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"MULTIDISCIPLINARY APPROACH TO CONTEMPORARY RESEARCH - Cultural and Industrial Heritage"

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CENTRAL INSTITUTE OF CONSERVATION, BELGRADE
SCIENTIFIC ASSOTIATION FOR THE DEVELOPMENT AND AFFIRMATION OF NEW TECHNOLOGIES

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PREFACE

The Proceedings includes the selected Papers and Abstracts presented at The Third International Student Scientific Conference "Multidisciplinary Approach to Contemporary Research". The Conference was held from 21st to 22nd December 2019 at the Faculty of Agriculture, University of Belgrade, Nemanjina 6, Zemun, Belgrade. It was organized by Central Institute for Conservation, Belgrade, Scientific Association for the Development and Promotion of New Technologies, Belgrade and Faculty of Agriculture, University of Belgrade.
As in previous years, the goal and main idea of the conference were students to participate in writing of scientific papers so that they can connect science and industry in the future. Also, students who wish to pursue a scientific degree in the future had the opportunity to practice all skills and gain experience. It is for this reason, that only students were entitled to participate at the conference, who with the obligatory assistance and monitoring of teachers and/or colleagues, wrote and prepared papers and presentations.
Therefore, the Conference brought together students from various fields. Papers presented a multidisciplinary field of view and connection between different and various sciences, where all participants, could observe contemporary problems and solutions as well as trends in particular scientific disciplines.
The aim of this Conference was, also, to provide a Forum for students and researchers from various countries to exchange their ideas and achieved results.
The Conference brought together the participants from Universities, Innovation Centers, Institutes and enterprises from different countries: Serbia, Croatia, Sweden, Macedonia, Ukraine, Russia, Spain, Canada, Bosnia and Herzegovina, Greece and others.
Unlike the previous years, the conference subtitle was "Cultural and Industrial Heritage", to which a group of papers was dedicated, with the idea of reminding young people of the importance of preserving and studying objects of historical value.

The first day of the Conference was held at the Faculty of Agriculture, University of Belgrade, where the participants orally presented their papers. The second day was devoted to poster presentation and discussion about papers at the premises of Scientific Association for the Development and Promotion of New Technologies, Belgrade.
All papers have been reviewed. Considering that this was the Students Conference and the age and experience of the first authors, the reviewers *have neglected both* language and textual mistakes which have not provoked the ambiguity of the papers.
We would like to thank all authors who have contributed to this Proceedings and also to the Scientific Committee, Organizing Committee, reviewers, speakers, chairpersons, and all the conference participants for their support for delivering a successful scientific meeting.

Editors

CENTRAL INSTITUTE FOR CONSERVATION, BELGRADE
SCIENTIFIC ASSOTIATION FOR THE DEVELOPMENT AND AFFIRMATION OF NEW TECHNOLOGIES

PREZENTACIJA I ANALIZA GEOMETRIJSKIH STRUKTURA OBJEKATA SVETSKE ARHITEKTURE

PRESENTATION AND ANALYSIS OF GEOMETRIC STRUCTURES OF CONTEMPORARY BUILDINGS IN THE WORLD ARCHITECTURE

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Apstrakt: *Ključna uloga arhitektinskog dizajna objekata današnjice zasigurno leži u geometriji njihove strukture. Saglasnost građevinskih tehnologija i materijala omogućila je gradnju velikog broja atraktivnih 3D struktura u svetskoj arhitekturi, onih sa jednostavnom geometrijom, kao i drugih sa kompleksnim geometrijskim svojstvima. Rad predstavlja nekoliko arhitektonskih dostignuća posebne estetke i dizajna i diskutuje njihove geometrijske strukture. Analizirane su četiri 3D strukture, nastale primenom površi hiperboličkog paraboloida, koje predstavljaju izvedene arhitektonske objekte čuvenog arhitekte Feliksa Kandele poznate u svetskoj arhitekturi.*
Ključne reči: *hiperbolički paraboloid; arhitektura; geometrijska struktura; 3D model.*

