

Greece's Laws on Properties and the Third Dimension: a Comparative Analysis

Dionysia – Georgia CH. PERPERIDOU, Georgios MOSCHOPOULOS, Konstantinos SIGIZIS and Dimitrios AMPATZIDIS, Greece

SUMMARY

Worldwide, description of properties and properties rights derive from legislation and legal documents. Legally defined properties and property rights are three-dimensional physical objects. Thus there is a growing need for complete, accurate and integrated description of three-dimensional properties with complex ownership rights and other legal restrictions. In Greece's legal framework there are several laws relevant to the 3d characteristics of properties and the 3d extent of the exercise of property rights, referring to private or public properties and properties rights and to special properties and properties rights. As those laws date back from the 1920's to nowadays and describe legal boundaries intercorrelated to physical objects, the representation of the legal described property and property rights in 3D is of a great importance. This paper presents a comparative analysis for the 3D representation of legal described property and property rights according to Greece's legal framework.

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1. Introduction

In many countries, land ownership and property rights are based on *numerus clausus principle*, result of post – feudal systems and are diversified form contract rights (Merrill and Smith, 2000) and can be created, modified, transferred and extinguished (Van Erp, 2003). Property rights are subjected to rules and restrictions, like rules deriving from building codes, or restrictions in the use of property such as for residential purposes only. In Europe and early on post – feudalism period, property rights and burdens on properties (e.g. mortgages) were briefly described in legal documents, which were registered to land registries (Moerkerke, 2017). The lack of detailed geometric and spatial documentation of plots, led to cadastral systems development. In many countries Cadastre co-exists with land registries (Zevenbergen, 2004), and their coordination is not always easy (Zevenbergen, 2004), (Femenia-Ribera and Mora-Navarro, 2018). Both land registries and Cadastre are under public faith, equal treatment and legal certainty principles, while they register and keep records for property rights, but also for mortgages, easements or other encumbrances that might burden the property.

Classification of properties' legal aspects is complex and varies from country to country for both land parcels/ plots and buildings (López, 2017) and at the same time there is no clear distinction between over and under the surface rights (Bélanger, 2016) or how the first-come-first-served principle affects registration of under the surface rights in respect to the ones over the surface (Volchko *et al.*, 2020). Property rights, easements and encumbrances refer to real world 3D objects/properties, land parcels/ plots, buildings, various installations, infrastructures etc. and are not limited in two dimensions, but are exercised in three dimensions, above and below the surface and could be altered or modified over the years. Furthermore 3D properties definitions vary due to diversifications of legislation on properties in various countries (Paulsson and Paasch, 2013),(Kitsakis *et al.*, 2016) .

Today both cadastral systems and land registries, register and record rights and burdens on properties using 2D geometric/ spatial systems, even though relevant legal frameworks actually describe 3D rights, 3D rules or 3D restriction on properties. At the same time reliable information, on land, natural resources and rights-restrictions-regulations on real world objects/ properties is fundamental for meeting the objectives of sustainable development (UN-FIG, 1999), while surveyors have to learn and understand legal rules that affect their profession pursuit and lawyers ought to understand technical rules and guidelines (Navratil, 2008).

In Greece 3D property exploitation is defined in property law, but is affected by legislation on urban planning legislation, utilities networks use restrictions on properties, public and common spaces use and exploitation, informal buildings or settlements development and legalization processes, cultural heritage protection or even by necessary actions to prevent or manage natural

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disasters (Perperidou and Tziortzioti, 2007), (Perperidou and Mantopoulos, 2017), (Theodoropoulos and Perperidou, 2019), (Siolas and Perperidou, 2010).

In this paper a comparative analysis of Greece's legislation on properties and the third-dimension is presented. 3D representation of selected properties rights or restrictions according to Greek Property Law definitions are also included.

