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COMPOSITIONAL ZONES OF ARCHITECTURAL FORM. WORKS OF THE SCIENCE CLUB [PHI]

Evolution has adjusted the structure of the eye to the needs of life, resulting in a zonal structure of the field of view. The zones are independent channels of information. The forms seen are automatically separated on the retina of the eye. Classic architectural forms harmonize with the natural zones of the retina: the details of these forms precisely fill the zones, resonating with the preapprehension of an ideal form. The effect of overlapping the details of the seen form on the visual field zones evokes aesthetic feelings. All definitions of architectural structure are fuzzy: it is difficult to formulate them without using terms such as "part of a larger whole". Each definition of an architectural detail must connect it with the entire building. The key to the concept of "detail" is therefore measure, the ratio of parts to the whole. The shape of the harp and the measurable string lengths produce sounds in harmony with the melody of the soul. Does architecture – a specific instrument for triggering aesthetic emotions – also have "measurable string lengths"? Or maybe a detail of the building is a single string, the sound of which tunes the harmony of the entire architectural body? We won't know until we don't delve into the past by examining how the measurable properties of space evoke immeasurable emotions in us.

Keywords: zones of the field of view, structural zones of the form

1. ARCHITECTURAL ORDER

1.1. The idea of order

Each organism can survive thanks to the structure of its neurons. Aesthetic evolutionists argue: any critical situation leaves a permanent mark on the neuronal

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memory of the survivor. The effective structure of neurons is passed on genetically by the individual to his successors [Hall 1984: 234-271]. In this way, through trial and error, the evolu-tion forms in us a tool for assessing our own safety, safe environment since always. We constantly carry and improve this idea of existential harmony and order [Lorenz 1986: 82]. Successive generations gradually appreciate the more and more subtle pleasures flowing directly from the order of an orderly environment, an order that eliminates threats. Undoubtedly, self-preservation reflexes are a key evolutionary force that has given us the ability to feel emotions.

1.2. Field of view zones. Critical observation distance

Existential challenges, repeated over thousands of generations have perfected the structure of the eye. Our distant ancestors, in contact with an unknown form, especially a living one, tried to immediately guess his arousal state caused by a sudden meeting. It was crucial to read intentions, estimate the anatomical structure and strength of the stranger. Such assessment had to be always made at a distance that allows escape. Evolutionism analyses the construction of the eye, which is based on the definition of the so-called residual escape distance [Hall 2001: 22, 157]. This is the distance from an unknown individual that is always kept during intense automated visual analysis; the distance that allows preventive evacuation.

So, if the encountered individual is a human, the distance allowing them to escape is 3.6 meters [Hall 1984]. From this distance, we can see the entire figure of the unknown interlocutor. It is located in the so-called the precise cone (29.2°) in the field of view of 185 cm in diameter[1]. At the same time, with the entire surface of the eye part called the yellow spot (representing the viewing angle of 7.04° and covering a field with a diameter of 43.7 cm), we can read the body language revealing the intentions of this individual and estimate its anatomical structure and muscle armor. The fovea of the eye (1.66°, field of view 10.3 cm) covers the entire hand and a pattern of fingers (aggressive, friendly or neutral disposition). The resolution of the eye enables the observer to quickly judge the intentions of the stranger, which are indicated by the size of the pupil seen clearly at this distance. The so-called fixation of the eyeball (consisting in the automatic oscillation of the sight axis within the angle of 0.04°) extends the field of maximum resolution to a diameter of 2.5 cm. This allows you to see the details of the fingers, the significant arrangement of the eyelids and the tension of the facial muscles. Finally, by standing in this safe distance from an unknown individual, with one glance we are able to control the spatial context of the situation within the so-called average binocular vision including the angle of view 90° and the field with a diameter of 8.7 m. The total horizontal image field reaches – admittedly – a half-full angle, but only at the angle of 90° the fields of view

[1] The sizes of the field of view were calculated for the eye structure parameters [e.g. Wykowska 1994].

of both eyes overlap, differing only in parallax. Hence, only within this viewing angle is it possible to perform a stereoscopic evaluation.

What is the effect of the mechanism described above? If the information contained in the observed form can be read quickly and it does not cause any existential anxiety, then a pleasant feeling arises in the mind of the observer, that things are going in the right direction. Life becomes beautiful and the form that initially disturbs us, suddenly becomes beautiful in our minds – like any messenger with the good news. Therefore, a "nice" form must be – firstly – legible, and secondly – friendly. In this case, it resonates with the deeply rooted intuition of beauty, with its innate idea or – as others prefer – acquired, shaped in the course of human history and individual life.

1.3. Zones of the field of view and details of the seen form

The escape distance is the only distance that allows the simultaneous assessment of the entire observed form and all its important details. By standing a bit closer or just a little further, we are not able to fully "receive" all important information about the object.

The field of view consists of a continuum of zones, determined by the anatomy of the eye perfected over the tens of the millennia. Each zone is a separate and specialized information channel collecting characteristic of itself unique, visual data. The qualitative and quantitative differences in the filtered data are mainly due to the differences in the microstructure of light detectors in different zones of the retina. Narrower zones provide precise information about the geometry of the details of the form (as well as their matter interpreted thanks to the details of the texture), wider zones allow to stereoscopically evaluate the alignment of details, their mutual relations and integrity of the whole, still other detect only movement on the periphery of the retina or analyze individual colors etc.

If one of the channels does not provide the routinely expected information, then the uncertainty about the observed form causes anxiety. Thus, the "pretty" form is built of parts that fill each zone of the field of view well. To put it bluntly: the parts of pretty form that are comfortable for the eye correspond with their sizes to individual zones of the field of view. The physiology itself, without the will of the observer, automatically decomposes the observed building into parts and details [Kozaczko 2005; Malmo 1959]. We subconsciously expect such multi-channel information to reach us simultaneously from important zones of the field of view in independent, yet consistent doses. Thus, detail is a compositional imperative in architecture.

1.4. Structural zones of order

If the measure of formal order rooted in our eyes were also to be a measure of beauty (and not only a measure of information important for life), it would have to influence the shape of things created to arouse aesthetic pleasure. This thesis can be easily verified by subjecting any object of plastic art to zonal analysis.

