownership model, also called the dualistic form, refers to an apartment which is owned independently like a piece of land and is regarded as a real property unit. Land and common parts of the building are jointly owned. The condominium user right model, or the monistic form, means that it is both the building and the surrounding land that are owned jointly by the condominium owners and then the owner only has a certain share in the common property. To this share is connected an exclusive right to use a specific condominium apartment in the building. The condominium building consists, in the most common case, of apartments, which are privately used, and common parts, which may include parts of the building such as roof, facades, stairs, elevators and other facilities, as well as main pipes providing certain services. It is a common and widespread form and exists all over the world in areas such as Australia, Canada and South America (see e.g. van der Merwe 1994; Paulsson 2007). The condominium ownership type can be found e.g. in Sweden and Germany. The condominium user right type exists, for instance, in Norway and the Netherlands.

2.3 Indirect ownership

The *indirect ownership* (3) form of apartment ownership has a legal person as the formal owner, which stands between the resident and the property (Nordisk Ministerråd 1997, p. 22), thus the ownership is indirect. This legal person could be a co-operative, an association, a limited company, etc. (Lilleholt et al. 2002, p. 29). It holds the title to the premises and grants rights of occupancy to apartments by different ownership-like rights (van der Merwe 1994, p. 185). Membership in the association gives the right to use an apartment in the building.

Indirect ownership forms of the 3D property include *tenant-ownership* (3a). The tenant-ownership represents a share in the capital of the association, not in the actual building. The right to use a specific dwelling is connected to the membership of the association. There is also the *limited company* (3b) system, where a joint stock company owns the property. Each tenant is granted an exclusive user right to a particular apartment in the building by acquiring shares in the company. The tenant-ownership type exists e.g. in Sweden and the limited company type is used e.g. in Finland.

It is also possible, and common, for a country to have a combination of the various types of 3D property rights in the legislation. There could, for example, be a further subdivision of the independent 3D property type into condominium apartments and a mixture with other forms within the same building, leading to a complex but often rather flexible system. This can be found in e.g. Australia. Legal systems with the condominium type in many cases also include forms of indirect ownership, as in the Swedish legislation, see further in section 3.

3. 3D PROPERTY IN SWEDEN

3.1 Independent property

The Swedish independent 3D property (*3D-fastighet*) was introduced in 2004, which makes it a rather new type of property in the Swedish legal system. It can be considered as a 3D construction property of the independent 3D property type and is defined as a property unit, which in its entirety is delimited both horizontally and vertically (Swedish Land Code, Chap. 1, s. 1a). One requirement for forming such property is that the 3D property unit must relate to a built construction or other facility. The property unit does not have to consist of a whole building or facility, but can comprise only a part of it. It is not bound to be located within one two-dimensionally delimited property, but may extend over or under several ground parcels. It can be used to delimit and separate different facilities or floors within a building or in the ground also in depth and height. An illustration of 3D property can be found in figure 1 below, where the 3D property unit is located in a building within the space of the traditional property unit.

