

CHAPTER 2

OVERVIEW OF 3D PROPERTY

2.1 Introduction

The aim of this chapter is to give an overview of property development by looking at properties in general, followed by a discussion on property rights, as well as issues relating to 3D property and 3D property rights attached to such properties. Since the individualisation of property has traditionally been concerned with the subdivision of land using on surface boundaries in the cadastral system, it is appropriate now to consider how three-dimensional situations should be handled from the legal, technical and organisational aspects, and how other countries have addressed similar issues.

2.2 Property

Before discussing what 3D property is, it is important to know what real property and personal property are because they are not homogenous and standardised terms (Mattsson, 2003a).

2.2.1 Physical

Land is referred to as ‘real property,’ and other possessions as ‘personal property’. Various authors present different definitions of these terms. The ‘real’ in real property usually refers to the land and things which are associated with or permanently attached to the land, whether above, on or below the surface.

Dale and McLaughlin (1999) described land as real or immovable property that includes all things attached to it, such as buildings, minerals and the air above it. Some countries make a distinction between land as a natural object with soil and a surface, and property as buildings or multi-level buildings and other fabricated objects attached to the land.

According to Swedish Land Code 1970 (2006: 7), “real property is land and divided into property units.” A property unit is delimited either horizontally or both horizontally and vertically. It further states, “a property unit includes buildings, utilities, fences and other facilities constructed within the property unit for permanent use, standing trees and other vegetation. A property unit also includes the building, or facility constructed outside the property unit, which is intended for permanent use in the exercise of an easement in favour of the property unit and does not belong to the property unit where it is situated.”

With few exceptions, the Swedish Land Code 1970 (2006) only recognises property delineated on the ground by what are termed x and y coordinates. In reality, properties have a three-dimensional extent. Theoretically, they can be likened to cones with their apices projecting down to the centre of the earth, and their bases projecting into outer space. In practice, 2D properties are limited to the extent that these dimensions can be asserted under the law. The essential point, however, is that there is no defined limit in terms of depth or height in the Swedish Cadastre System; accordingly, no one else can assert ownership within the theoretical cone (Mattsson, 2003a).

2.2.2 Abstract

A definition of property by the United Nations Economic Commission for Europe recognises individuals or groups of individuals, legal persons or the State to hold property.

Property may be defined as an object to which legal rights may be attached, especially rights of ownership.

(United Nations Economic Commission for Europe, 2004: 8)

In the natural context, however, land is regarded as including all types of construction and development, while property more specifically relates to the abstract nature of the land. According to Dale and McLaughlin (1999: 164), property refers to “either the buildings associated with land or more specifically the legal rights attached to the land”.

According to Khublall (1991), property can be classified into movable (i.e. personal movable property), and immovable (i.e. realty and chattel real). Various

estates and interests can be created out of the same parcel of land and these can be owned by different peoples either concurrently or in succession.

Ownership of real property or immovable property differs from ownership of personal property or movable property. Dale and McLaughlin (1999) use the assumption that the law of property distinguishes between real and immovable property as opposed to personal, intellectual or other types of movable property. It is important to separate the concept of property from the physical object. Property is an abstract right in things or attached to things. Legal interests are rights in land associated with fixed objects. Abstract rights deal with the physical nature of the land, defining what can be done with the property and when such action may proceed.

2.3 Property Rights

The definition of different rights will decide the roles for the parties concerned. The fact that many parties involved does not by itself imply that management will be split and unproductive. However, hesitation about who has the right to act and the right to benefit from the land will obviously be counter-productive. To understand rights, it is first to examine the nature of the connection between persons involved in legal relationship. A broadly accepted categorization of such relationship consists of this four Hohfeldian correlates, namely right/duty, liberty/no right, power/liability and immunity/no power (Stevenson, 1991).

2.3.1 Definition

According to Larsson (1997), the development of property rights, including their definition on the ground, may thus be a slow process with many intermediate stages. Nevertheless, generally it can be said that a clear definition of existing rights and their delimitation are important for good land management at all stages. With more individual and intensive use, the need for distinct definitions increases.