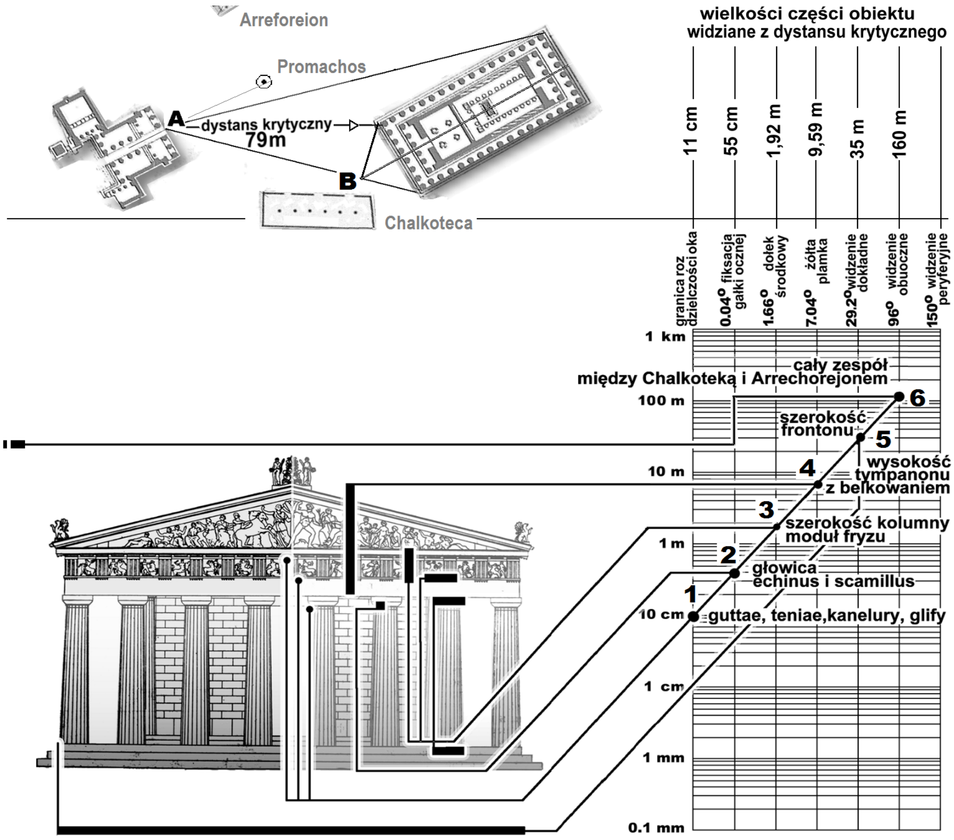

Fig. 1. The case of the Parthenon

The Parthenon is probably one of the most convenient cases here. It’s because of the Greeks – recognized by Choisy as possessing “absolute sight” – are beyond any suspicion of a formal falsehood resulting from some over-intellectualised aesthetic doctrines. Their architecture is a projection of the physiology of seeing and a philosophy proclaimed with Aristotelian simplicity: “the soul is for the body what sight is for the eye”.

First, then, the critical observation distance from which the form can be fully assessed: let’s position ourselves at such a distance from the Parthenon that it completely fills the fine vision zone. It is no accident that this distance coincides with the distance between this temple and Propylaea. After passing their eastern portico, the Parthenon appears in its harmonious fullness. Leading from inside the Propylaea towards the statue of Athena Promachos, we pass the point (A in the picture), when the golden helmet of Athena is at the upper edge of the two-eyed field of vision. This field shows the breadth of the temple and its context: the entire complex framed by the Chalkoteca colonnade and the Arreforeion building (if all this could existed still, of course). We direct our eyes to the Parthenon, and the field of precise vision will then cover the entire body of the building. All zones of the field of view are immediately and completely filled with the appropriate details (as in the diagram in the right part of the picture): the eye's resolution allows you to see slight ornamentation and embellishments (such as guttae or teniae); the most important characteristic details (such as column heads) fill the fixation zone (0,40); the double classical module (the diameter of the column at the stylobate) and the height of the triglyphon are completely enclosed by the foveal zone; details "joined" in larger parts (the largest of which is the tympanum with architrave) fill the field of the macula lutea. As we can see, the solid, its details and context have been precisely calibrated to the critical distance. They are mutually tuned and adapted to all areas of the field of view. And abovementioned facts concern just the more distant look.

Further on, reaching the lower scalinate at the groundwork of the Parthenon (point B in the figure), the spatial context is removed from the two-eyed field of vision to the peripheral zone of vision. There – by our anatomy itself – the geometry of the forms adjacent to the temple becomes blurry, and the fronton of the Parthenon is cut off from the background and fills the entire field of binocular vision, revealing (here and only here) the fullness of its three-dimensional complexity. The field of vision zones move by one degree: the tympanum with the entablature – until now filling the macula lutea's zone – is now covered by the fine vision zone (which in turn housed the entire building at point A). The field of view of the yellow spot (macula lutea) has a diameter that exactly corresponds to twice the modulus of the column width (and also the height of the triglyph frieze). The precise zone of the fovea covers the dimensions of the column heads (heights of echinus along with anula, hypotrachelion and scamillus). The fixation zone is capable of "consuming" all form of ornaments, leaving at the edge of the visual resolution some excess needed to assess the smoothness of the matter of the form, details and texture discoloration.

That's still not everything. The next aesthetic episode takes place when we stand at a distance of 3.6 meters from the column, from where the precise vision zone now covers only this column. At this short distance, the entire field of view is tightly filled with the pediment, which is the only spatial context for the column – the main module from which the measure of the entire temple has been derived. All zones of the field of view are again still in full coupling with the zones of the Parthenon's form and its construction details…

2. CASE STUDIES

The following sections include the cases analyzed within the Science Club [phi]. The data was obtained from own sources (photos) as well as from publicly available websites.

2.1. Baptistery – Florence

Author: Weronika Anioł

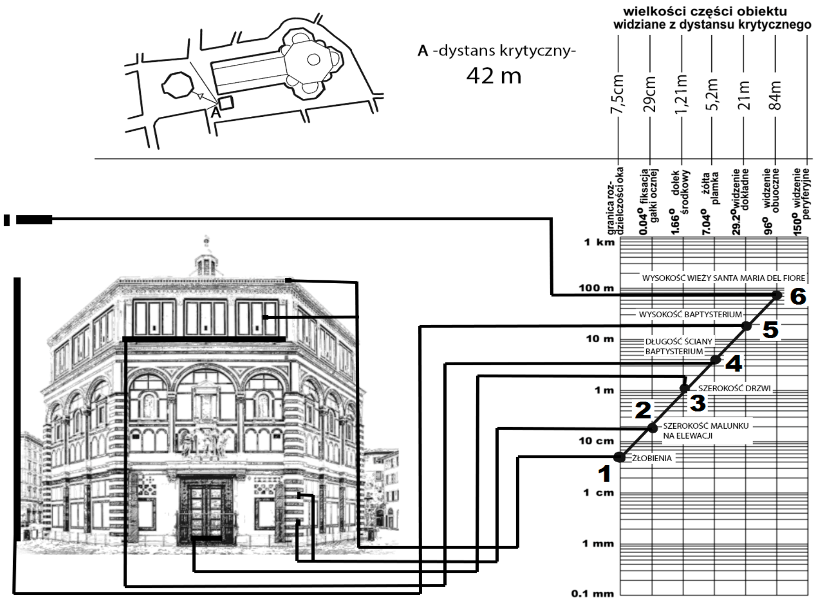

Fig. 2. Florence – Baptistery. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 42 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	7,5 cm	width of the secondary incrustation stripes
2	Eyeball fixation	$0{,}04^0$	29 cm	width of the main incrustation stripes
3	Fovea centralis	$1{,}66^0$	1,22 m	main door width
4	Macula lutea	$7{,}04^0$	5,21 m	the length of the side of the polygon (in plan view)
5	Accurate vision	$29{,}2^0$	21 m	height of the baptistery
6	Binocular vision	96^0	85 m	context: the height of the Campanile di Giotto