Abstract: *The key-role in architectural design of contemporary buildings certainly lays in geometry of their structure. The compliance of construction technologies and materials brought variety of attractive 3D structures, the ones with simple geometry, as well as the other with complex geometric properties. This work presents several architectural achievements of exceptional aesthetics and design and discusses their geometric structures. Four 3D structures, generated from the surface hyperbolic-paraboloid, are chosen to present architectural designs, of famous architect Felix Candela, well known in the architecture of the world.*
Key words: *hyperbolic paraboloid; architecture; geometric structure; 3D model.*

1. INTRODUCTION

Geometry, beside the symmetry and proportions [1] plays the key-role in the aesthetic impression of an architectural design of a building. The complexity and variety of geometric shapes offers to a designer plenty of possibilities for a creation, although interesting structure can arose even from a simple shape, like a cube, or sphere. This research was inspired by an attractive geometric surface, named hyperbolic paraboloid.

Hyperbolic paraboloid, shortened hypar, is a doubly curved surface which can be generated in two ways: by translating a parabola along the other parabola, that have the opposite curvature, or rulling the straight generating line along the two guiding lines – directrices set in parallel planes, by the third infinite directrise), thereby creating a saddle surface [2]. Because of that hypar is considered as a ruled surface. As in the case of the two parabolas, there are two systems of straight generating lines. This is an important advantage of hyperbolic paraboloid for application in architecture, because of its static-stability characteristics (equal distribution of forces) [3]. Its name derives from the fact that it has a horizontal cross-sectional curve - hyperbola, while the vertical cross-sectional curve is parabola.

Despite being a curved surface, a hypar can be thus geometrically constructed with straight lines. It is an important reason for the use of hypars in roof constructions. Interesting is how hypars can be joined together, at their edges (directrices), or cross-sectional curves to make variety of beautiful structures [4]. Hence, it is very attractive surface and has numerous examples of application in architecture, especially in the 1950s.

The surface is commonly defined by spatial quadrilateral set at the different levels of the building structure. A wide variety of segments are obtained by cutting the initial hypar along intersecting curves – parabolas, or lines- generatrixes of the surface, leading to the compositions of extraordinary spatial structures. Also, attractive patterns may be formed by combining with other surfaces, for example, cones or cylinders. The maximum range of the application of this surface in architecture is achieved by Spanish architect Felix Candela (1910-1997), in the second half of the 20th century [5]. Different ways of cutting and connecting the segments of the hyperbolic paraboloid received original solutions and the richness of the attractive geometrical shapes and applied to the objects of different functions.

1.1 Felix Candela and his opus with application of hyperbolic paraboloids

Felix Candela was one of those architects that highlight geometric form of the structure prior to materials applied [5]. He was inspired by a form of hyperbolic paraboloids, i.e. thin shell concrete structures. His experience in restoring military facilities during Spanish war helped him to become familiar with construction techniques of such structures, which he later studied from the theoretical point of view in his scientific career [6]. His construction solutions achieved excellent results in thinness of a shells and stiffness of other constructive elements [7].

Some of the creations of Felix Candela (Fig.1a) [8] based on the geometry of the surface – hyperbolic paraboloid, famous in the world architecture are: Restaurante del Oceanagrifico and Oceanographic pavilion-Spain 2002, Iglesia de San Jose Obrero Church - Mexico 1959, Celestino Fernandez factory-Mexico 1955, Hotel Casino da la Selva-Mexico (Fig.1b) [9], Restaurante los Manantiales-Mexico (Fig. 1c) [10], Palacio de los deportes – Mexico (Fig. d) [11], San Lazaro Metro Station-Mexico (Fig.1e) [12], San Vicente de Paul Chapel-Mexico (Fig. 1f) [13], Bacardi Rum Factory- Mexico 1960, etc.

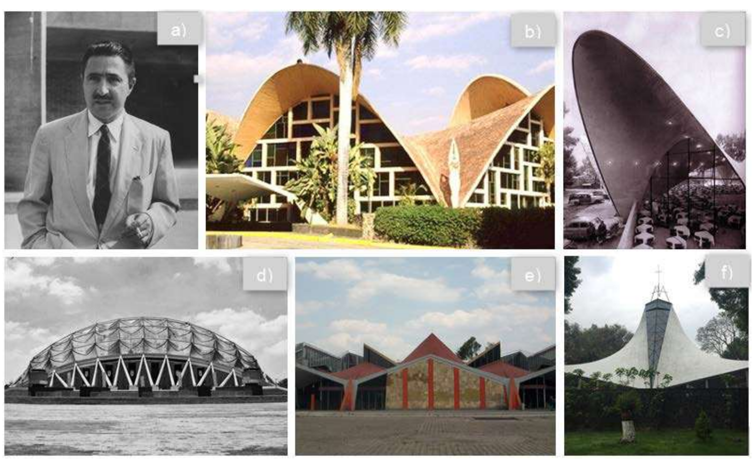

Figure 1 Felix Candela and his hyperbolic paraboloids

2. MATERIALS AND METHODS

Several methods will be applied in the analysis of the spatial structures, i.e. present in the World architecture, and generated from hyperbolic paraboloid:

- geometric constructions and theory (Descriptive geometry methods)
- computer modeling (AutoCAD modelling)
- image collecting (Internet sources of images applied in practice).

Each of the analyzed complex structures (chosen architectural object) is decomposed geometrically, by Descriptive geometry methods and modeled its conceptual model in 3D environment. Geometric settings of hyperboloids are recognized and geometric procedures divided into separate modelling phases. The four buildings, the designs of Felix Candela, were chosen for the analysis, with respect to their different appearance, and geometric procedures for generating their geometric shape. They are presented in consecutive modelling steps. The final structure is presented without detailed analysis of its engineering construction.

3. 3D MODELS OF HYPERBOLIC PARABOLOIDS WITH GEOMETRIC INTERPRETATIONS

The authors' idea was to identify an architectural object as an imagery term and associate it with a basic form of hyperbolic paraboloid and appropriate geometry fitting whole elements or its segments into the complex 3D structure. Hence, the "flower", "butterfly", "orcid" and "mushroom" represent the Restaurante del Oceonagrifico - Valencia, Spain, 2002 (Fig. 2), Iglesia de San Jose Obrero Church-Mexico, 1959 (Fig. 5), The Oceanographic pavilion - Spain, 2002 (Fig. 8) and Celestino Fernandez Factory - Mexico, 1955 (Fig. 11) respectively.

3.1. "The flower" – structure composed of eight hyperbolic paraboloid segments

Figure 2 Restaurante del Oceanagrifico, Valencia, Spain, 2002

https://www.archdaily.com/496202/ad-classics-los-manantiales-felix-candela/53461fadc07a80f94d00009f-ad-classics-los-manantiales-felix-candela-photo

An elegant structure on the water surface, constructed as concrete thin shell above glass cylindric façade is composed of eight equal petals with parabolic contours (Fig. 2). The petals are segments of hyperbolic paraboloid, radially arranged to obtain the "flower" shape. Since this object is a part of marine complex

The initial hypar is defined by adequate spatial quadrilateral over the deltoidal base. The 3D structure was created by composing eight segments of hyperbolic paraboloid. Each segment is created by slicing of the basic hyperbolic paraboloid along parabolas. Two are in inclined planes, and the other two in the vertical (internal angle between the vertical planes is 45°) and they intersect at the apex of the contour parabola of the basic hypar (Fig. 3). The final structure is obtained by 3D polar array of a segment, filling the angle of 360º (Fig.4).