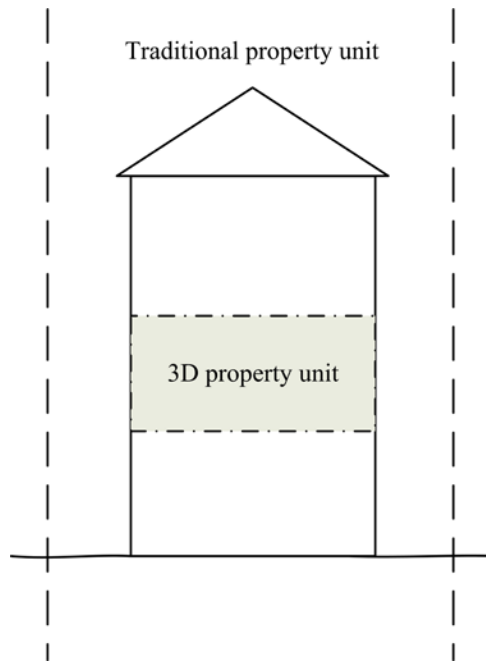


Figure 1. Example of the Swedish 3D property unit

The Swedish 3D property is, from a legal point of view, in principle the same as a traditional 2D property (Mattsson 2003). The same regulations as for other property-related rights apply also to the 3D property, e.g. the requirements for forming a property unit that are stipulated in the Real Property Formation Act, with only a few special regulations added for 3D properties, designed to reflect the particularities connected with that specific property type. One such regulation is that a 3D property may only be formed if this solution is found more suitable than other measures for obtaining the purpose. The 3D property formation must also lead to better management of the construction or facilitate its financing or construction. Another rule is that the 3D property unit may only be formed if the facility is already constructed, unless it is done to guarantee financing or the construction of the facility, but then only for a transition period (Swedish Real Property Formation Act Chap. 3, s. 1a). The 3D property unit must also be assured of the additional rights that are needed for its appropriate use (Swedish Real Property Formation Act, Chap. 3, s. 1a), such as rights for access to the property and to different facilities. If the 3D property is formed for residential purposes, it must comprise at least three apartment units (Swedish Real Property Formation Act, Chap. 3, s. 1a).

Swedish legislation also contains three-dimensional property space (*3D-fastighetsutrymme*), which is space that belongs to a property unit other than a 3D property, and which is delimited both horizontally and vertically (Swedish Land Code, Chap. 1, s. 1a). It contains a delimited space that is located within the space of another traditional property unit than to which it belongs. It is thus not a separate property unit, but is included in another traditional property unit. The 3D property space can be used for delimiting space that is more suitable to add to another property unit than where it is located, e.g. a parking space under another property, bridges or connecting tunnels or passages.

The 3D property is defined by x, y and z co-ordinates or other types of indication of its extent in the vertical dimension (Eriksson 2005, p. 7), such as constructions. However, the legislation is not very detailed in the sense that it does not give exact regulations, for example, on where the boundaries between property units are to be drawn or what forms of co-operation between property owners should be used to give access to the common parts of the building. There are guiding principles in the government bills and in the recommendations issued by *Lantmäteriet* (the Swedish mapping, cadastral and land registration authority) (see e.g. Lantmäteriet 2003 and 2009) on how to apply the law in this respect, but the property formation order is still based on judgments regarding what is suitable in the specific case. Also other decisions are left to be made in the property formation procedure. Some specific questions, such as insurance solutions, have to be solved by the industry without specific guidance from the legislation.

3.2 Condominium

The Swedish condominium (*ägarlägenhetsfastighet*) was introduced even more recently, in 2009. It belongs to the dualistic condominium ownership type in the sense that the resident owns the actual part of the building that the apartment constitutes and has a share in the common property. The condominium unit is defined as a three-dimensional property unit intended to contain nothing but one single residential apartment (Swedish Land Code, Chap. 3, s. 1a). It is thus in fact also a 3D property unit (of the independent 3D property type), but with the specific purpose of being used for just one apartment. An illustration of the Swedish condominium can be found in figure 2 below, where a building within the space of the traditional property unit has been subdivided into condominium (apartment) units A₁-A₆.