2.2. Santa Maria del Fiore – Florence

Author: Natalia Maćkowska

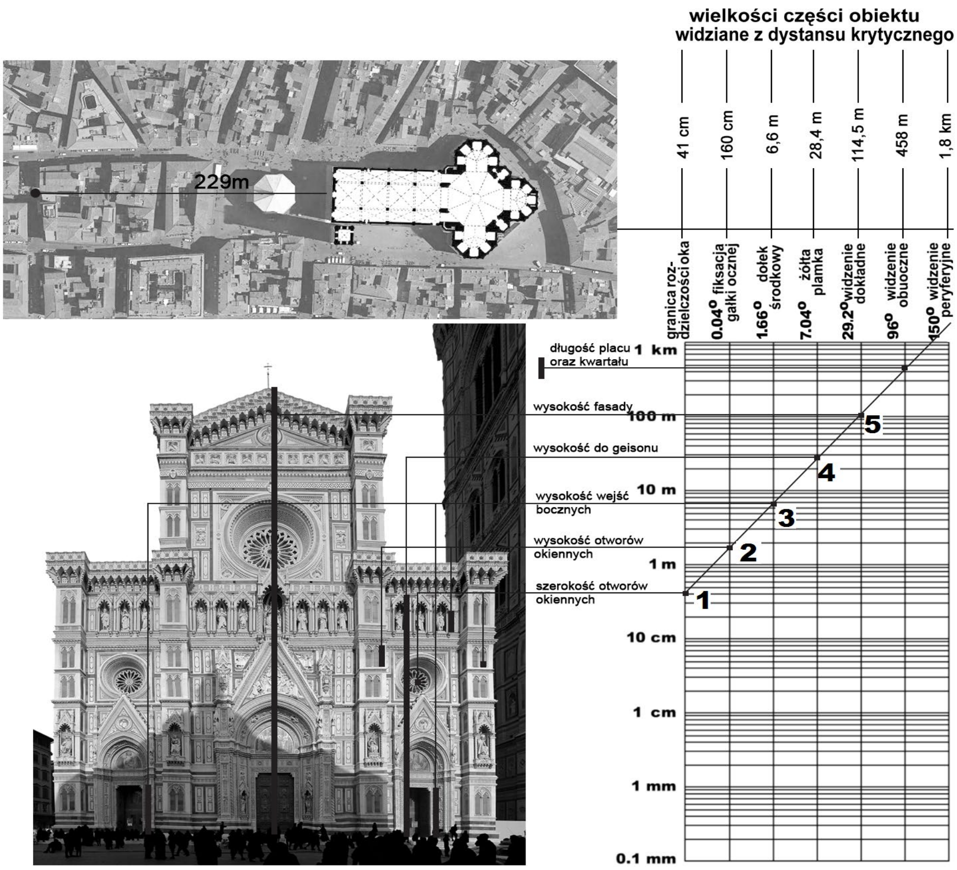

Fig. 3. Florence – Santa Maria del Fiore. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 229 m (theoretical situation)

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	41 cm	width of the bifora and pilasters module
2	Eyeball fixation	$0{,}04^0$	1,59 m	height of the module of the gallery and biforium
3	Fovea centralis	$1{,}66^0$	6,64 m	the height of the side gates
4	Macula lutea	$7{,}04^0$	28,4 m	corpus height to the frieze under the rosette
5	Accurate vision	$29{,}2^0$	114,5 m	dome height (in the background, not interpolated)

Author: Weronika Anioł

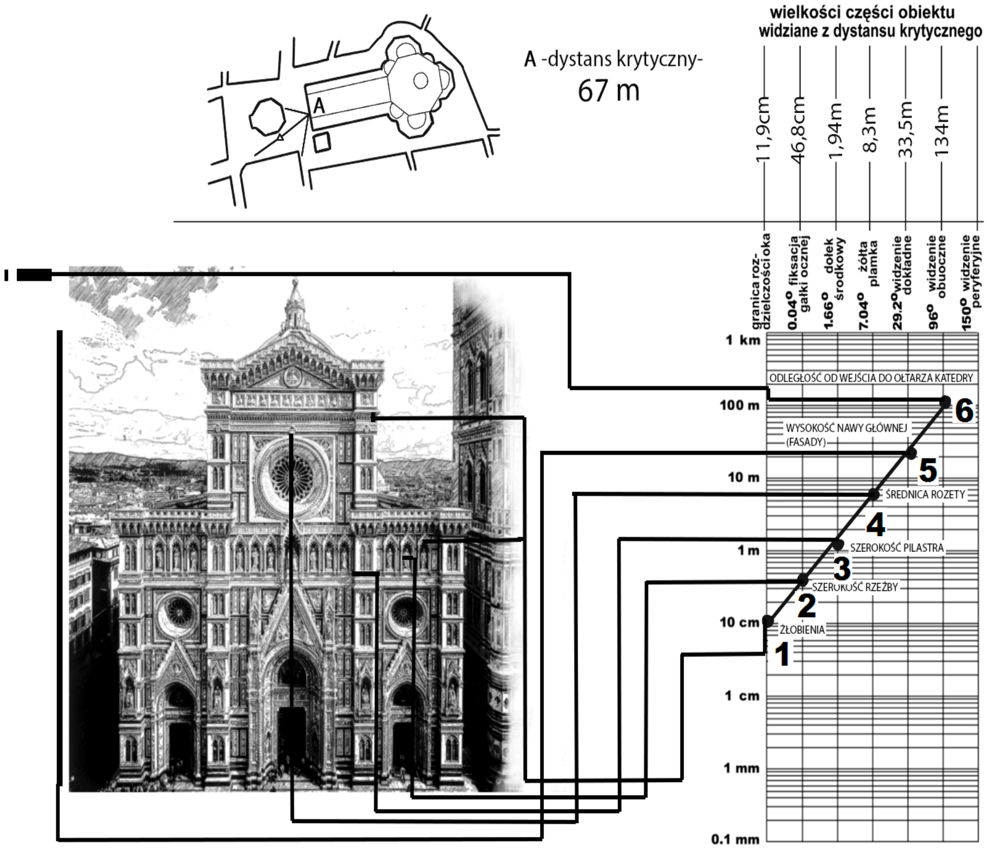

Fig. 4. Florence – Santa Maria del Fiore. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 67 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	11,9 cm	width of the incrustation stripes
2	Eyeball fixation	$0{,}04^0$	46,8 cm	width of the sculptures in the arcades
3	Fovea centralis	$1{,}66^0$	1,94 m	the width of the pilasters of the main articulation
4	Macula lutea	$7{,}04^0$	8,31 m	rosette diameter
5	Accurate vision	$29{,}2^0$	33,5 m	facade height