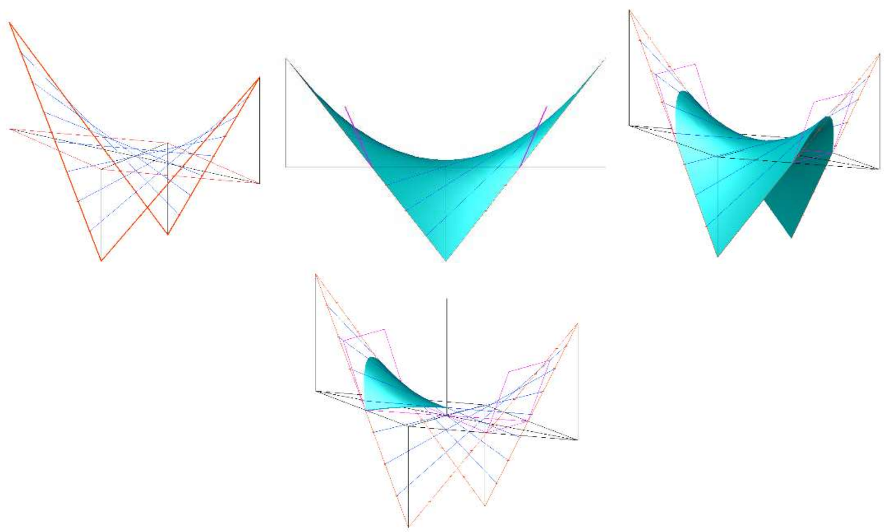

Figure 3 Modeling steps in creation of HP segment

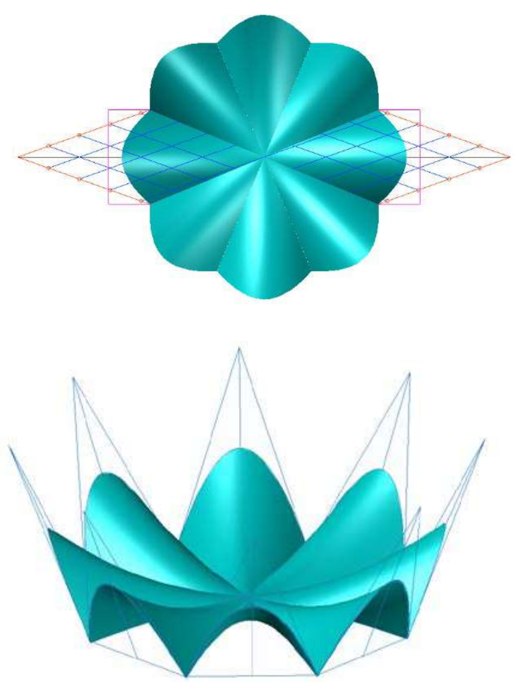

Figure 4 Top view and axonometry of the unique structure – "the flower"

3.2. "The butterfly" – structure composed of the two identical hypars

Figure 5 Iglesia de San José Obrero Church, Mexico, 1959

https://45gradosmty.files.wordpress.com/2015/10/sj2.jpg

The dominant roofing structure is very elegant while combining several materials: concrete (hypar), glass (facade) with aluminum window profiles in an appropriate grid on the facade. Indirect illumination of the interior enables the impression of mystics, needed for a church ambient (Fig.5).

The 3D structure is formed by joining two identical elements of the hypar set over the deltoidal base. The initial hypar is set over the rhombic base, i.e. the two joined equilateral triangles and then rotated at a certain angle around horizontal line – connector of the lower vertices of a quadrilateral (Fig. 6). It is mirrored in relation to a vertical plane of symmetry, hence providing lighting space between the two parts – wings of the roof (Fig. 7).