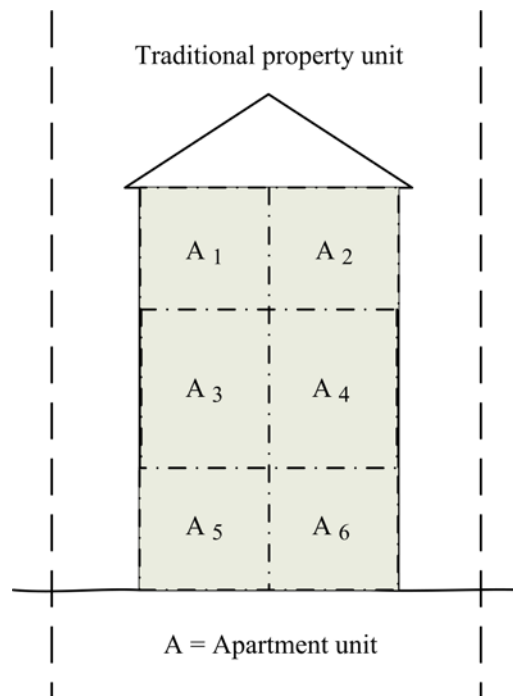


Figure 2. Example of the Swedish condominium

Since the condominium is a 3D property, the same rules as for other 3D property units apply also to the condominium, but there are also some specific rules added just for this type. One rule is that such a property unit can be formed only for residential purposes, which was the intention behind this form of property. Another restriction is that it may only be formed in new buildings, or buildings that were not used for accommodation during eight years before the condominium was granted. The reason for this is to avoid any transformation of existing residential apartments into condominiums. At present there is an investigation by the Swedish government whether this restriction should be changed in the future (Dir. 2012:44). There is a rule that there must be at least three condominium apartment units closely connected to each other if granted within a building. In the same way as it is required for other 3D property units necessary additional rights, such as access and facilities, must be provided.

As a main rule the condominium unit should contain the apartment space and the surface of the separating structures. What parts of the building should be private or common is decided in the cadastral procedure. There is no compulsory form for cooperation between property units, but this need should preferably be solved by the formation of a joint facility and/or a joint property unit, which will include common property and facilities. Easement is another possible solution for such needs. The legislation does not provide that an association must be created for the management in all cases, although if joint facilities or joint property units are formed, an association is compulsory. This means that an association will be formed in most cases. Another role of the association is taking action against disturbances amongst the residents and creating clear rules for management. The association can also issue house rules for the use of the common property.

3.3 Indirect ownership

Tenant-ownership is a type of 3D property right that has existed in Sweden since 1930 (SOU 2002:21, p. 46). It is an indirect ownership type of 3D property and is, in many respects, similar to condominium ownership, but with the ownership representing a share in the capital of the economic association that owns the property instead of owning a physical part of the building (Brattström 1999, p. 83). That share gives a right to use a particular apartment in the property that the association owns. The right to use an apartment exists without limitation in time. This form provides a possibility for granting individual rights to a specific apartment without any independent 3D property or condominium rights. The management of the tenant-ownership building has to be in a co-operative manner, where the tenant-owner has the responsibility of maintaining the interior of the apartment, while the association takes care of the management of the building. Tenant-ownership still remains the main way in Sweden to obtain individual rights to a specific apartment without any independent 3D property or condominium rights.

4. COMPARISON OF 3D PROPERTY RIGHTS

4.1 Comparison of standard types

It can be noticed from the examples of 3D property in different countries that the types of 3D property rights can vary, e.g. regarding ownership, delimitation, common property and management. The ownership can range from independent ownership to different rights. Independent 3D properties usually involve the ownership of larger units, or units not

delimited by a specific building, while condominium mainly refers to ownership of single apartments for residential or other purposes. There are of course differences between different legal systems when it comes to type of property and the regulations of those. However, there are certain features that are common for all types of 3D property rights, but they can also be specific for one of these types. There are also variants of the main types and types closer to the user right form.

Even though the independent 3D property in my opinion seems to be getting more common internationally, there are still rather few countries that have this possibility, at least in comparison with the more common and wide-spread condominium type. This is also the case in many European countries, e.g. Germany that has its condominium ownership type (*Wohnungseigentum*), but no independent 3D property. It is of course possible for a country or legal system to have several types of 3D property rights that co-exist, as seen e.g. in New South Wales. New South Wales has the main forms *stratum* and *strata* titles. *Stratum* belongs to the independent 3D property type and is a horizontally subdivided property, which could be located both on the ground and in the air, with no need for connection with a building, i.e. it is an air-space parcel (Paulsson 2007, p. 157). *Strata* title is condominium of the ownership type and is a right to possess one of the separate lots/apartments into which a building can be subdivided. These forms can be combined in different ways. It can e.g. be possible for an independent 3D property unit to be subdivided into condominium units, which is the case in New South Wales where the *stratum* unit can be further subdivided into several *strata* title units. In developments with mixed use, such as for residential and retail, there may be a need for parts of a building to be divided into apartments and for other parts of the building to be separately owned.

