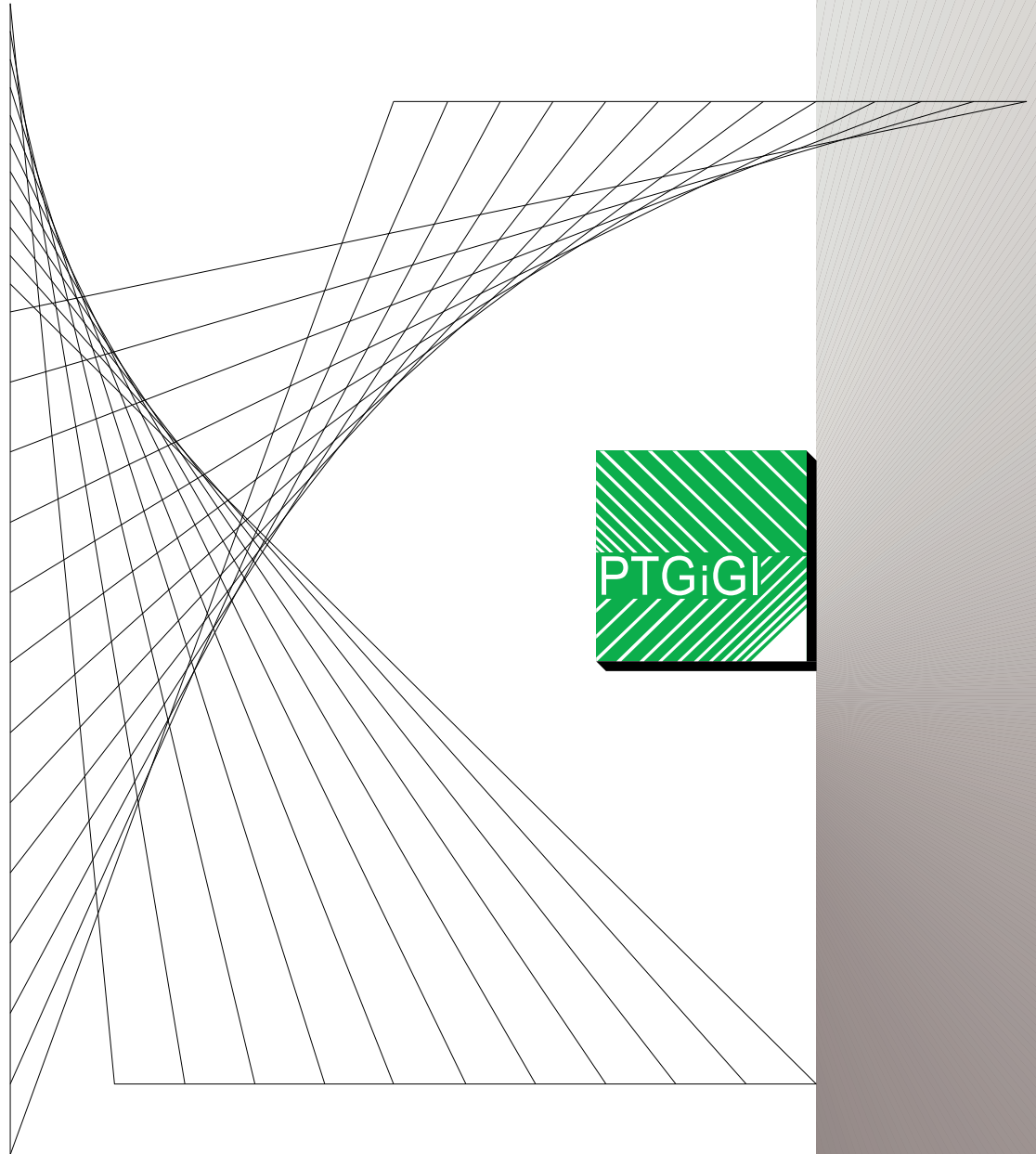


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Editorial office address:

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COMMENTS ON ANDREA POZZO'S ILLUSIONISTIC DOMES

Antonina ŻABA

Faculty of Civil Engineering
Silesian University of Technology
ul. Akademicka 5, 44-100 Gliwice, POLAND
e-mail: Antonina.Zaba@polsl.pl

Abstract. One of the most important works of the Baroque era is an illusionistic painting presenting dome with a high drum and a lantern from church of St. Ignatius in Rome. The author of this painting is Andrea Pozzo SJ (1642–1709). Painted in the year 1685 the painting became an archetype for many paintings all around Europe. The aim of this article is to present the comments on the methods used by Pozzo for constructing the perspective of the domes.

Keywords: Andrea Pozzo, Baroque, illusion, perspective, quadrature, dome

1 Introduction

The church of St. Ignatius in Rome, in which's interior there is a illusionistic painting, so called Andrea Pozzo's dome¹, to be found, was erected in the years 1626–1659 by Orazio Grassi SJ (1583–1654). In the plan of the church, in the point where the nave and transept cross, it was proposed to make a dome situated on a high tambour (drum) and crowned with a lantern. This combination of architectural elements in this article, for simplification will be called a dome. Although the dome was redesigned many times and consulted with best architects of Rome it was never accomplished [5]. The structural dome was replaced by it's illusionistic image². It was painted using oil technique on canvas sheets. The connected sheets were fixed to a wooden construction. So prepared painting was hung in the point of crossing of the nave and transept. The painting had diameter of about 17 m³, what caused many artistic and organizing problems for it's creator⁴. Finished in 1685 the painting was already "improved and upgraded" in the year 1693, as Pozzo stated himself, [6/Fig. 90/t. 1]. It was so, among other reasons, because the canvas used to ripple, what made proper reception of the illusionistic work impossible. In the beginning of XIX century there was a fire in the church, that damaged the painting. The destruction was so large, that the conservator (1753-1831) had to reconstruct the painting basing on the sketches, drawings and other illustrations, left by Pozzo. These works were conducted in 1823. In 1891, near the church of St. Ignatius there was a large explosion of black powder stored in a warehouse close to the church. The canvas sheets, on which the painting was on were torn and deformed by the shake caused by that explosion. So destroyed painting was kept in impregnated cloth covers and in it's place a drapery was hanged, called *provisorium*. The painting was restored by Pico Cellini

¹ In connection with the fact that this painting is often presented in the Internet it was decided not to include it's photography in this article.

² According to the literature as the reason for resignation from building the dome were financial problems of Rome's section of Jesuits. Other sources point out a protest made by Jesuits neighbours, the Dominican monks, according to whom the dome of St Ignatius would shade their library, what would have worsen conditions of it's use.

³ In literature the dimensions vary from 17 to 18 m.

⁴ Further source on realization of the projects are available in [8].

(1906-2000) only in 1962-1963. Then it was installed in place of original XVII century painting created by Pozzo⁵. Pozzo's painting caused and still does cause many emotions and discussions. In the Baroque era it was criticized by Pozzo's contemporary artists. Currently many people evaluate the dome painting critically, comparing it to greatest work of Pozzo, a painting to be found in the nave of St. Ignatius' Church⁶.

2 Domes by Andrea Pozzo

The dome theme was undertaken by Andrea Pozzo for a few times, both as artistic creation and his tractate *Perspectiva...* [6]⁷.

Work, that made Trento born Pozzo famous and made it possible for him to create in the capital was decoration of St. Francis Xavier in Mondovia. One of the elements of this decoration was an illusionistic tambour painted on the vault of the church's nave in 1676-1677 [6/ Fig. 92/I]. According to the description accompanying the image it shows „an octagonal dome”⁸. In the literature the tambour is also often called a dome.