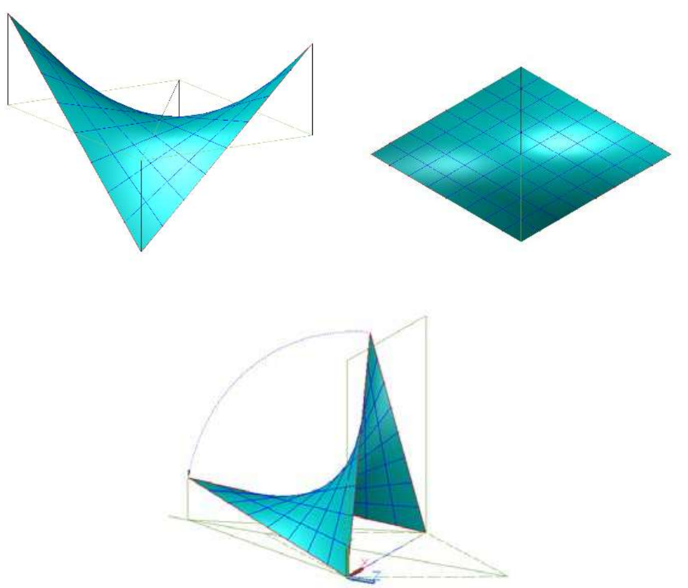

Figure 6: Initial hypar and its rotation

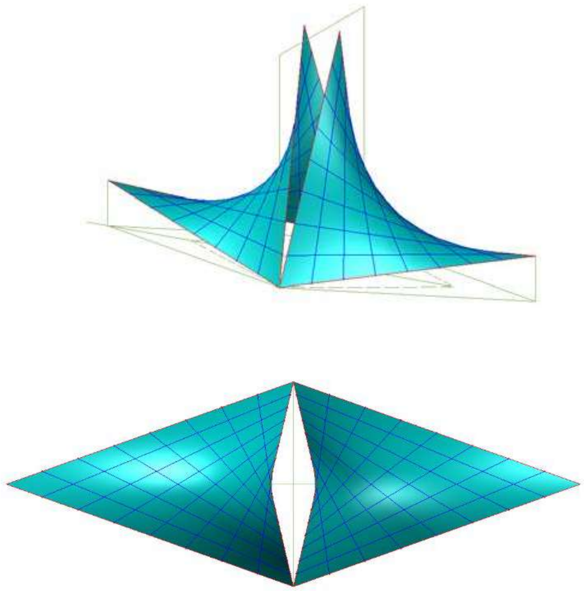

Figure 7: Final structure – "the butterfly"

3.3. "The orchid" – Structure composed from the three segments of hypar

Figure 8 The Oceanographic pavilion, Spain, 2002

https://upload.wikimedia.org/wikipedia/commons/7/79/Candela_Oceanographique.jpg

An elegant tripartite roof, resembling the orchid flower, set over the cylindric glass façade, mirroring in a water surface, is a part of a larger marine complex along with Restaurante del Oceanografico, presenting the shiny jewel of architecture in Spain (Fig. 8).

The structure is formed by dissolution, of the three congruent segments of hyperbolic paraboloids, on three planar curves, parabolas, that meet at the vertex point, and are located in three different vertical planes, which belong to the heights of the triangular base.

The generatrixes of the initial hyperbolic paraboloid, set by the spatial quadrilateral ABCD, are extended towards vertical plane while obtaining parabolic section in it (Fig. 9). After generating the surface, the new equilateral triangle is drawn in the base plane (the span of the parabola is equal to the edge of the triangle). The surface is cut by two vertical planes over medians of the base triangle, hence deriving unit surface of the complex structure. The unit surface is multiplied in polar setting (polar array), where three surfaces meet in unique vertex (Fig. 10).

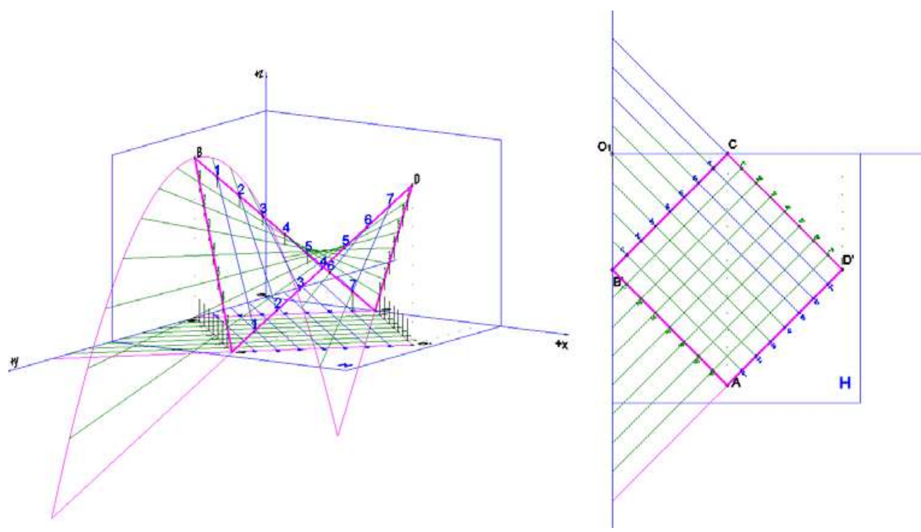

Figure 9 Extension of the basic HP towards profile plane: axonometric view and top view