Author: Ewa Loos

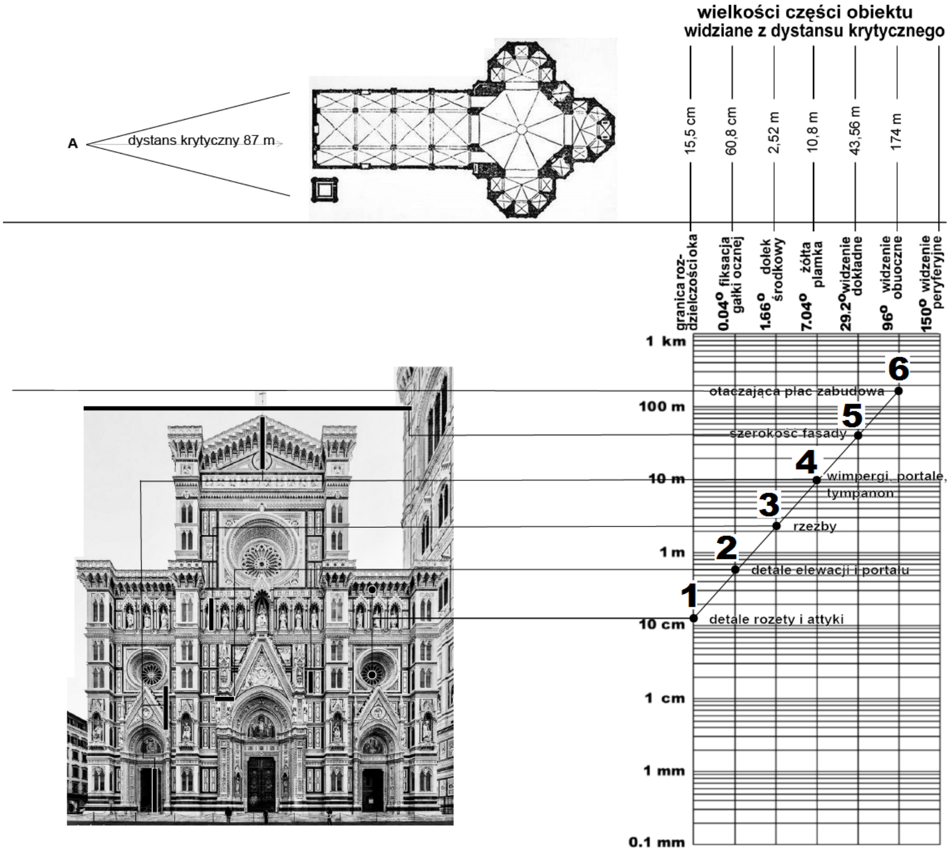

Fig. 5. Florence – Santa Maria del Fiore. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 87 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^{0}$	15,5 cm	details of rosette and attics
2	Eyeball fixation	$0{,}04^{0}$	60,8 cm	narrower belt module (between the portal and the main pilaster)
3	Fovea centralis	$1{,}66^{0}$	2,52 m	height of the arcades with statues
4	Macula lutea	$7{,}04^{0}$	10,8 m	wimpergs, side entrances, tympanum
5	Accurate vision	$29{,}2^{0}$	43,5 m	facade width
6	Binocular vision	96^{0}	174 m	context: the extent of the square

2.3. Pompidou Centre – Paris

Authors: Weronika Anioł, Natalia Maćkowska, Ewa Loos

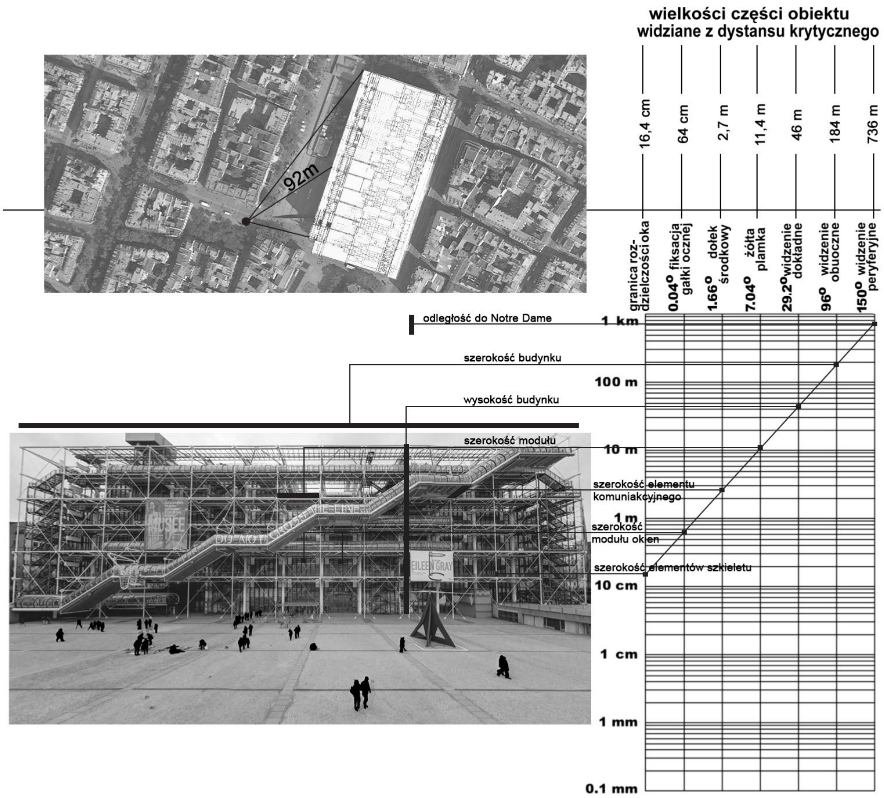

Fig. 6. Paris – Pompidou centre. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 91 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	16,2 cm	diameter of steel facade pipes
2	Eyeball fixation	$0{,}04^0$	63,5 cm	width of the window panes
3	Fovea centralis	$1{,}66^0$	2,6 m	staircase height
4	Macula lutea	$7{,}04^0$	11,3 m	building span module
5	Accurate vision	$29{,}2^0$	45,5 m	building height
6	Binocular vision	96^0	182 m	width of the building

2.4. Notre Dame – Paris

Authors: Ewa Loos, Eliza Tomczak, Marcjanna Wabińska, Agnieszka Wlazły, Weronika Wodras

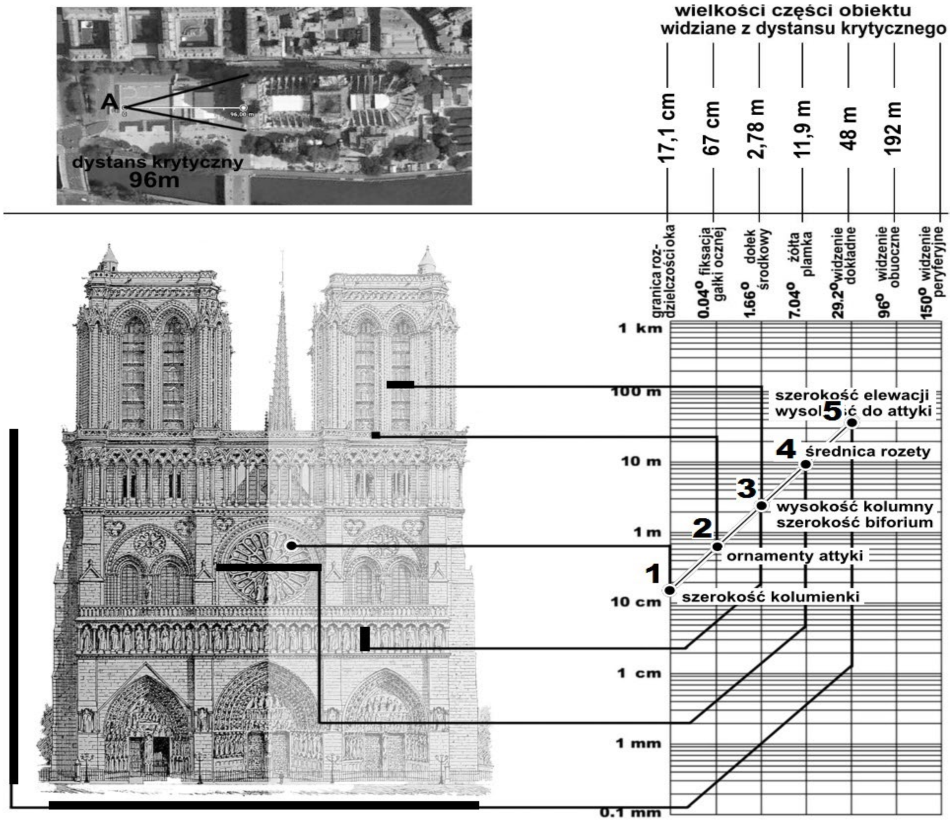

Fig. 7. Notre Dame – Paris. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 97 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	17 cm	thickness of the stone elements of the rosette and portal skeleton
2	Eyeball fixation	$0{,}04^0$	67 cm	height of the attic above the royal gallery
3	Fovea centralis	$1{,}66^0$	2,8 m	height of the royal gallery
4	Macula lutea	$7{,}04^0$	12 m	rosette diameter and height of the biforium
5	Accurate vision	$29{,}2^0$	48,5 m	facade width, height (including the attic)