The types of 3D property that are used include also other similar forms and are interconnected, with the same kind of features and interaction with each other. The relationship between them is both complex and flexible. In other countries there are fewer types and they can be used more separately, for different purposes. Several countries that have the condominium form also have other types of property rights intended for apartments, such as indirect ownership as tenant-ownership, or tenancy. Except for Sweden, such a situation can also be found in e.g. Denmark and Norway (Brattström 1999, p. 143). Thus, the 3D property types should not be considered as a list of alternatives where one of them should be selected as the only form to be used in a country. Instead it can be found that there is both a need and room for several forms of rights to occupy an apartment (Brattström 1999, p. 143) or other volumes of space.

So far, there is not much written about the independent 3D property type (see e.g. van der Merwe 1994; Paulsson 2007), especially in publications from Europe where this type seems to be quite rare. It may seem that the *stratum* instrument is not used to the extent that would be possible (Paulsson 2007). When Sweden introduced this form it was as one of few countries in Europe, and therefore, when Swedish legislators made the initial preliminary study, they had to look at other countries, such as Australia and Canada, for inspiration (SOU 1996:87). In New South Wales the *strata* title system is rather well described in the literature, while it is more difficult to find examples of *stratum* in publications. A reason for this is in my opinion that the *stratum* subdivision is more similar to the conventional 2D subdivision of properties, and does not have the same need for regulation of the relationship between

properties and property owners, as well as management issues. In comparison, the strata title scheme with its subdivision into smaller units with common property is often connected with housing living conditions, and relations between neighbours.

The independent 3D properties are often treated as, or similar to, the traditional 2D property and can be regulated by the same legislation. The independent 3D property type can be seen as just a regular 2D property in most aspects, only delimited horizontally as well. This approach exists in the Swedish legislation, as well as in New South Wales and Victoria, where there is no separate act for the 3D property or stratum unit, it is simply included in the acts for traditional 2D property units. The regulation of 3D properties has been integrated into the regular real property legislation and the Victoria Subdivision Act makes no distinction between 2D and 3D properties, i.e. conventional subdivision and strata. Thus, a lot in Victoria is defined as a specific unit of land, building or airspace that can be separately owned (Consumer Affairs Victoria 2004, p. 1). The relationship between independent 3D property units can be compared with the relationship between traditional property units on the ground, where general rules for neighbour relations apply, or agreements are made. Agreements are often made to settle issues related to the use of common property, management etc., as with the special type of agreement that is used between stratum owners in New South Wales, where all common elements and services within the building are regulated by an agreement between stratum lot owners and strata title associations, but there is no single association for all properties within the building.

In contrast, the condominium type includes a relationship between the property units that is more interdependent and sharing, and where the freedom of action is more limited for the owners (Sandberg 2001, p. 204). A certain legal framework is then needed to regulate these co-ownership relations between the units and their owners. Thus, one of the main differences that can be found between the independent 3D property type and the condominium type is the level of cooperation between the property units. There may seem to be a large difference between the two condominium forms, condominium ownership and condominium user right, due to their different levels of ownership. However, they have a very similar construction, and the actual disposition right to the apartment in practice does not differ much between these two types. For the condominium user right, the owners' disposition right to the apartment comes very close to actual ownership right to the apartment, since there is an exclusive right to use it. The tenant-ownership type, although being an indirect form of ownership, in practice also includes more or less the same type of disposition right as the condominium types, and the same right to use common areas (Brattström 1999, pp. 73-75, 92), for example regarding what measures may be taken with the interior of the apartment, disposition, common property, membership in the association, etc.