2. Greece: an overview on properties and property rights

Greece is located in the east part of the Mediterranean Basin, in south-east Europe and is the southern state of the Balkan Peninsula. Modern Greek State was formed from 1832 to 1947 by various international treaties and conventions as Continental Greece was occupied by Ottomans, Ionian Islands were occupied by Brits and the Aegean Islands by Ottomans, Venetians or Italians, later in the 20th century (Perperidou, 2020). Legal framework on property is affected by precedent legal systems, the Ottomans Laws, Byzantine – Roman Law, the Ionian Civil Code (in the case of Ionian Islands), Cretan Civil Code (in the case Crete Island of) customary law in the case of Islands occupied by Venetians, while some south Aegean islands, like Rhodes, that were occupied by the Italians until 1947, have operational Cadastre (Perperidou, 2020).

From 1832 to 1946 the Byzantine – Roman Law – BRL-, known as Harmenopoulos' Exabiblos, was in force as it was judged as the most appropriate legal framework, for the in 1832 newly established Greek State, until the enactment of the Civil Law (Papagianni *et al.*, 2015). According to BRL the ownership of an immovable property is an absolute property right and other rights exercised on immovable properties are: easement, pledge, mortgage, plantantion right, surface right, separate ownership right, ownership right acquired by adverse possession, limited ownership rights on mines and healing springs (in private properties mines exploitation rights are granted by the State). Monastery property rights are under the Admministration of the Church of Greece. Property rights are described in legal documents (deeds etc.), that are registered in land registries from 1856 (Law "About ownership on immovable property transcription etc"). From the 1830's property rights were subjected to restrictions or regulations imposed by urban plans legislation, building code, agricultural code, forest code and land redistribution legislation.

The Greek Civil Code (GCC) was adopted only in 1946, although it was first presented in 1939 but delayed due to WW II. The Property Law, PL, is GCC's Book 3 and determines only four absolute property rights: ownership, easement, pledge and mortgage. The four property rights of the PL are subjected to restrictions/ regulations as those are defined by laws on common goods, like security, sanitation, social economy, transporth etc., forming a sphere of public power exercise (Balis, 1951). Plantantion right, surface right, separate ownership right were repealed but existing ones, described in legal documents and registered in land registries were kept in force. Succession acceptance or waiver have to be described in legal documents registered to land registries, thus giving an end to legal insecurity and inconsistency in property rights deriving from succession, enhancing public faith on property transactions.

After 1946 PL affected legislation on properties and properties rights and is always addressing to their three-dimensional legal aspect, but without any binding obligatory and official 3D representation or spatial documentation.

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3. The third dimension of property legal framework

In this section 3D representation of properties or properties rights/ restrictions is presented, in respect to their official legal documentation in PL and in specific legislation on properties, rights or restrictions, so as to fulfill the gap between theoretical legal definitions and actual real world conditions.

3.1. Property Law and 3D provisions

According to the PL as immovable thing is defined "the soil and its components" (Art. 945) and as components of an immovable thing "things firmly connected to the ground, products connected to the ground, underground water and underground springs, seeds and plants after plantation" (Art. 973). Ownership right "extends in the space above and below the immovable thing, unless the law provides otherwise, but owner can not forbid action of third party in that height or that depth, that by this forbiddance the owner has no interest" (Art. 1001). In deep depths or high heights the owner of a property has no particular interest or any profit to gain from property's exploitation and any use of that space, especially in cases of common interest like transport or safety. Thus air flights, or underground metro lines are exempt from any compensation to property owners (Balis, 1951), and this rule of law introduces limitation in rights exercise on a property,

Fig. 1..