2.1 Illusionistic paintings of domes among Pozzos artistic creations

Pozzo is author of a couple of illusionistic dome paintings, which are situated:

- in Rome in St. Ignatius Church (oil on canvas) from 1685; this dome and this image, which were presented in the tractate *Perspectiva...* [6] were inspiration for many artists;
- in Arezzo, in the monastery church of St. Flora and St. Lucina (oil on canvas) dated 1701-1702;
- in Vienna, in University's Church (painting on barrel vault) dated 1705.

Some sources ascribe Pozzo some other dome paintings, which were probably made by his apprentices or in collaboration with them, for example the domes in St. Bartholomew's church in Modena, Jesus' Church in Frescati and St. Blaze's in Montepulciano.

To our times were preserved *bozzettas*⁹ of Pozzo's domes, kept in Rome's museums:

- in National Gallery of Antique Art, dimensions 100 × 106 cm;
- in Museum of Roman Baroque, dimensions 76 × 77 cm.

2.2 Domes in Pozzo's tractate *Perspectiva...* [6]

In Pozzos tractate we can find numerous presentations of different domes or conches. These domes crowned buildings, architectural interiors, triumphal arches and scenic decorations. Also some views of apses are to be found there. In volume one of Pozzo's work there was presented a geometric construction (Fig. 90/I) connected to a method of drawing perspective using side perspective (Fig. 1). In volume two Pozzo solves the problem of drawing a perspective on a ceiling using the method of points where seeing rays pierce the background. This method was analyzed by Kazimierz Bartel [4/ p. 549-552]. Description of volume two's construction is basing on giving guidelines, that is information on the object (simplified projections and sections), location of the image and the observer. These elements

⁵ Description on the damage with pictures available in [8/ il. 38 and 39]. Compare [1/ p. 160-170] and [4/ p. 53].

⁶ See [7].

⁷ In the article author is referring to published in 1719 Latin-German edition of the tractate as to very popular version in Central Europe. Further parts of article use markings in following order: fig. number/volume number, for example Fig. 90/I.

⁸ The term is referring to octagonal foundation of presented object. It was introduced in the original Latin-Italian text as well as in it's many translations.

⁹ The studies took form of sketches and paintings lesser than the original. They have been presented to patrons and other recognized authorities before the start of the works on original, for them to assess the value of future work. Modern literature also indicates a miniature of a sculpture, which was basis for making it's original – formerly called a *modello*.

are missing in volume one. The author repeated in volume two the lecture and the illustration (Fig. 50/II) from volume one again (Fig. 90/I) but had made some slight changes in construction's description.