Enemark (2009: 4) gives an overview of the property rights as “secure property rights provide a sense of identity and belonging that go far beyond (the economic dimension) and underpins the values of democracy and human freedom”. Therefore, property rights are normally managed well in modern economies.

Ownership can be described as a bundle of rights that are defined by law (Larsson, 1997). Rights maybe held by individual or groups (*Federation Internationale de Geometres*, 1995). As stated by Stevenson, “property rights are specifically (a) relationship between persons regarding use of a thing”. Various rights, duties, liberties, powers, immunities and liabilities combine to define a person’s property rights (ownership rights) in a thing and how another person is morally or legally required to act with regard to the thing. The existence and observance of these rights, duties, and other relationships distinguishes property from non-property, as well as one type of property from another.

To sum up, property rights tend to be well managed in the modern economy. They are supported in theoretical and administrative aspects through legal theory, economic theory and sophisticated registration systems. A good land administration system, cadastre system and registration system are required to provide an effective property rights infrastructure.

2.3.2 Classification of Rights

The 1989 World Development Report on Financial Systems states that:

The legal recognition of property rights - that is, rights of exclusive use and control over particular resources - gives owners incentives to use resources efficiently.

(World Bank, 1989: 86)

Another two major divisions of property are public property and private property. Public property is State owned property, dedicated to public use, and is not restricted to any one individual's use or possession. Property under State ownership is also called State property. It is the land held by the State and vested in a public agency that is created to serve the public. The public may have limited access to it (Chong, 2006). Open access is the other class of public property, which refers to areas of resources that have unrestricted access and use without any rights, restrictions or responsibilities. There are no prescribed purposes to these areas and anyone can appropriate benefits from the resources (Dalrymple, 2005). Meanwhile, individual ownership of property gives rise to private property, which is protected from public appropriation. The owner has exclusive control and absolute rights of the property. Private property specifies a single party vested with the right to exclude others from exercising or enjoying the rights attached to the property (Park, 2003). The property owner has full and exclusive control over the use and management of the land (Dalrymple, 2005). Another class of private property is joint ownership of common property, which is vested in a community and is specified by the right of all users within the community to access and not to be excluded from the enjoyment or use of the object owned. Under common property, individuals have rights and obligations in common with all other users. Often, owners incur additional restrictions and responsibilities for the protection of the property owned.

According to Alchian and Demsetz (1973), property rights may encompass particular rights of use in a society where such rights did not exist earlier. A real property right is defined by Larsson (1991: 9) as “a means of securing exclusive control of resources within a given area, but also as a method of protecting resources or investments”. Snare (1972) states that while property rights are in some sense exclusive, there are many exclusive rights that cannot be transferred and thus would not be called property rights. For example, the exclusive right to occupy a particular part of the building or space with a building, or the exclusive right of filling the airspace with contents in a specific apartment, or to occupy the same apartment for a specific and determinate recurrent period of time would vary according to each country’s legislation.

In brief, and subject to the laws of the country, the rights, duties, liberties, powers and immunities that define the degree of ownership are basically the right to possess; personal use of right; management right; the right to use; alienation, disposing or modification power; the power to bequeath; term of ownership rights; and the liability to dispossess for outstanding debt (Honore, 1961; Becker, 1977).

2.4 3D Property

As mentioned by Paulsson (2007) in her doctorate thesis, 3D property has no simple meaning. In the most general sense, a 3D property can be defined as a property delimited both horizontally and vertically in length, width, height and depth, and sometimes can be defined as a three-dimensionally determined property. Another definition that is more or less neutral, and which can be used in most countries, defines a 3D property as a volume that is delimited in length, width, height and depth. The latter definition is even more suitable as it reflects the physical nature of 3D property.