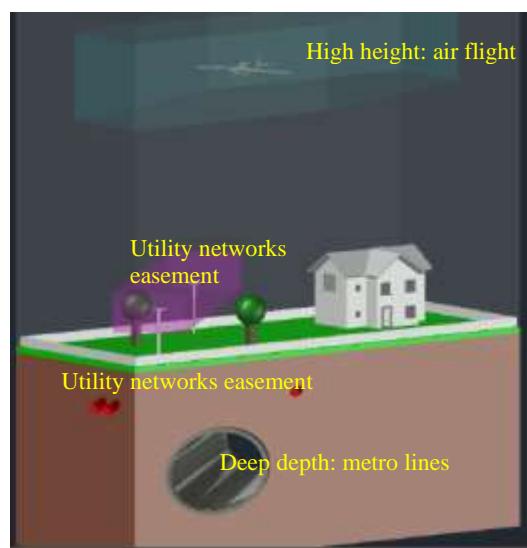


Fig. 1: Immovable think and ownership right according to Greece's PL and common good restrictions (3D representation writers own processing)

3.2. Horizontal, Vertical & vertical combined to horizontal division

According to BLR or the PL all components of a plot are joint ownership. The great scale urbanization of the 1920's, result of the over 1,500,000 refugees flee to Greece after Asia Minor Campaign failure and Smyrna Disaster, made imperative the need for firm ownership rights to a building's floors or floor-parts (apartments). In 1929 the **horizontal division of property** is enacted (Law 3741), even though the PL was not still adopted. Horizontal division is expressed as co-ownership percentage of a specific floor or floor part to the plot. Basements and underground building are also defined as floor. Common spaces, like entrance, stairs, elevator and plot's open space are exempt from division, are indivisible, belonging to all co-owners and no intervention is permitted unless there is full consent. The main breakthrough of horizontal division is the for the first time three - dimensional legal description of divisible property. Apart from a co-ownership percentage to the plot of a building part, this distinctive part is also legally

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described by its exact volume, in a bind legal document, the horizontal property definition deed that is registered to responsible land registry (or cadastral office), before any further horizontal property transfer. In the case of abolition of horizontal property establishment owners have joint ownership of the plot. All provisions of horizontal division legislation were included in PL, according to which “in buildings, separate per floor or per floor apartment, ownership is recognized” (Art. 1002) and “floor or apartment owner is ex-officio co-owner, respectively to his proportion, on all common and non-divisible parts of the immovable thing such as the ground, foundations, external walls, roof, yard” (Art.1117), Fig. 2. Per floor divisible ownership is a combination of severalty and forced co-ownership (Balis, 1951), and the owner has the exclusive right to use and maintain his separate floor or apartment ownership, and has to participate to the maintenance of the common and non-divisible parts of the immovable thing. Restrictions in exploitation of divisible ownership can be imposed either by building’s regulations or by administrative acts on land uses, whereas no interventions and alterations to common and non-divisible parts are allowed.

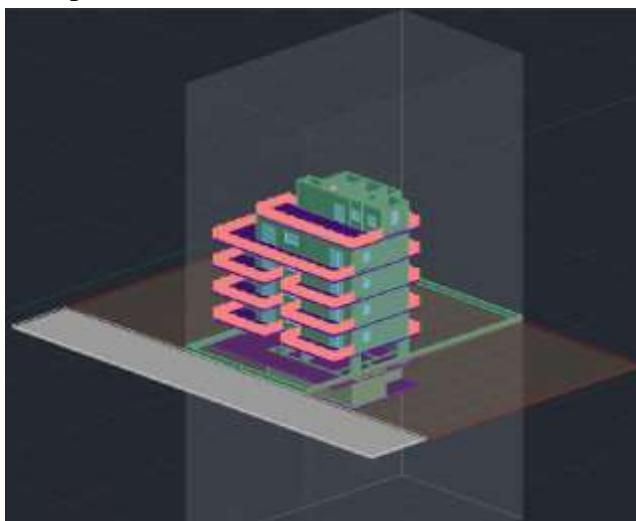


Fig. 2: Horizontal division of property according to Greece's PL & L. 3741/1929. Commonly owned and non divisible are: space above & below the building, entrance, the staircases – lifts, upper floor, non-built up plot area (3D representation writers own processing)

In 1971 the vertical division of a plot was enacted and defined as “separate ownership, in respect to L. 3741/1929, PL Art. 1002 & 1117 provisions, on distinctive buildings constructed in the same plot belonging to one or more co-owners, subject to urban regulations” (Legislative Decree 1024). Each building has the exclusive use of specific plot’s space, in respect to its co-ownership proportion. Vertical division building can be further separated into floors, or floors parts horizontal ownerships, and is defined as vertical combined to horizontal division. Vertical division plot’s co-ownership proportion also applies to the proportional division of building factor (urban planning regulation).