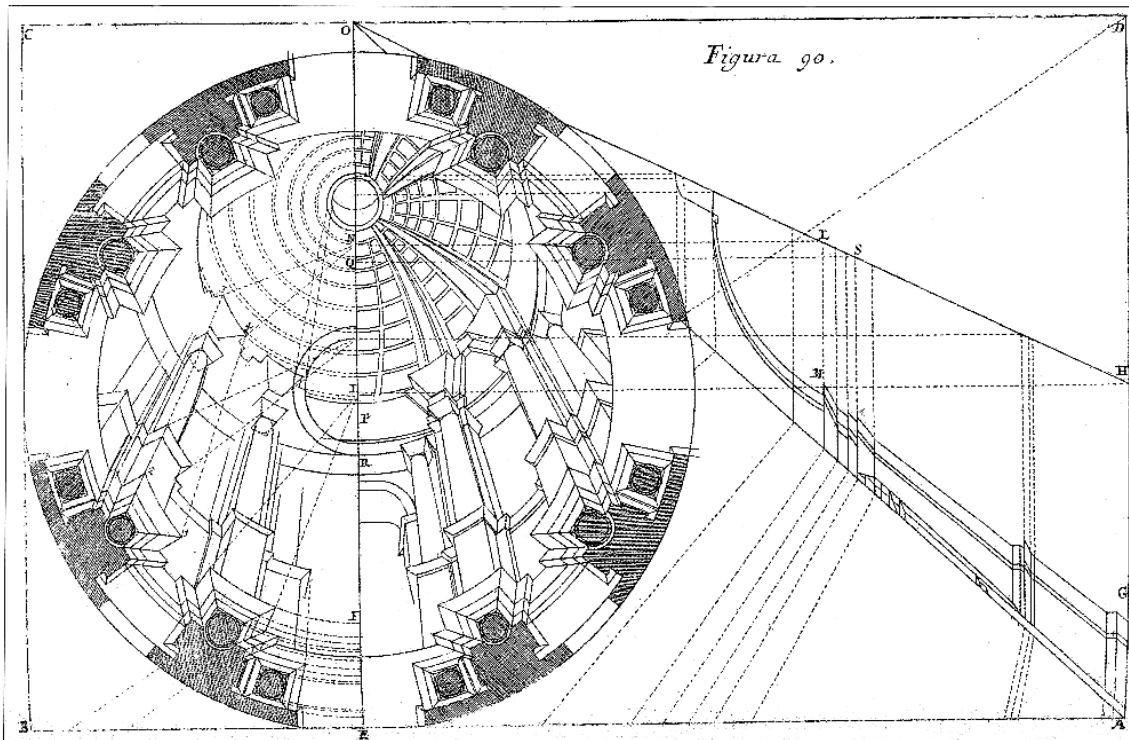


Figure 1: Andrea Pozzo, *Perspectiva...* [6] Fig. 90/I, construction of horizontal perspective of the dome using elements of side perspective

Information on dome presentations in the *Perspectiva...* tractate [6] were included in table one (at the end of the article).

3 The evaluation of methods for constructing the perspective of a dome by Andrea Pozzo

The author of this article decided to compare the above-presented methods of constructing perspectives of domes. In connection, for the experiment consisting in constructing of domes author invited students of II year of Faculty of Civil Engineering at Silesian University of Technology, which are taking part in works of student's scientific club "Szczablina" (Eng. "rung", Ger. "Sprosse") at Faculty of Civil Engineering, which's scientific supervisor is the author of this article.

First the students were invited to construct the perspective using the method of points of piercing the background with the sight rays. Drawing with this method was not difficult for the students at all, what was confirmed by sketches made by them. It surely was so, because students already learned this method at the other classes.

In case of the second method even the presentation Figure 90/I caused lots of confusion. It was evaluated as completely unknown and incomprehensible. Most important matter for students was the fact that there were no assumptions available (no projections, views, nor sections of the building). Both methods proposed by Pozzo are indirect perspectives, characteristic for the architects¹⁰. These methods require a mediation

¹⁰ See [2/ p. 279].

of the projections or the views of the drawn object. Pozzo in the description of Figure 90/I recommended „ad hoc” drawing of the horizon, foundation, measuring the distance, fixing the eye and the distance point, what was not clear for the students. Surely Pozzo implied that someone who wants to construct a sophisticated drawing, which a horizontal perspective of a dome is, meticulously studied his whole work. According to this article's author in case of the perspective even after a detail study of the work a person sketching the dome can have a lot of doubts. Another problem was a lack of known among the students symbols of the elements of so called geometric apparatus, that is planes of the background, the horizon and so on. Because of that, the author of the experiment prepared the assumptions and supplemented them with the symbols compatible with the symbols currently used in the lectures on the perspective for the architects. The below presented description presents the symbols used in Figure 2, which presents the assumptions for the constricting of the horizontal perspective of a small tower consisting of a tambour with a hexagonal foundation and a pyramid roof with the same foundation. Because of an unusual combination of elements for the horizontal perspective (further HP) below the symbols are presented:

– the planes:

α – the object's floor (not a plane of foundation in case of HP),

τ – the background, the bottom of object's ceiling,

β – the main, going through points O , O_s , A and B , perpendicular to χ ,

χ – the horizon, going through O and O_s , perpendicular to τ and β ,

ε – the foundation, going through A and B , parallel to χ ,

γ – the background of the side perspective, going through Z_s , perpendicular to τ , χ and ε ,