At the First International Workshop on 3D Cadastres, held at Delft University of Technology in November 2001, the common features for 3D properties worldwide were discussed. The conclusion of the ensuing discussion was that, despite the fact that each country had its own specific laws, this should not lead to the development of a separate system for every country. While specific problems concerning 3D property systems arose in many countries, it was important to look at the general aspects that were common to all (Registration of Properties in Strata, 2002).

It is worthwhile mentioning that issues of three-dimensional determination of properties are becoming more and more important. In general, 3D property refers to multiple uses of a land parcel where there is a need to use space under or above the land. It is especially prevalent in urban areas where there is intensive use of land, including the space above and under the ground surface for different activities.

One definition presented by Dutch researchers is that a 3D property unit is a bounded amount of space to which a person is entitled by means of real rights. With this definition, a traditional parcel would also be a 3D property unit, without the particular issues connected with the third dimension. In areas with high population densities, 3D property situations with high property values are common (Van Oosterom, Ploeger and Stoter, 2005). This type of 3D property situation is where property units are located on top of each other or engaged to one another, and which is considered as a stratified property. A stratified property is where several users are using a space limited in three dimensions and positioned on top of each other within one surface or crossing parcel boundaries, and where real rights are established to entitle persons to the separate volumes (Stoter, 2004).

In Sweden, 3D properties are not something new and they are like other conventional properties. They can be transferred, mortgaged, expropriated, inherited and can be created by cadastral procedures as a subdivision, partition and amalgamation. In fact, 3D properties are an extension of the concept of conventional properties; they possess all of the features pertaining to conventional properties, and can be integrated in the same legal framework as conventional properties. However, 3D properties have more advanced features like volumes, parts of spaces, while conventional properties have areas and parts of the earth surface. 3D properties have

to occupy different parts of space. They can be subdivided into strata that create separate parcels above or under the original surface parcels.

Mattsson (2003b) also states that generally a 3D property is in principle the same as a conventional property from a legal point of view. The difference is that 3D properties are differently delimited and that they can be abolished more easily if they are not appropriate to their purpose. For instance, if a railway tunnel is constructed below a private property, some form of right must be created to the use of the space. As another example, a balcony projecting over a street may also need to be specially dealt within the confines of the law.

In a new Swedish legislation, a 3D property is defined as a property unit that, as a whole, is delimited both horizontally and vertically. While this definition is suitable for the Swedish type of 3D properties, it is too narrow for an internationally valid definition. What needs to be included in the definition is the purpose and use of the 3D property, rather than what the physical object really is. Mytrofanova (2002) describes 3D property as the multiple use of a land parcel where there is a need to use the space under or above the land.

Three-dimensional (3D) property in this study refers to property above surface (airspace), on surface and below surface (underground). Strata titles in most countries are used for residential purposes, but in some countries, such as Malaysia, they can also be used for commercial and industrial purposes. Paulsson also says:

A difference from the independent 3D property type, which legally is completely separated from the land parcel, is that the condominium ownership always includes a share in the related land parcel. Another distinction that can be made in some legislation is that separate buildings can be established as 3D property, and parts of one common building are designated for condominium units.

(Paulsson, 2007: 35)

A main difference between the independent 3D property type and the condominium type of property is the level of cooperation between the property units. 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. For the condominium type, the relationships between the property units become more interdependent with the sharing of common facilities. Accordingly, freedom of action is more limited for the owners and a certain legal framework is needed to regulate the co-ownership relations (Sandberg, 2003).

In Australia, there are two main types of 3D property, namely the stratum of the independent 3D property type, and the strata title of the condominium type. The Swedish 3D property is of the independent 3D property type, with a requirement for larger units, rather than for a condominium unit but with certain features from the condominium type incorporated, such as common property and management associations. In general, it is possible to say that the condominium type is more common throughout the world as compared with the independent 3D property type.

The concept of 3D property establishes a strong link between the real world and legal cadastral entities. Properties have been considered three-dimensional long ago, but unlike surface properties where there must be no gaps or overlaps in their boundaries, 3D properties can be located above or below one another.