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3.3. Rights and restriction on trees

From the beginning of the Modern Greek State, in 1829, until mid-1970's trees were used to define boundary line between properties and until the enactment of PL were subjected to plantation rights according to which, a tree and its fruits could be subject of separate ownership, belonging to deferent owner than the immovable thing owner. PL abolished plantation rights, with existing ones being indefinitely valid, and included certain regulations for properties borders trees. As trees are considered as component connected solid to the ground, they are not subject of ownership. In cases of boundaries trees, each owner possesses the part of the tree that is within his property (Art 1023). When a tree is located close to boundaries and encroaches neighboring property, PL foresees two distinctive conditions in 3D level: in the case of roots encroaching the neighboring property its owner has the right to immediately cut and keep the roots for himself without any prior notification to tree-owner, while in the case of overhead branches a prior notification, to tree-owner is imperative (Art. 1008). When tree fruits branches hanging over a neighboring property, fruits belong to tree owner, but when fruits fall to the ground, they belong to the property owner (Art. 1009), Fig. 3.

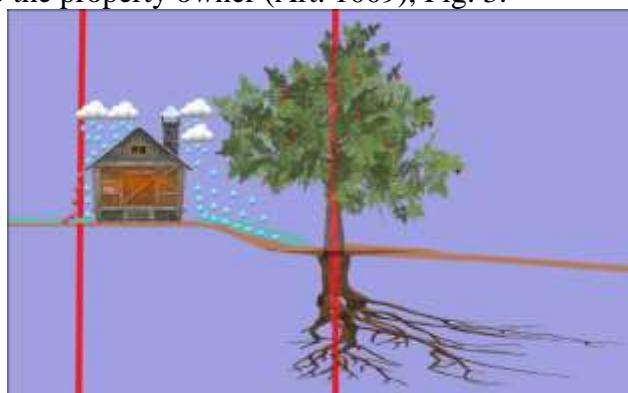


Fig. 3: Cross-section of plot and its boundaries according to Greece's PL's rights & restrictions on trees & rain water (3D representation writers own processing)

3.4. Rain-water, springs and 3D property rights

The owner of low lever agricultural plot has no right or permission to build a construction that changes or prevents natural flow of rain surface running waters on steep slope or rough terrain (Art.1024), Fig. 3. Residential buildings rooftops must prevent rain–water from entering neighboring property (Art.1026), Fig. 3 Even though spring – waters belong to property owner, owner cannot over-exploited waters or cut water - supply to the village, thus private use is forbidden in respect to common interest (Art. 1027-1028). When a well is within the property boundaries, its owner ought to provide water to its neighboring properties for domestic use only and due to disproportionate cost of any other technical solution. Terms and conditions of use and charges are defined in respect to contract law. PL's articles on natural flow surface water, springs and rain water in urban areas strictly refer to dtm and dsm.

3.5. Rights of way

When a residential or agricultural land parcel has no access to public, municipal or community road, its owner can demand from neighboring porperties, having access to the road, to grant right of way, so as the property can have access to transport netowork. Right of way is an upper-surface 3D restriction for land parcel with access to transport network and right for the

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land parcel that is granted access to official transport network. Right of way length and width are determined by court decision and beneficiary ought to compensate the owner of burdened property. Underneath the right of way owner of burdened property can exploit his property as wishes in respect to general PL provisions. Right of way can also be defined as easement on immovable thing (Art. 1120).