Authors: Natalia Maćkowska, Paulina Szadkowska

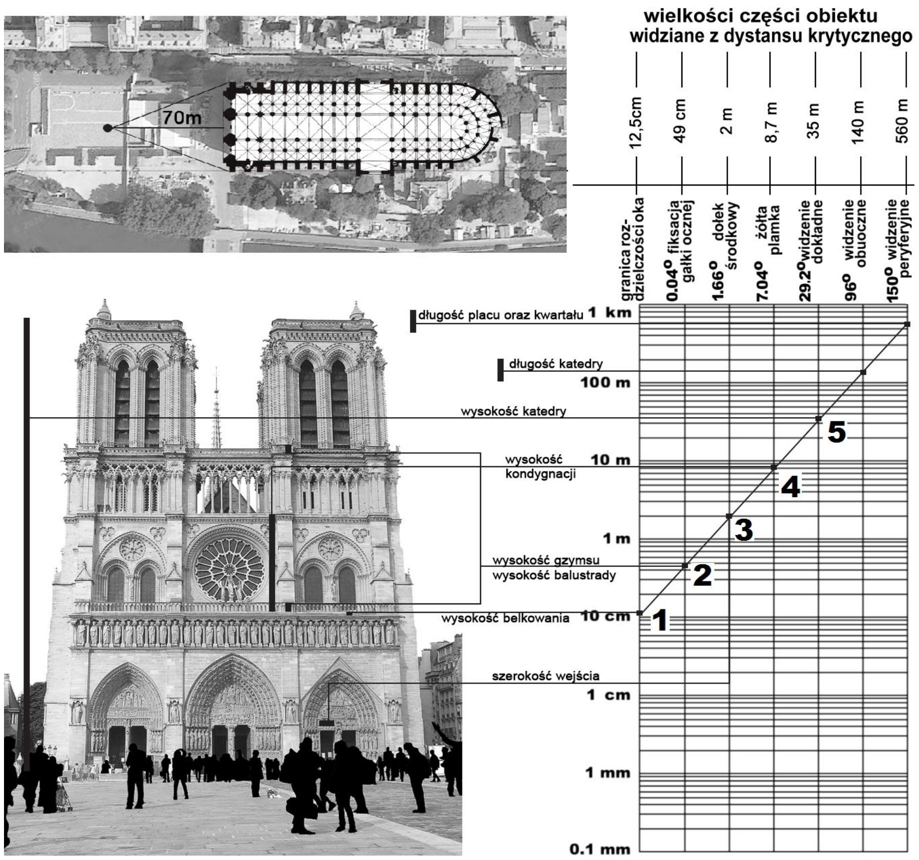

Fig. 8. Notre Dame – Paris. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 70 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	12,5 cm	dimension of the beam cross-section, stone details
2	Eyeball fixation	$0{,}04^0$	49 cm	height of the cornice and balustrades, archivolt width
3	Fovea centralis	$1{,}66^0$	2 m	width of the main gate, kings gallery module, tracery, portal steps
4	Macula lutea	$7{,}04^0$	8,7 m	storey height with rosette, storey above the rosette, tower biforia
5	Accurate vision	$29{,}2^0$	35 m	height of the central nave (to the cornice above the rosette), facade width

2.5. St Peters Basilica – Rome

2.5.1. Basilica seen from the axis of the landing of the elliptical stairs

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

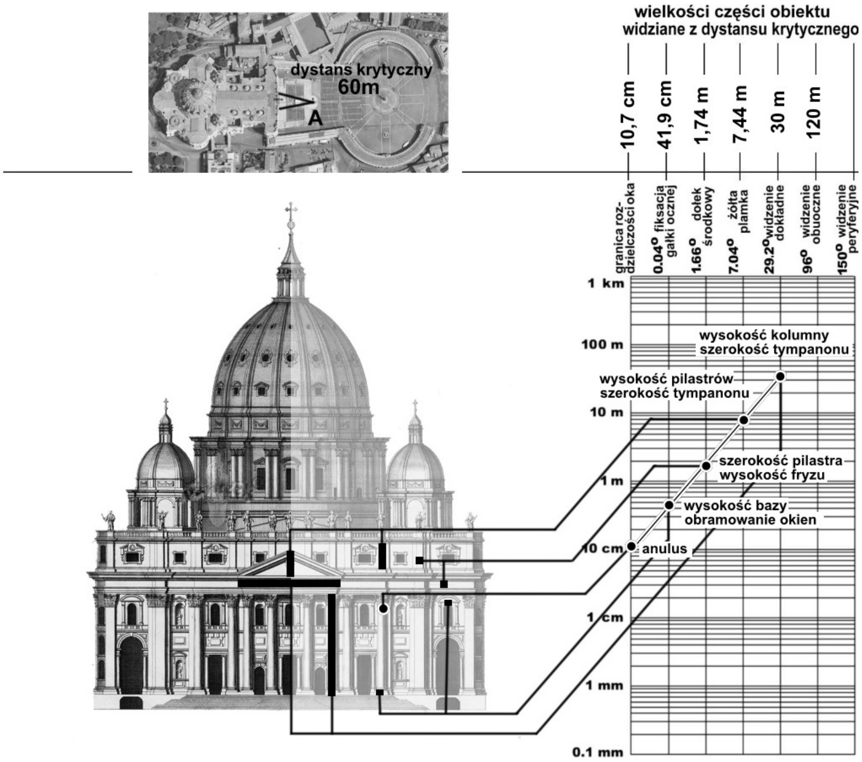

Fig. 9. St Peters Basilica – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 60 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	10,7 cm	anuluae
2	Eyeball fixation	$0{,}04^0$	41,9 cm	base height, window frames (aediculae details)
3	Fovea centralis	$1{,}66^0$	1,74 m	width of the frieze pilaster, height of the architrave frieze
4	Macula lutea	$7{,}04^0$	7,4 m	height of the main frieze pilasters, height of the tympanum
5	Accurate vision	$29{,}2^0$	30 m	tympanum width, column height
6	Binocular vision	96^0	120 m	nominal width of the façade