2.5 3D Property Rights

A property then is a proprietary two-dimensionally defined right in land, the definition of which is determinate in the third dimension of depth/height.

(Mattsson, 2003b: 2)

We can see that property rights in many countries are not limited in the vertical direction. They can extend from the centre of the earth into the sky although they are restricted by mineral and flying rights (Stoter, 2004).

As stated by Paulsson (2007: 26), “a bundle of rights means that the attributes for each property unit is a system of rights that can be easily distinguished, but where the different rights are separate and may be transferable independently, being used simultaneously by different holders. Such rights, for example, are leasehold, rental tenure, road rights or easement.” This above mentioned is treatment of the right. In other words, they are treated separately from each other where the rights above surface, rights on surface and rights below surface are having total separation of rights.

As pointed out by Paulsson (2007), the forms of 3D property rights can vary when it comes to ownership and delimitation of property. The management of a common property varies according to the type of ownership. The owner of a 3D property could be a member of an association or a stockholder in a company, or an owner of a share in the common property with the right to use an apartment.

The condominium system is usually well defined and has many similarities in different countries. It consists of two components, both of which are necessary for its constitution: (a) the ownership to a part of a building and (b) a system of organisation to deal with the interaction between the owners that are dependent on each other within the same scheme. It is also seen as a threefold unity, consisting of the individually owned unit, a share in the common property and the membership in the owners' association.

As pointed out again by Paulsson (2007), apartment ownership in Sweden, having similarities to condominium ownership means ownership of single apartments, while the independent 3D property is property that not delimited by condominium ownership. Regarding the interdependence between properties, it is possible to make a clear distinction between an independent 3D property and a condominium. For an independent 3D property, the basic principle is that the relationship with the neighbouring properties should not be more extensive than for neighbouring surface

properties. For example, when a few properties share party wall in a high-rise building, it is crucial to make clear by-laws between neighbours for the maintenance and repair work of utility features. On the other hand, in the case of the condominium, where the apartments as individual parts are closely interrelated, it is important to regulate the relationship between the individual owner of the shares, their duties, rights, responsibilities and the common properties parts (Onsrud, 2003). Paulsson (2007: 35) also adds that “at the same time, as the condominium contains a certain limitation of private property rights, there are advantages of having clear and reasonable rules for managing the common elements for the benefit of all owners.”

The concept of 3D property rights may vary depending on the national legal system (Stoter, 2004). According to Paulsson (2007), it is necessary to look at the legislations of different countries that have implemented 3D property rights legislation in order to arrive at a consensus for a clearer definition. A conclusion from the first International Workshop on 3D Cadastres, held at Delft University of Technology in November 2001, was that the concept of property mainly depended on the national legal system, where each such system had its own instruments for multiple use of land (Registration of Properties in Strata, 2002). Hence, a common definition does not seem to exist, and each researcher dealing with this term would choose his or her own stipulated definition or description.

In Paulsson’s view, two main types of 3D property rights can be identified. She notes:

The independent 3D property type is the “pure” type of three-dimensional delimitation of space, and the condominium type is apartment ownership, usually connected to a building, with an owners’ association managing the common areas.

(Paulsson, 2007: 28)

A condominium type, also known as the common type, which is a form of rights in 3D property, is defined by the United Nations Economic Commission for Europe (2002) as a part of common law jurisdictions that constitutes a special form

of ownership giving the proprietor an absolute title to the property. This type of ownership is just one common way for people to own properties containing a number of flats or units.

There are different classifications of the ownership of a building or a piece of land delimited in three dimensions. The rights to such properties can be classified into three types, *viz.* right above the surface, right on the surface and right below the surface.