3.6. Utility network easements

According to PL a property's owner is obliged to allow, after receiving appropriate compensation, underground passage of water, drain or gas tubes and pipes and overhead or underground electric cables (Art. 1031). In the case of utility networks and for safety and public interest reasons, limited personal easements are established after court decision and payment of appropriate compensation. Limited personal easement, is a property right over another property for the benefit of a certain person, physical or legal, providing to the person the right to use that part of the other property in respect to its purposes (Art. 1188). In contrast to easement on immovable things (rights of way) where an immovable thing has the benefits of using part of another immovable thing, limited personal easement provides privileges to another person to benefit from the use of an immovable thing. Legal entities responsible for utility networks, establish limited personal easements for operational and maintenance purposes of their networks and safety reasons. Those limited personal easements are 3D restrictions to an immovable thing customary use, over or under the ground. Overhead power-lines limited personal easements are defined, as the right of electricity power transmission operators to control or even to forbid 3D development or certain activities on both sides of a transmission line and in certain width within another property, while they have the right to clean the space defined by the easement from trees, vegetation or even to forbid constructions for safety reasons, with no prior notice, Fig. 4. The width and the height of this type of easement are defined by the power line characteristics, the line voltage and the pylons 3D geometric characteristics and 3D development, as those are depicted in official administrative acts, published in the Governmental Gazette.

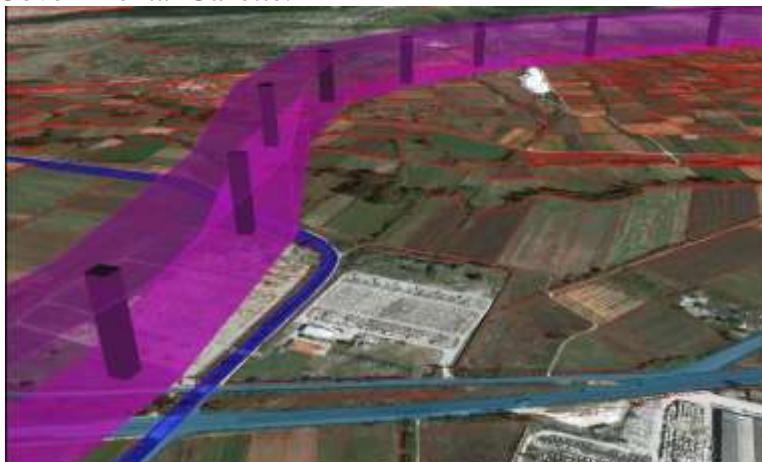


Fig. 4. 3D representation of overhead power lines, pylons & limited personal easements, on 2D current cadastral records (cadastral data source (red) Hellenic Cadastre, overhead power line 3D representation writers own processing)

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Underground limited personal easements for water, sewerage, gas, telecommunications and electricity networks, vary according to network's operational, maintenance and safety characteristics.

3.7. Mines

Since 1910 law "on mines" (ΓΦΚΔ, OGG) excludes from full ownership and separates rights on metal ores, industrial minerals and fossil fuel exploration, research and exploitation. Resources are under the State's strict authority and control, exploitation is only feasible after the completion of mining research and exploration permit, granted by the State. Mine exploitation permit is an official administrative act published in the Governmental Gazette. Exploitation area cannot be over 10,000 sm, depicted detailed topographic map. In public and common spaces and railway lines no mining research is allowed and research area ought to be at least 60 meters radius away from residences and buildings. Enactment of PL preserved mines' ownership separation, between the surface and the underground resources, while permits easement on mines exploitation areas, which obligatory is depicted in detailed topographic diagram (Art. 1149). Mining Code (OGG, 1973), defines two categories of mines: metal ores, industrial minerals and fossil fuel mines, where surface ownership does not extend to the underground resources, and construction minerals mines, where land owner owns the minerals under specific restrictions. Rights on mines are granted after completion of mining exploration and research, and is granted by the state. Permit for mines' exploitation is granted by official administrative act published in the Governmental Gazette, and the exact area is depicted on detailed topographic map, in which the 2d represented surface limits and those surface limits are extent vertically.