2.5.2. Basilica seen from the closer point on the perimeter of the ellipse of the square

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

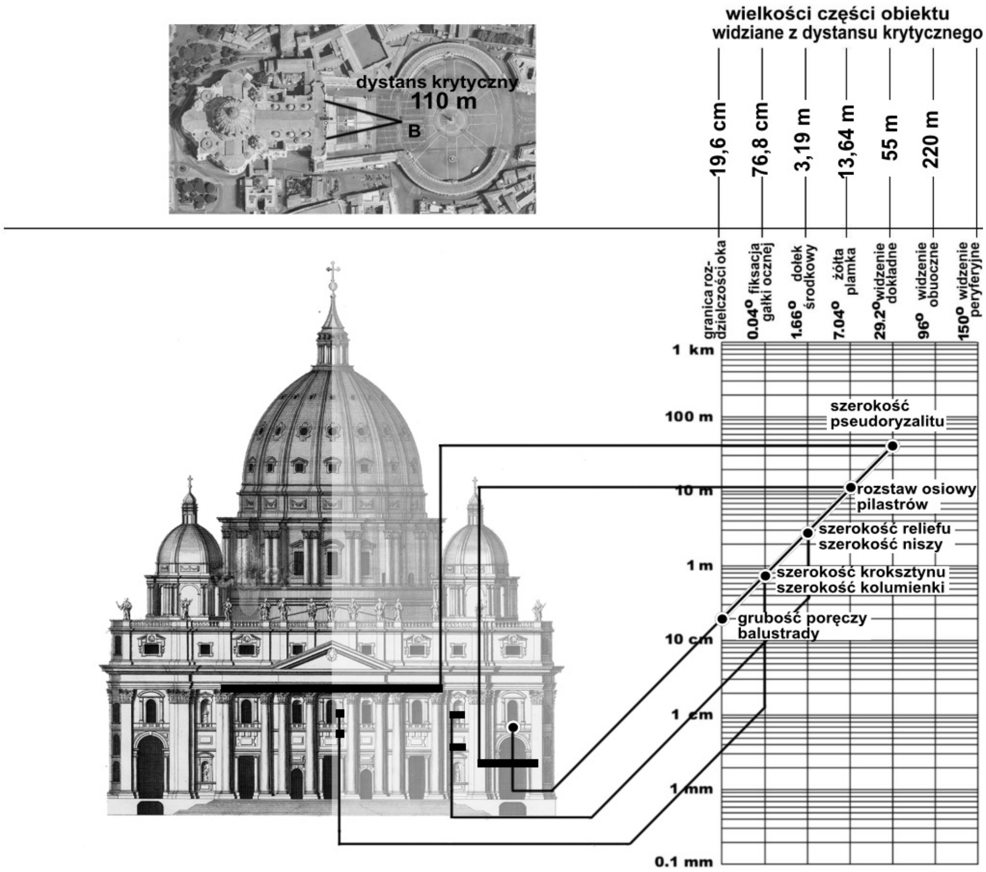

Fig. 10. St Peters Basilica – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 110 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	19,6 cm	thickness of the railing beam
2	Eyeball fixation	$0{,}04^0$	76,8 cm	width of the supraport corbel, aediculae column - width
3	Fovea centralis	$1{,}66^0$	3,2 m	relief in the supraport – width, aedicula – width
4	Macula lutea	$7{,}04^0$	13,6 m	side risalit module
5	Accurate vision	$29{,}2^0$	55 m	width of the main risalit, height of the facade
6	Binocular vision	96^0	220 m	context: width of the ellipse of the square

2.5.3. Basilica seen from the center of the elliptical part of the square

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

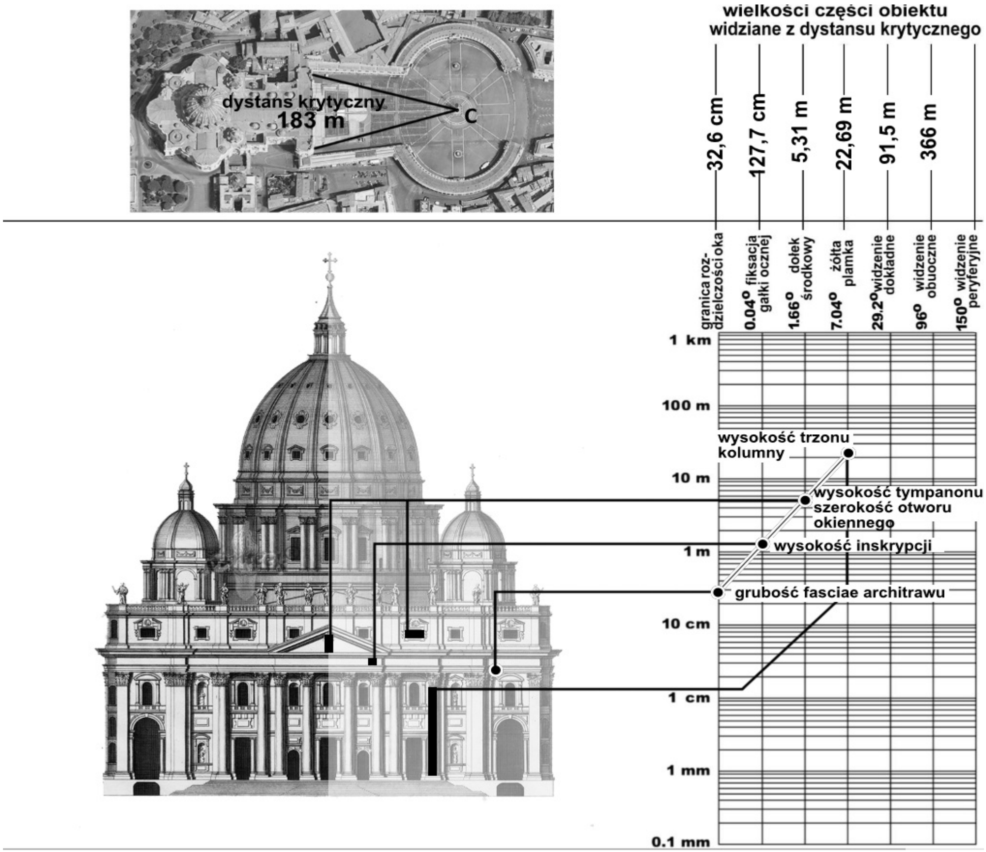

Fig. 11. St Peters Basilica – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 183 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0,01^0$	32,5 cm	thickness of the architrave fasciae
2	Eyeball fixation	$0,04^0$	1,28 m	height of the inscription on the architrave
3	Fovea centralis	$1,66^0$	5,3 m	height of the tympanum field, main frieze window – width
4	Macula lutea	$7,04^0$	22,7 m	column shaft – height, main tympanum – width
5	Accurate vision	$29,2^0$	91,5 m	distance between axes of side risalites, main inlet width
6	Binocular vision	96^0	366 m	context: distance from the entrance of St. Peters square to the facade