– the straights:

p – the foundation, the edge of intersection of planes ε and τ ,

h – the horizon, the edge of intersection of planes χ and τ ,

k – the edge of the intersection of planes τ and γ ,

m – the edge of the intersection of planes ε and γ

– the section OO_s – (background's depth)

– the points:

the tower:

A – the point of the hexagonal tambour's foundation,

B – the point of the hexagonal roof's foundation,

S – the middle of the hexagonal tambour's foundation,

T – the middle of the hexagonal roof's foundation,

W – the middle of the roof,

O – the observer's eye,

O_s – the projection of the eye on the background,

P – the place, where the observer is standing, in case of HP is not an usual observers place, as it is not a part of foundation's plane ε ,

Z_s – the point of gathering of the straights leaning to the background at an angle of 45° , which is also the point of measuring for the straights perpendicular to the background.

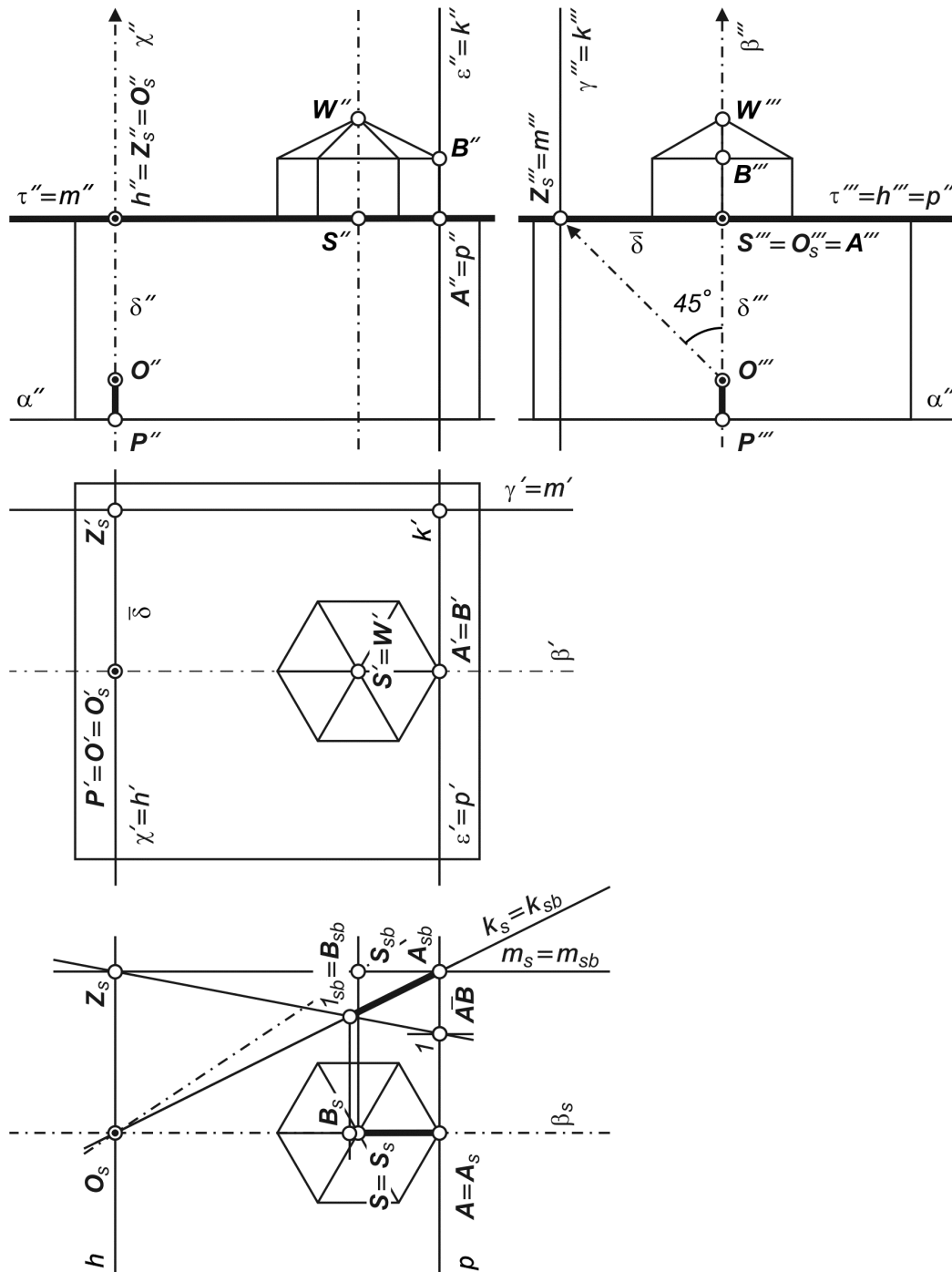


Figure 2: The assumptions for constructing a horizontal perspective of the tower using Pozzo's method and construction of the AB section (drawing below), A. Żaba

Although the known symbols have been used, the first try to construct a perspective of the tower was a failure.