4.2 Comparison of Swedish 3D property with the standard types

In comparison with the standard types of 3D property rights, it is possible to discern some differences in the Swedish forms of such property in relation to the standard types. It seems that the Swedish 3D property and the condominium are very similar to each other. The much used tenant-ownership type is also of importance when making such a comparison and in trying to find differences both between the Swedish forms and in relation to the standard types. The Swedish 3D property unit belongs to the independent 3D property type in the sense that it

has the independent features of that type and is used for larger units with purposes such as separating different types of use, enclosing infrastructure objects, etc. (Paulsson 2011). However, the condominium unit is also a 3D property unit, although a special kind of it for a special purpose or limitation. But being a 3D property unit it still belongs to the independent 3D property type in that sense. In the legislation, the condominium unit is even defined as a 3D property unit, but intended only for one residential apartment.

In the two Australian states New South Wales and Victoria, each with its own 3D property legislation, there are as mentioned two main types of 3D property, namely the stratum of the independent 3D property type, and the strata title of the condominium type. In comparison, the Swedish 3D property unit is of the independent 3D property type, with a requirement for larger units than just a single apartment, but with certain features from the condominium type, such as the existence of common property and management associations. The Swedish type, unlike the Australian stratum, is limited to constructions, such as buildings, tunnels, etc. The stratum can be located both on the ground and in the air, with no need for connection with a building, i.e. it is an air-space parcel. Height and depth are restricted and the boundaries of the stratum are related to height datum, not to any building structure (Paulsson 2007, p. 157). The Swedish 3D property is, however, very similar in other respects, with similar fields of application.

If comparing with the usual main features for the independent 3D property type, these are fulfilled for the Swedish 3D property unit. There is no need for any connection with the ground parcel. The 3D property unit can cross several underlying parcels, but access to the ground level must be secured in the property formation. Neither is there any requirement of common parts. Often it is a larger unit, including several apartments or offices, or used for facilities and infrastructure, such as tunnels. As a 3D construction property it has to be related to a building or construction. The relationship between the independent 3D property units can be handled through agreements, such as easements, or through the general laws about neighbour relations. However, common property can be created and then the relationship between the properties can be dealt with through an association or part-owner management.

The same regulations as for traditional 2D property will apply also to the 3D property, with only a few special regulations added. There is no special separate 3D property or condominium act, even though a previous proposal on condominium suggested the introduction of a Condominium Act (SOU 2002:21). This is in line with the development in Victoria, but unlike the situation in New South Wales and Germany which have separate Condominium Acts. As mentioned, 3D property in Victoria is integrated in the legislation for traditional 2D property units, just like in Sweden, but in Germany and New South Wales they are still separated. There are not much detailed regulations in the Swedish 3D property legislation, unlike the German condominium legislation which is regulated quite in detail but also has a large influence from legal practice (Demharter 2002, p. 72), and New South Wales with its very detailed rules on e.g. insurance requirements for the strata title.

There are other reasons for not categorising Swedish 3D property and condominium units into the independent 3D property and condominium ownership types. Unlike e.g. New South Wales where the stratum (independent 3D property) unit can be subdivided into strata title

(condominium) units this is not done in the Swedish case in the same way. A condominium unit can be situated within another 3D property unit, but it is still related to the ground parcel and is considered to take out the space volume from the ground parcel (Unger 2012). Another reason for why the Swedish 3D property unit can be seen as falling in between the independent 3D property unit and the condominium is the fact that the boundaries usually relate to a construction. In other systems, such as New South Wales, the stratum often is related to coordinates, even within a building.