2.5.4. Basilica seen from the farther point on the perimeter of the ellipse of the square

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

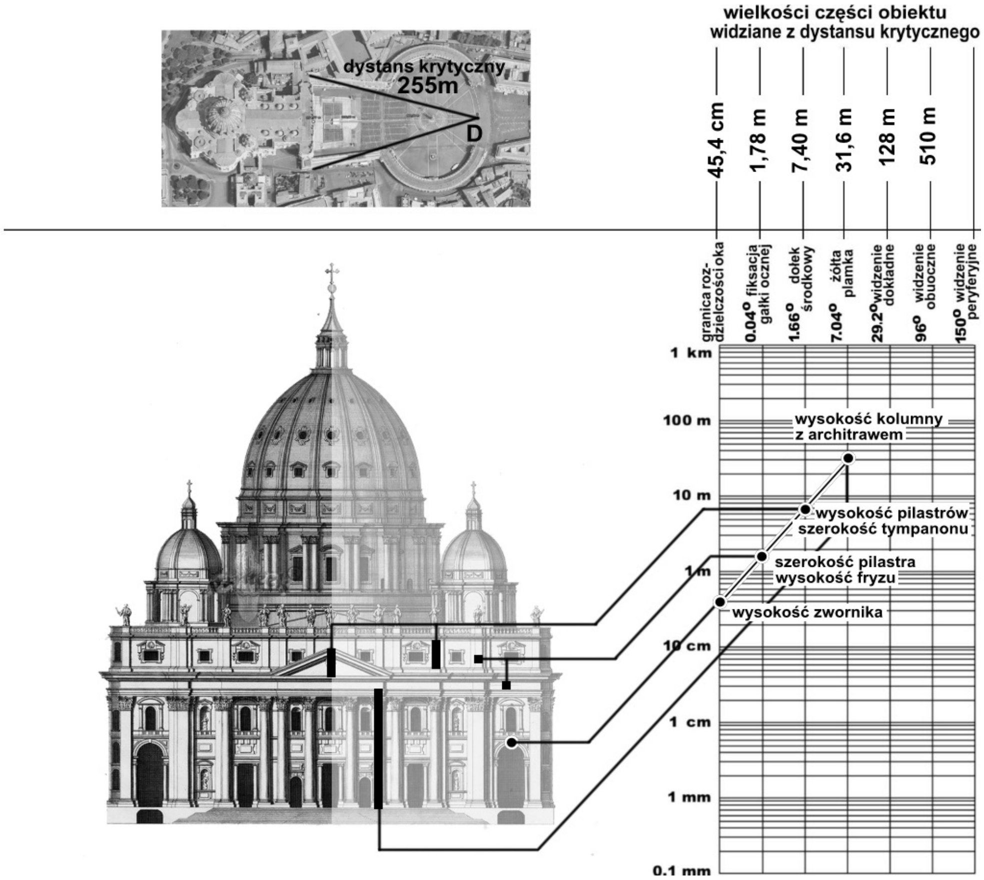

Fig. 12. St Peters Basilica – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 255 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	45,5 cm	height of the keystone of the great arch of the side risalites
2	Eyeball fixation	$0{,}04^0$	1,79 m	width of the pilaster, height of the architrave
3	Fovea centralis	$1{,}66^0$	7,4 m	height of the main frieze pilasters, main tympanum height
4	Macula lutea	$7{,}04^0$	31,6 m	the width of the main tympanum
5	Accurate vision	$29{,}2^0$	128 m	nominal width of the façade

2.5.5. Basilica seen from the entrance to the square

Author: Natalia Maćkowska

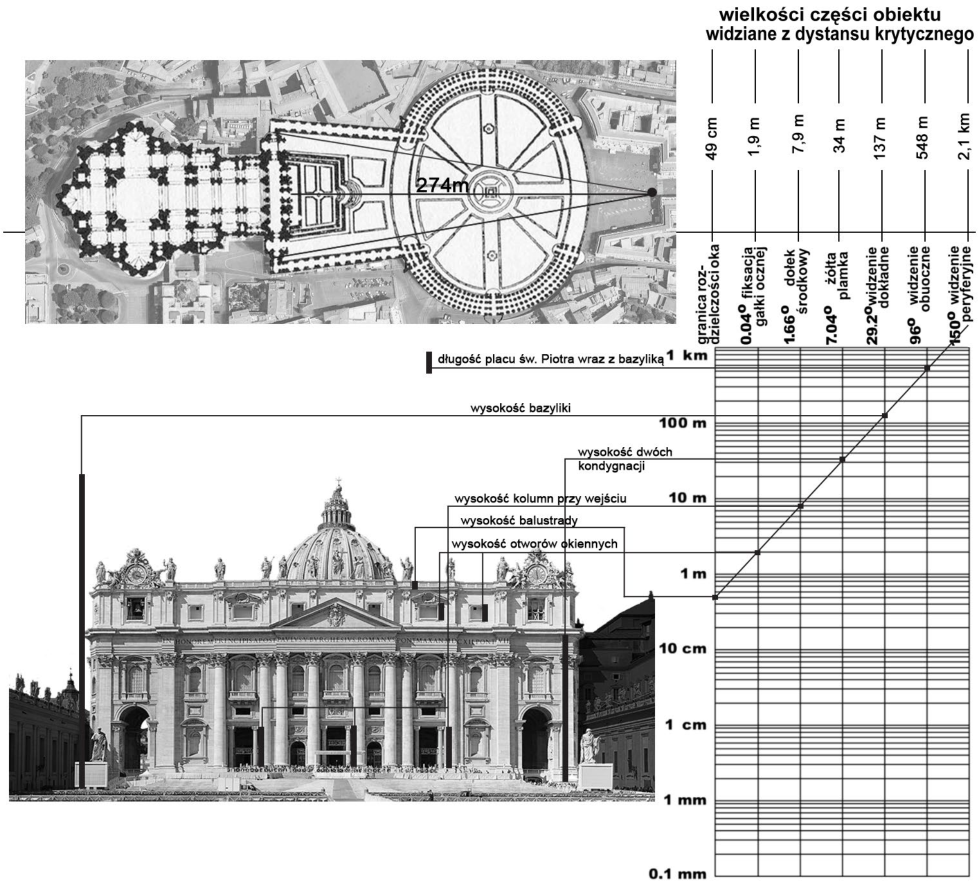

Fig. 13. St Peters Basilica – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 274 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0,01^0$	49 cm	the height of the roof railing
2	Eyeball fixation	$0,04^0$	1,9 m	height of the window openings above the architrave
3	Fovea centralis	$1,66^0$	7,9 m	height with architrave
4	Macula lutea	$7,04^0$	34 m	column height with base and architrave
5	Accurate vision	$29,2^0$	137 m	basilica – non-interpolated height (dome non-offseted)

2.6. Il Gesu – Rome

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

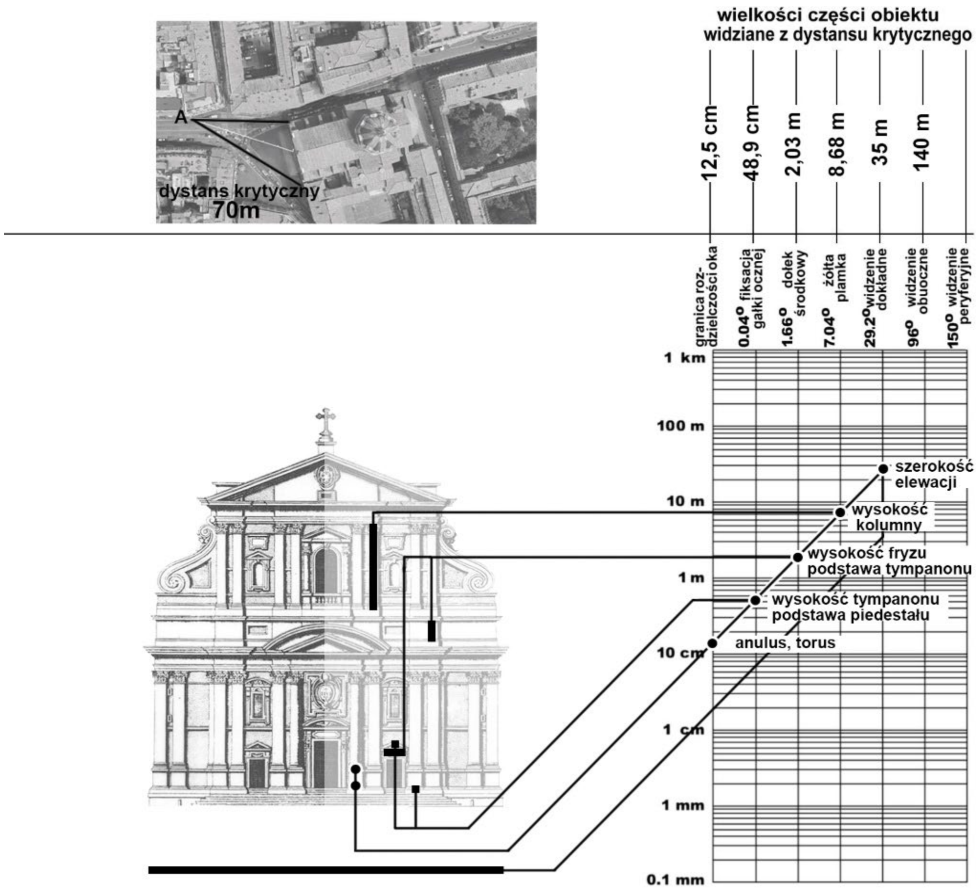

Fig. 14. Il Gesu – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 70 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	12,5 cm	details (anulae, torus)
2	Eyeball fixation	$0{,}04^0$	49 cm	height of the smaller tympanum, height of the pedestal
3	Fovea centralis	$1{,}66^0$	2 m	height of the main frieze, smaller tympanum width
4	Macula lutea	$7{,}04^0$	8,7 m	column height
5	Accurate vision	$29{,}2^0$	35 m	facade width / height