Because of that fact, the students were given the rules of constructing a perspective of a cuboid using the side perspective. The students accomplished the exercise having confirmed, that they have understood the rules of this method and are able to use it. Then another attempt to draw a tower was conducted. Sadly it resulted in a failure again. The interview with the students showed, that the strong feel of "own verticality" combined

with the assumption, that the vertical edges of the tambour in a perspective “must be always” vertical disturbs them in constructing a proper perspective.

In the next step the students made an assumption, that the observer is lying on a high piece of furniture and the O -eye did not change it's position. Only this assumption helped the students in constructing of this perspective. Most students, although there was no such assumption marked in their works a „location of the observer” as projection of the O -eye on the foundation's plane ε . Although this point was not necessary for the construction only after it was marked the proper constructing of perspective began. The final result – side perspective of the sections AB and BW (Fig. 3), although it was properly build, it caused doubts among the students. Even though they have made an assumption that the observer was lying down, they were expecting that the vertical edges of the tambour will be vertical in the side perspective.

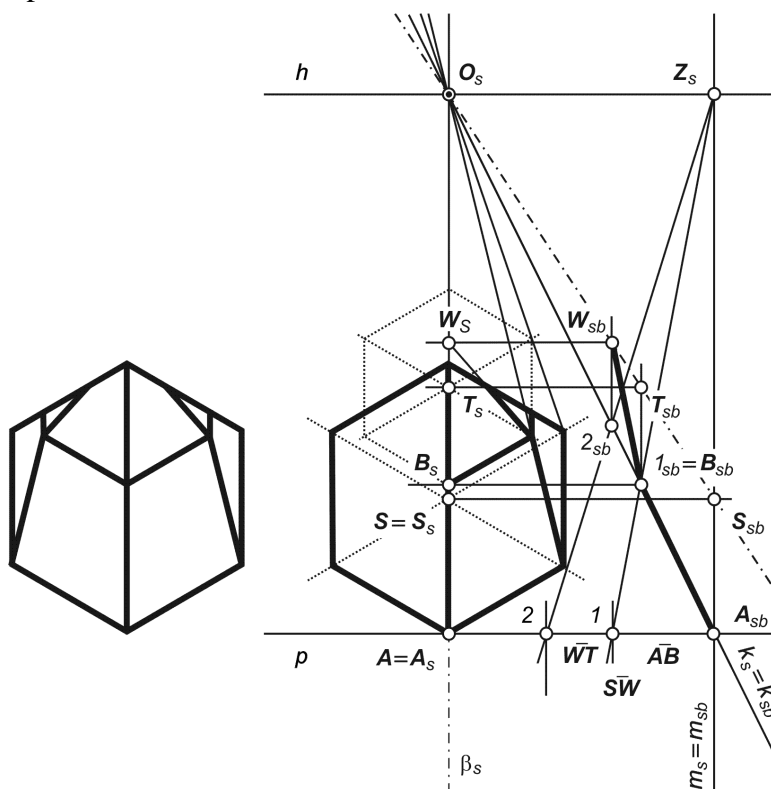


Figure 3: A full construction of perspective of the tower using the side perspective (the plane of symmetry taken into account), A. Žaba