Comparing again with the German condominium system which belongs to the dualistic condominium ownership and not the monistic condominium user right, it is still the co-ownership that is regarded as the primary ownership there. What makes the German condominium belong to the dualistic condominium ownership form is that it is the apartment itself that is being owned (Bejrums et al. 2000, pp. 41-42). The condominium system is usually well defined and has many similarities in the different countries. It is seen as a threefold unity, with the individually owned unit, a share in the common property and the membership in the owners' association as the three parts. The German condominium system contains these three parts (Bärmann et al. 2003, p. 31), but it is not a compulsory element in Sweden, nor in Victoria. The Swedish condominium does not have a requirement for common property, even though it is created in the usual case. In Germany, on the other hand, common property is a necessary element in order for the condominium to be formed since separate ownership of apartments is only allowed in connection with the common property. In the same way, in Victoria an association is compulsory only if there is common property connected to the 3D property, but in that case it is created automatically (Libbis 1996, app. 1:1.7). It is not regulated by law that an association must be created for the management of the Swedish condominium in all cases, but if joint facilities or joint property units are formed for managing common land and building parts related to the 3D property, an association is compulsory. The requirement for an association in these cases also for the Swedish independent 3D property unit is a feature that makes it seem like a mixture between the independent 3D property type and the condominium type.

A Swedish condominium can only be granted for accommodation purposes, unlike the German case, where condominium for office or commercial premises can be created (German Condominium Act, s. 1). It is also limited to be formed only in new buildings, or buildings that were not used for accommodation during eight years before the property formation of the apartment units, while in Germany condominium can be formed in former tenancy buildings (Gerremo 1998, p. 47). This is a limitation which does not change the nature of the property form, but it restricts the use of it and makes it more limited than in other countries.

Other differences can be noticed in the location and definition of property boundary between the property units. In general they are located in the surface of separating constructions in New South Wales and Germany, in the surface or centre of the constructions in Victoria and in Sweden determined based on the case. This has a bearing on what parts of the building should be included in private or common property and who should be responsible for these parts.

Actually, in many ways the Swedish tenant-ownership type is more similar to the condominium type than the Swedish condominium unit is. The tenant-ownership apartment must relate to a surface parcel on which the building is erected, which is not the case with the condominium apartment unit. Another reason is that there is a formal association managing the common parts relating to the tenant-ownership 3D property, similar to an owners' association within a condominium scheme, although there is no such requirement for the condominium property, even though an association is created in most cases.

The fact that the indirect ownership of apartments in Sweden, the tenant-ownership, is already existing since many years and is a well-functioning form of 3D property right, can be a reason for why this form is still the dominant one and that the condominium type is not much used to date. Another reason for this is the restriction that it is not allowed to form condominium property within existing residential buildings. As mentioned, this will now be investigated by the government (Dir. 2012:44) and it might thus be changed in the future.

5. CONCLUSIONS

When analysing Swedish 3D property rights and comparing them with the categorised standard types, it is possible to find that many of the features of these types exist also for the Swedish forms. Hence, there is a variety of types of 3D property now existing in Sweden. When comparing with the 3D property forms in other legal systems, there are many similarities. However, differences exist and the Swedish 3D property and condominium forms differ from the standard types in certain ways. It is interesting to notice that they are still actually rather similar to each other, and the tenant-ownership form also has many similarities with those forms. Perhaps this can be one of the reasons for why these types of property have not yet been used to a large extent in Sweden. The forms are not clear enough in themselves and between each other, so that people will not understand how to use them and why to choose one or the other.

Even though each country or state has its own legislation, there are specific issues common for 3D property rights. This makes it important to study the general common aspects. It is interesting to see e.g. the different ways in which the two Australian systems for 3D property in New South Wales and Victoria have developed. If comparing Sweden with those, it is possible to notice that there are more similarities with the Victoria system than with the one in New South Wales.

The research for this article started with the preconception that the Swedish 3D property types should differ from the international standard types. However, during my study I realised that all these forms in fact are rather similar and that certain elements are needed just for being a 3D property, and also that the basic construction of these forms is rather similar even though the legal systems differ. This further supports the findings from the previous study (Paulsson 2007) that there are certain key factors that seem to be important when creating a successful system for 3D property rights and that these factors should be analysed when comparing systems and developing new ones.