3.8. Expropriation

Under special circumstances and for public interest purposes, for public works (e.g. roads, airports, etc. construction), or for environmental or cultural heritage protection, property expropriation is foreseen by receiving appropriate compensation, with the exemption of cities or settlements expansion, whereas all properties ought to contribute part of their property for common and public spaces creation without receiving any compensation. Expropriation extents on the surface, under and over the ground.

3.9. Seashore and beach borderline

Under RBL two coastal areas of enhanced protection are defined, seashore and beach (a strip of land behind seashore). Seashore is common good exempt from any transaction and is the area between coastline and the line defined by the maximum winter wave exceedance. According to law on "Seashore and beach" (OGG, 2001) seashore is public property, under public administration protection and management and beach zone is a protective land strip, up to 50 m wide, where construction activity is prohibited. Seashore and beach borderline is defined by official administrative act, and land owners, within the two zones, have the right to compensation. For zones determination specific criteria are set (geomorphology, coastal natural resources, sea bottom morphology etc.). In cases of erosion or port development, construction works are under the strict supervision of public administration, and after their completion belong to public authority. Within the two zones Ministry of Finance can grant permit on limited right to use part of beach or seashore areas for recreational activities. In the case of

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constructions, for commercial, industrial, transportation, etc. purposes, public authorities grant right to construction permits on seashore and beach, on sea bottom or adjacent marine area.



Fig. 5: 3D representation of seashore and beach boarderlines, on 2D current cadastral records (cadastral data source (red) Hellenic Cadastre, 3D representation writers own processing using Google Maps)

3.10. Surface ownership right

In 2011 surface ownership right was reintroduced in Greece's legislation on properties, but only in the case of public real estate (L. 3986) or ecclesiastical real estate (L. 4235/2014). As public real estate is defined any plot or land parcel owned by Greek State, or legal entity of public law or legal entities of public organizations under private law, regardless of its use or land cover and as ecclesiastical real estate is defined land parcels and plots that owned by Church of Greece, local bishoprics or monasteries. As surface right is defined the three dimensional right of a physical or a legal person to construct building on the surface of public property, and the building is defined as any construction over or under the ground. Surface right is an immovable property right, defined in deeds, registered to land registry or cadastral office and have duration from 5 to 99 years. Surface right owner is due to periodically compensation to the State.

4. Discussion

According to PL the accurate description of immovable things, especially plots and land parcels boundaries, is mandatory and is not limited in two-dimensions. In parallel PL and relevant legislation on properties and property rights explicitly foresees 3-D full ownership rights and 3D restrictions on full ownership rights or property use in respect to common interest, public or private law, described in legal binding documents registered at land registries or the cadastral offices. However this 3D extend of the right, or restrictions on right exercise and property use, have not yet been technically and accurately defined. Only in detailed 2D topographic diagrams and maps the boundaries of immovable thing are depicted. Full ownership rights on immovable things, that are extended above or below the ground, are only described in word content in deeds or other legal binding documents, whereas full ownership rights restrictions, property use restrictions and combined full ownership right and use restrictions are also only depicted in 2D topographic diagrams or top views, cross sections & longitudinal models of buildings, or described in word content (especially in the case of utility network easements). In various cases 3D restrictions on property rights/ use are imposed by urban planning legislation, and are also documented only in word content. It is obvious, that even though there is a wide range in 3D

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legal definitions of properties, property rights and restrictions, there aren't any specific and official technical specifications for their 3D representation, even though respective official technical specifications for their 2D representation already exist, Table 1.