First, the splitting of land into independent property above surface as used in some English systems enables countries to divide ownership three-dimensionally (Sandberg, 2003). Rights to the above-ground and above-building space are sometimes called air rights or air space rights. There is a distinction between the three-dimensional delineation of the unit and its physical content (Sandberg, 2003). As described by Paulsson (2007; 33), “air space rights can be seen as on-surface 3D property rights; it provides for the registration of separate three-dimensional property units independent from the underlying parcel. There is no need for a connection with the ground parcel. It enables ownership of air rights to be subdivided. It is also possible to subdivide air space or areas underground into properties. Units can thus be created in a subsurface space in the same manner as in tracts of air. In some legislations, a 3D property does not have to be a closed volume, but may extend from a specified level and as far into the ground or air as private ownership extends, for instance as with the stratum in New South Wales, Australia.”

In brief, the air space of a 3D property is not bound to a specific building or construction. In some legislation, it may contain only a space volume (Paulsson, 2007). On the other hand, a 3D property on the ground surface may only be created within a building or construction; the property (or a part of it) may cease to exist if the construction is demolished or damaged. Such types of properties can be found in the newly introduced 3D property legislation in Sweden. For the above-mentioned types of 3D property, it is frequently necessary to establish an agreement containing the rights and duties of the respective proprietors, as well as rules and guidelines for the resolution of disputes between the owners.

Another type of rights that is broadly used for 3D properties are the on surface 3D property rights. The common term for this type of 3D property rights for condominium ownership is strata title, comprising individual ownership of dwellings in one building. Such rights are derived from the common law (Reshetyuk, 2004). They are used both in countries practising civil law or common law, and are governed by strata titles in countries with title registration systems, which are mostly countries that practise common law (Mytrofanova, 2002).

Finally, three-dimensional use of land can be exercised through below surface 3D property rights. Such an arrangement is often used for underground transportation or piping purposes. As Paulsson (2007: 42) explains, “the use of a lease or easement makes it necessary to subject the boundaries of vertical 3D units to the original borders of the 2D parcel above ground. It also limits the possibility of sub-splitting the 3D unit further, and the freedom of freely designating the reciprocal relationship between the owners.”

2.6 Summary

Changes as well as reforms in the legislation are to be expected over the years. A reason for the need for the many amendments to the law is that society has changed, along with different property development and building types. Many countries look to the strata legislation of preceding countries as a model for their own 3D property legislation. For example, the Strata Titles Act 1985 (Act 318) in Malaysia has many similarities with that of the New South Wales system, where both countries are provided with provisions within the common law.

Systems for 3D property use have evolved with time and management regulations have changed accordingly as the need arose. It is possible for a country’s legal system to have several forms of 3D property rights. These forms can be combined where an independent 3D property unit is subdivided into condominium

units. This framework would be similar to the example of the stratum unit in New South Wales, which can consist of several strata title units. All forms of strata titles and community titles are interconnected using the same features that interact with each other. The relationships between them are both complex and flexible (Paulsson, 2007).

In discussing 3D property laws, the first country that comes to mind is Australia. This country has had considerable experience in dealing with 3D properties since the Victorian Transfer of Land (Stratum Estate) Act was adopted in 1960. The Australian 3D property system is based on strata and stratum. In this Act, a stratum is a layer horizontally subdivided property, both on the ground and in the air, and there is no need for its connection to a building. If it contains a building, this building can be subdivided into strata titles. Most recently, there have been changes in the words used for 3D properties where ‘strata’ and ‘stratum’ have been replaced with the terms ‘cubic spaces’ or ‘volume parcel’ respectively (Paulsson, 2007).

As mentioned earlier, real property is largely thought of as pieces of land on the earth surface. They can be buildings or other permanent structures attached to the surface or extended upwards into the air or downwards into the ground. According to the United Nations Economic Commission for Europe (2004), most European countries define real property as extending from the centre of the earth to the sky, although a number of countries limit private ownership to certain levels of height. Hence, land boundaries are in reality not lines on the ground but they are vertical planes intersecting on the surface of the earth. It is to be emphasised here that property laws deal with the relations between people and things.

It is remarkable that 3D property laws have led to a growth of interest in solely three-dimensional delimited properties. Many housing developers, finance providers, owners of utilities infrastructures and so on argue that existing flexible regulations that govern 3D properties rights are not always adequately structured.