The intention of this study has not been to make a full comparison of all aspects of 3D property rights. It has rather been to show examples of in what way they can differ and how that makes a 3D property form in a country in practice belong more or less to one standard category of 3D property or another. It has previously been noticed that much research within the field of 3D property rights only is describing national systems and contains less of comparison with other countries and generalisation of results (Paulsson and Paasch 2011). Making these international comparisons is of use both for the general understanding of 3D property and in developing a country's own system for it. A further comparison of 3D property types may give input to a deeper understanding of 3D property in general and point to new solutions in the development of the concept of 3D property on a national level.

REFERENCES

Bärman, J., Pick, E. and Merle, W. (2003). *Wohnungseigentumsgesetz, Gesetz über das Wohnungseigentum und das Dauerwohnrecht. Kommentar* (in German). 9th edition, Verlag C.H. Beck, Munich.

Bejrums, H., Julstad, B. and Victorin, A. (2000). *Nya upplåtelseformer i flerfamiljshus – Bostadsrätten i internationellt perspektiv* (in Swedish). Stockholms Byggnadsförening, medlemsblad April 2000.

Brattström, M. (1999). *LÄGA – Lägenhet med äganderätt* (in Swedish). Skrifter från Institutet för fastighetsrättslig forskning, Uppsala universitet (Uppsala University), Nr 5. Iustus förlag, Uppsala, Sweden.

Consumer Affairs Victoria (2004). *Future Directions Paper, Bodies Corporate*. Consumer Affairs Victoria, Melbourne.

Demharter, J. (2002). *Beiträge des Bayerischen Obersten Landesgerichts zur Entwicklung des Wohnungseigentumsrechts* (in German). In M. Drasdo, H. Müller and K. Riesenberger (Eds.) *Festschrift für Wolf-Dietrich Deckert zum 60. Geburtstag*. Haufe Mediengruppe, Freiburg, Berlin, Munich.

Dir. 2012:44. *Ägarlägenheter i befintliga hyreshus* (in Swedish). Justitiedepartementet. Swedish Committee Directive.

Eriksson, G. (2005). *A New Multi-dimensional Information System Introduced in Sweden*. Paper presented during FIG Working Week 2005 and GSDI-8 "From Pharaohs to Geoinformatics" 16-21 April 2005, Cairo, Egypt.

German Condominium Act (Gesetz über das Wohnungseigentum und das Dauerwohnrecht (Wohnungseigentumsgesetz)), BGBl. I 1951, 175, 209.

Gerremo, C. (1998). *Ägarlägenheter i Tyskland* (in Swedish). Examensarbete nr. 40. Avd. för Fastighetsvetenskap, Kungliga Tekniska Höskolan. Royal Institute of Technology, Stockholm.

Lantmäteriet (2003). Tredimensionell fastighetsindelning. En handledning för lantmäterimyndigheterna (in Swedish). LMV-rapport 2003:14. Swedish mapping, cadastral and land registration authority.

Lantmäteriet (2009). Ägarlägenheter. Information till lantmäterimyndigheterna (in Swedish). PM Dnr 401-2009/1238. Swedish mapping, cadastral and land registration authority.

Libbis, S. (1996). Plans creating bodies corporate. In *Understanding Bodies Corporate*. Seminar papers, 1.1. Leo Cussen Institute, Melbourne.

Lilleholt, K., Modeen, P., Rečiūnas, G., Stasevičius, G. and Victorin, A. (2002). Apartment Ownership and Mortgage Finance in Lithuania. *TemaNord* 2002:579. Nordic Council of Ministers, Copenhagen.

Mattsson, H. (2003). Towards Three Dimensional Properties in Sweden. In *Proceedings of European Faculty of Land Use and Development, 32nd International Symposium*. Strasbourg, France, October 2003.

van der Merwe, C. G. (1994). Apartment ownership. Chapter 5 in A. N. Yiannopoulos (Ed.), *International encyclopedia of comparative law*. Vol. 6, Property and trust. Mohr, Tübingen.