4 Ending

According to the author of this article the conducted experiment showed the existence of many deeply rooted stereotypes in thinking about architectural interior spaces and elements, which are marking them off and filling them. Their research requires collaboration between „geometricians” and psychologists. Furthermore, the author thinks, that the method of points of piercing of sight rays with the background was a method way easier to master and use, not only in case of constructing the perspective of the domes, but in case of general horizontal perspectives.

In the literature on illusionistic-architectural paintings there is a common point of view, that their creators had to have deep knowledge and geometrical skills. According to the author of the article, it was possible to copy these ready-made perspectives

of the domes from Pozzo's tractate without knowing the rules of perspective. This automatic copying of patterns could expose it's creator to a lack of connection between illusionistic and the structural space.

Table1: Comments on domes in Andrea Pozzo's *Perspectiva...* [6]

Volume	Figure number	Title of figure in Pozzo's traktate	Comments on geometry			Example of realization
			Perspective	Method	Description	
I	90	Dome in horizontal perspective	H	S	Figure appears in volume II as Fig. 51/II*	Święta Lipka (PL)
	91	Dome from fig. 90 with light and shadows	H	S	The description and the drawing does not contain procedures for shadow constructing	
	92	Octagonal dome (tambour with octagonal foundation – authors annotation)	H	--	The drawing shows the tambour only	Mondovi (I) Łęczycza (PL)
I I	43	Temple of Theatre	F	--	No cohesion between the drawing and the description	Betliar (SK)
	49	Teaching on how to make the dome ** seen from below	H	P	Combination with simplified drawings of projection and section	Roma (I) Henryków (PL)
	50	Perspective view of a dome seen from below	H	P	Combination with simplified drawings of projection and section	
	51	Dome of Collegium Romanum according to rules given in volume I	H	S	Different description from the one in volume I	
	52	Dome above, according to rules in this book	H	P	A procedure for constructing the middles of the circles and their radiuses was given	
	53	The shading of Collegium's dome	H	--	The description and the drawing does not contain procedures for shadow constructing	----
	54	Dome of different structure	H	P	Perspective supplemented with a projection and section in different scale with basic elements of projecting	Jędrzejów (PL)
69	Painted high altar in Frascati	F	--	A dome above illusionistic altar on the crossing of illusionistic naves (longitudinal and transverse)	Frascati (I) Brzeg (PL)	

Abbreviations explained: Fig. – figure, * - in German edition there was an engraving mistake very easy to see, which lets evaluate, what volume the painter was using, ** - in intention a perspective of the dome. Perspectives: H – horizontal, F – frontal. Methods: P – points of piercing of the sight rays through background, S – using side perspective. Countries: I – Italy, PL – Poland, SK – Slovakia.

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UWAGI O ILUZJONISTYCZNEJ KOPULE ANDREA POZZO

Jednym z najbardziej znanych dzieł epoki baroku jest iluzjonistyczny obraz przedstawiający kopułę z wysokim tamburem i latarnią z kościoła św. Ignacego w Rzymie. Autorem malowidła jest Włoch Andrea Pozzo SJ (1642-1709). Namalowany w roku 1685 obraz stał się archetypem dla wielu malowideł w całej Europie. Celem opracowania jest przedstawienie uwag na temat metod zastosowanych przez Pozzo przy konstruowaniu perspektyw kopuł.