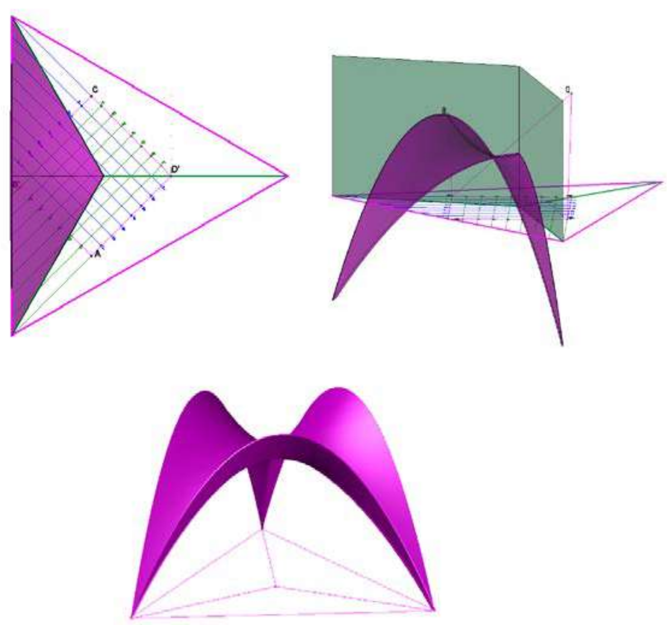

Figure 10 Cutting of the basic unit and creation of the tripartite structure – "the orcid"

3.4. "The mushroom" – Structure composed of four hypars

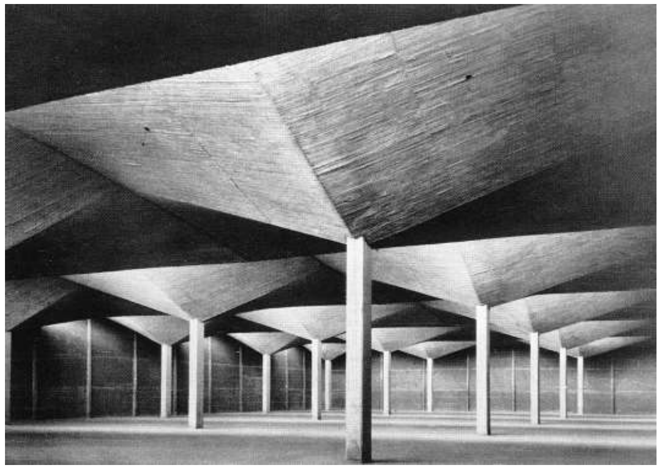

Figure 11 Celestino Fernandez Factory, Mexico,1955

https://twitter.com/vaumm/status/733556392875843589

The purity of the concrete roof structure under the rectangular grid of columns highlighted Candela's attractive simplicity in design (Fig. 11).

The basic unit of the roof structure is a hypar set in specific positions of directrices, i.e. spatial quadrilateral has three coplanar vertices (in the same horizontal plane), while the fourth vertex is lowered (Fig. 12). The base shape is a square. Complex systems can be established due to the possibility of connecting more elements of hyperbolic paraboloids, by overlapping their neighbor directrices, in this case by establishing double symmetry. Hence, rather simple construction appears while obtaining the final complex structure (Fig. 13), especially suitable for open spaces, like factories.