Mitrofanova, E. (2002). Property Rights and 3D Determination. In *Suchasni dosyagnennya geodezychnoyi nauky ta vyrobnyctva (Modern achievements of geodetic science and production)*. Zbirnyk naukovyh prac' (Collection of scientific works). Liga-Pres, Lviv, Ukraine.

Nordisk ministerråd (Nordic Council of Ministers) (1997). *Nordisk bustadrett (Housing Law in the Nordic Countries)*. *TemaNord* 1997:594. Nordisk Ministerråd, Copenhagen.

van Oosterom, P., Stoter, J., Ploeger, H., Thompson, R. and Karki, S. (2011). World-wide Inventory of the Status of 3D Cadastres in 2010 and Expectations for 2014. *FIG Working Week 2011, Bridging the Gap between Cultures*, Marrakech, Morocco, 18-22 May 2011.

Paasch, J. and Paulsson, J. (2011). Terminological aspects of three-dimensional real property. *Nordic Journal of Surveying and Real Estate Research* 8(1), 81-97.

Paulsson, J. (2007). *3D Property Rights – An Analysis of Key Factors Based on International Experience*. Doctoral thesis, Report 4:99. Section of Real Estate Planning and Land Law, Royal Institute of Technology, Stockholm.

Paulsson, J. (2011). 3D Property in Sweden. Article in *Conference of Surveying Sciences 1-2.12.2011, Helsinki (Finland)*. In Kirsikka Ninkkanen (Ed.) *Moniulotteinen maanmittaus*. The Finnish Society of Surveying Sciences & Finnish Association of Geodetic and Land Surveyors. Special Series n:o 48. Multiprint Oy, Vantaa (Finland), pp. 9-21.

Paulsson, J. and Paasch, J. M. (2011). 3D Property Research – a survey of the occurrence of legal topics in publications. Proceedings of the 2nd International Workshop on 3D Cadastres, Delft, the Netherlands, November 16th-18th, 2011, pp. 1-14. International Federation of Surveyors (FIG), Copenhagen.

Sandberg, H. (2001). Three-dimensional Division and Registration of Title to Land: Legal Aspects. In Proceedings of International Workshop on “3D Cadastres” (pp. 201-209). Delft, the Netherlands, 28-30 November 2001. International Federation of Surveyors.

SFS (1970:988). Fastighetsbildningslagen. (Swedish Real Property Formation Act) 1970, including later amendments.

SFS (1970:994). Jordabalken. (Swedish Land Code) 1970, including later amendments.

SOU 1996:87. Tredimensionell fastighetsindelning (in Swedish). Betänkande av Utredningen om tredimensionellt fastighetsutnyttjande, Justitiedepartementet. Swedish Official Enquiries.

SOU 2002:21. Att äga sin lägenhet (in Swedish). Betänkande av 2000 års ägarlägenhetsutredning, Justitiedepartementet. Swedish Official Enquiries.

Stoter, J. E. (2004). 3D Cadastre (Doctoral Thesis, Technical University of Delft). Netherlands Geodetic Commission, Delft, the Netherlands.

Unger, O. (2012). E-mail response from Olof Unger, Lantmäteriet (Swedish mapping, cadastral and land registration authority), 21 May 2012.

Victoria Subdivision (Body Corporate) Regulations 2001.

Victoria Subdivision (Procedures) Regulations 2000.

BIOGRAPHICAL NOTES

Jenny Paulsson is a senior lecturer at the Department of Real Estate and Construction Management of the KTH Royal Institute of Technology, Stockholm, Sweden. She holds a M.Sc. degree in Surveying and a Ph.D. degree in Real Estate Planning, both from the KTH Royal Institute of Technology. Her PhD thesis concerned 3D property rights.

CONTACTS

Jenny Paulsson
KTH Royal Institute of Technology
Real Estate Planning and Land Law
Brinellvägen 1
10044 Stockholm
SWEDEN
Phone: + 46 8 7906661
Fax: + 46 8 7907367
E-mail: jenny.paulsson@abe.kth.se
Website: <http://www.kth.se/en/abe/inst/fob>