Table 1: Legal and technical 3D Rights & Restrictions on Properties comparative analysis

Thing/ Right/restriction	Legal Framework	Legal Binding Document	3D legal description	3D Representation
Immovable thing	PL	Deeds/ official governmental or administrative acts	YES	No/ Only 2D boundary drawing
Ownership right	PL	Deeds/ official governmental or administrative acts	YES	NO
Property division - horizontal/ vertical/ vertical combined to horizontal	-PL/ L.3741(1929)/ urban planning regulations	Deed	YES	NO/ 2D boundary drawing and 2D top views, cross section & longitudinal model
Trees (rights-restrictions)	PL / urban planning regulations	Under conditions in Deeds or officially approved building permit	YES	NO/ in some cases of building permits only 2D position
Rain water natural flow agricultural areas	PL	In some cases by court decision	YES	NO/ 2D legal description in court decision
Rain water natural flow residential buildings	PL	None	YES	NO/ Under conditions in 2D top views, cross section & longitudinal model of officially approved building permit
Spring/ Spring village water supply	PL	Deeds/ court decisions	YES	NO/ 2D boundary or water supply network drawing
Rights of way	PL	Deeds/ official governmental or administrative acts/ court decision	YES	NO/ 2D width length topographic diagram
Utility Network Easement	PL/ specific legislation on utility networks legal entities	Court decision (on the bases of expropriation rules)	YES	NO/ linear determination, width described by word content - height or depth described by word content
Mines	PL/ L. ΓΦΚΔ (1910)/ Mining Code (1973)	Official administrative permit	Yes	NO/ 2D detailed topographic map of surface boundaries, word content on 2d surface boundaries unlimited underground extension
Expropriation	PL/ Expropriation Code	Official administrative acts after court decision	Yes	NO/ 2D detailed topographic diagram of boundaries and all things firmly connected to the ground (over or under)
Seashore & beach borderline	PL/ L. on Seashore and Beach	Official administrative decision	YES	NO/ 2D detailed topographic diagram, seashore borderline can enter the sea in case of officially approved constructions
Surface ownership right	L. 3986 (2011)/ urban planning regulation	Contract after official administrative decision or law	YES	NO/ 2D detailed topographic diagram of property boundaries on which surface ownership right is exercised/ 2D top views, cross section & longitudinal model of officially approved building permit

5. Conclusions

From the beginning of the Modern Greek State, legislation on properties and property rights is full of three dimensional legal definitions, either with references to Byzantine – Roman Law, or to Property Law, after its enactment. PL foresees and describes property rights 3D spatial exercise. However there are no valid, specific and official technical specifications for the spatial depiction of either 3D properties or 3D rights and 3D restrictions. Only official technical specifications on 2D topographic diagrams of property boundaries, 2D maps for utility networks, or in the case of buildings their 3D development is depicted in 2D top views or sections. In this paper laws on properties, property rights and restriction and their third dimension is in detail presented and analyzed. Future work could focus on detailed technical description of this third dimension. Furthermore future research, on how urban or spatial planning legislation affects 3D rights and restrictions on properties, is essential, especially nowadays that Underground Spatial Planning and Urban Air Mobility are hot topics.

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Dr. Dionysia – Georgia Ch. Perperidou is Adjunct Lecturer, University of West Attika, Department of Surveying and GeoInformatics Engineering, in the field Cadastre, GIS, Urban Planning and Technical Legislation. Has over 12 experience in Hellenic Cadastre, head of Athens & Voula/Vouliagmeni Survey Offices. Scientific advisor at Hellenic Republic Asset Development Fund/ Helliniko project, Public Properties Company SA, Independent Power Transmission Operator SA, on Cadastre, urban planning, integrated technical and legal documentation of large scale properties and properties rights.

Georgios Moschopoulos started working as a land surveyor in 2002. He is an experienced Surveyor Engineer with a large variety of expertise: Surveying layouts, GNSS Campaigns, Geodetic networks analysis, Precise levelling campaigns, Photogrammetric studies, Cartography, Remote sensing. He is certified UAV-pilot (certificate from the Public Agency of Civil Aviation). He is also involved in numerous cadastral mapping studies. He also has great skills regarding GIS softwares and databases. He is an active member of a scientific society which investigates the coordinates transformation among different geodetic reference frames for the Hellenic area. The last 4 years he has been responsible for many GNSS campaigns in Northern Greece (prefectures of Chalkidiki, Thessaloniki, Kilkis, Serres and Drama) related to the aforementioned project

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