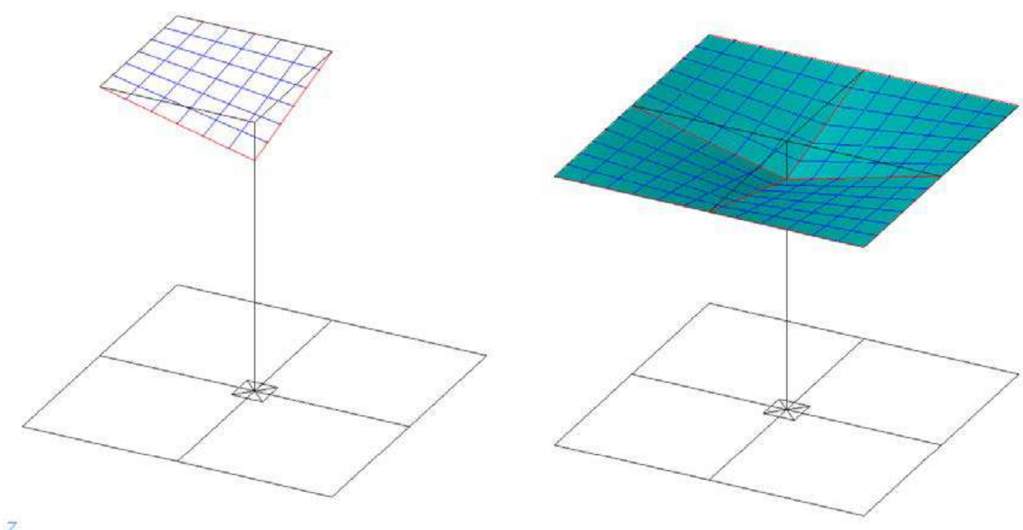

Figure 12 The setting of a basic hypar and creation of a four-hypar unit

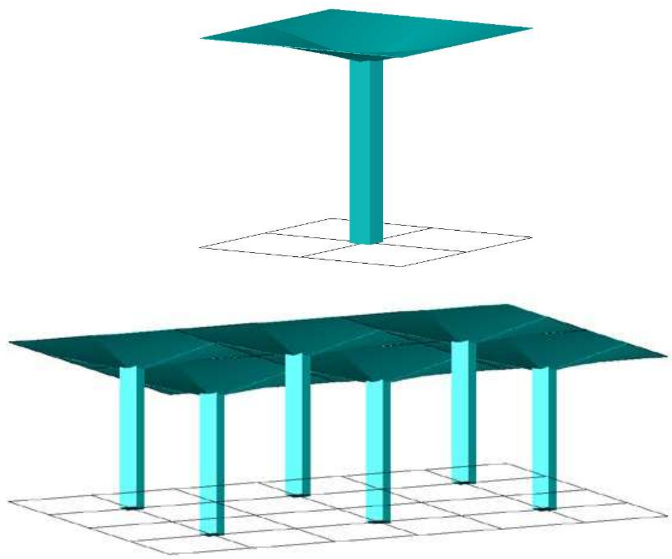

Figure 13 Single unit and the whole open-space structure – "the mushroom"

4. CONCLUSION

This research shown several possibilities of the utilization of the surface – hyperbolic paraboloid in architecture, through the definition of geometric procedures which obtained various spatial structures. The design creations of famous architect Felix Candela, although most of them appeared in far 1950s, are still provocative, attractive and inspirational. Beside the fact that aesthetics of creation depends on imagery and creativity of a designer, it is shown that geometric knowledge of surfaces and their regularities, geometric constructions and 3D computer modelling techniques is good foundation for obtaining elegant and attractive spatial structures.

References

[1] **Tartalja, I.**, *The aesthetics of Đuro Daničić*, HERAedu, Belgrade, Serbia, 2019.
[2] **Obradović, M.**, *Computational geometry with 3D modelling,* University in Belgrade – Faculty of Civil Engineering, AGM knjiga, Belgrade, 2010 (in Serbian)
[3] **Nestorović, M.**, Construction systems – The principles of constructing and shaping, Faculty of Architecture, Plato, Belgrade, Serbia, 2000.
[4] **Krasić S.**, *Geometric surfaces in architecture*, Faculty of Civil engineering and Architecture - University of Niš, Niš, Serbia, 2012 (in Serbian).
[5] **Barallo, J., Sanchez-Beitia, S.,** *The geometry of organic architecture -The works of Eduardo Torroja, Felix Candela and Miguel Fisac*, Bridges 2011: Mathematics, Music, Art, Architecture, Culture, pp. 65-72.
[6] https://www.archdaily.com/496202/ad-classics-los-manantiales-felix-candela approached in December 2019
[7] https://artmuseum.princeton.edu/legacy-projects/Candela/works.html approached in December 2019

Web images

[8] https://www.archdaily.com/591415/spotlight-felix-candela/56a8e32ce58ecee7e10000ce-spotlight-felix-candela-image Fig. 1a

[9] https://upload.wikimedia.org/wikipedia/commons/1/10/Felix_candela_en_Casino.jpg Fig. 1b

[10] https://www.archdaily.com/496202/ad-classics-los-manantiales-felix-candela/53493e92c07a8073b4000067-ad-classics-los-manantiales-felix-candela-image Fig. 1c

[11] https://cultura.cervantes.es/nuevayork/en-US/hispanismo-en-usa%3A-la-arquitectura-intercontinental-de-felix-candela/117054 Fig. 1d

[12] https://upload.wikimedia.org/wikipedia/commons/3/34/San_Lazaro_03.jpg Fig. 1e

[13] https://foursquare.com/v/capilla-de-san-vicente-de-paul/4df907a1ae608a367ceb9bfa?openPhotoId=5af1eaa3da2e00002cfbb31d Fig. 1f

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