2.7. Palazzo Vecchio – Florence

Author: Paulina Szadkowska

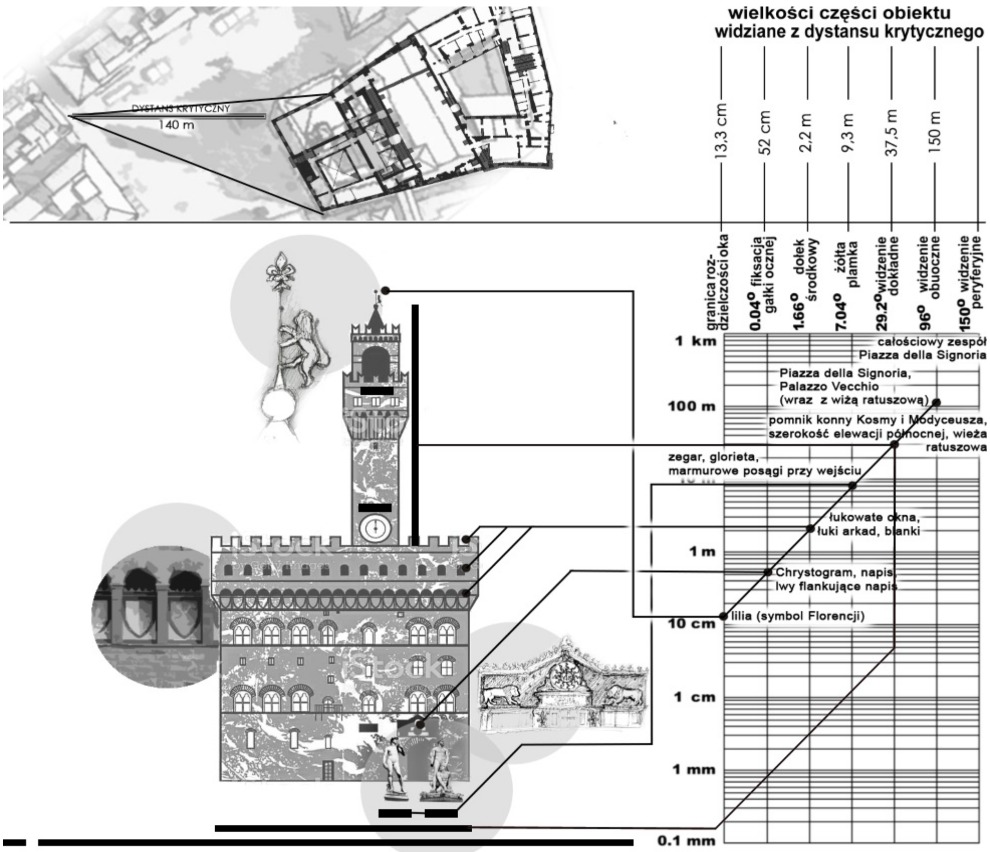

Fig. 15. Palazzo Vecchio – Florence. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 75 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	13,5 cm	Florentine lily, stonework details
2	Eyeball fixation	$0{,}04^0$	52 cm	Christogram, lions flanking the inscription
3	Fovea centralis	$1{,}66^0$	2,18 m	windows, arcades, battlements
4	Macula lutea	$7{,}04^0$	9,3 m	clock, gloriette (arch width), entrance statues
5	Accurate vision	$29{,}2^0$	37,5 m	elevation width, tower shank (with finial) – height
6	Binocular vision	96^0	150 m	square diagonal (field of view width)

2.8. Torre Pendente – Pisa

Author: Paulina Szadkowska

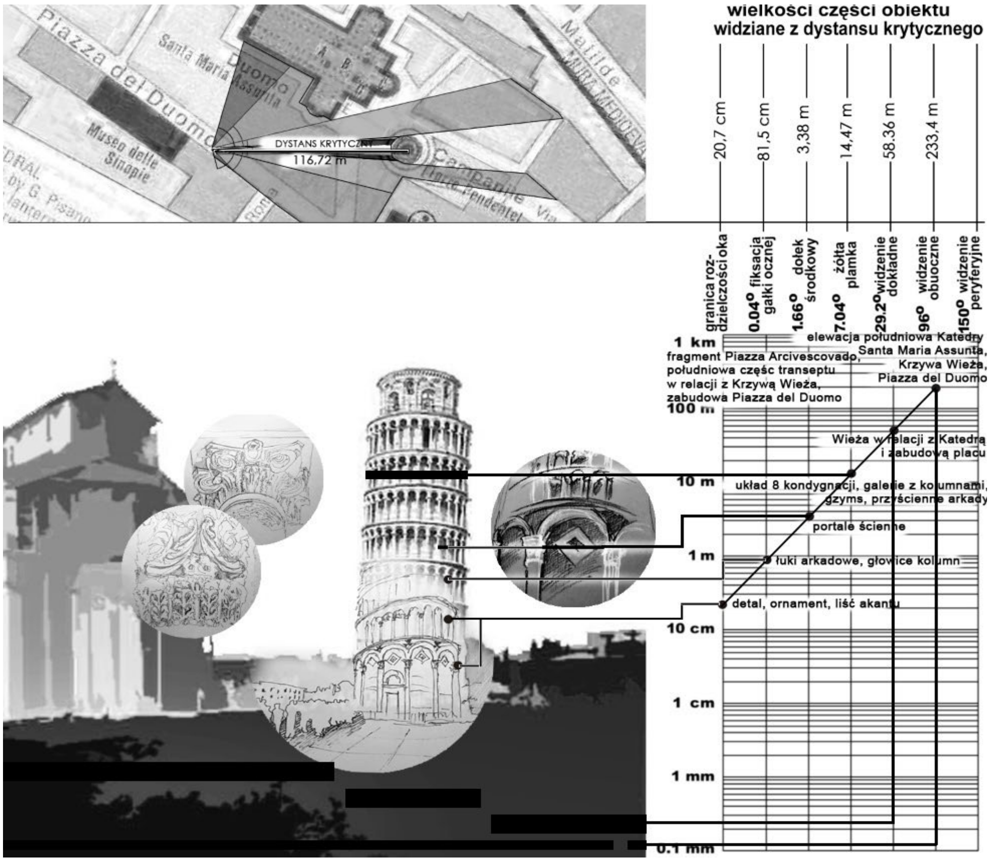

Fig. 16. Florence – Baptistery. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 116,7 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	20,7 cm	acanthus leaf, details of the ornament
2	Eyeball fixation	$0{,}04^0$	81,5 cm	arcade arches, column heads
3	Fovea centralis	$1{,}66^0$	3,38 m	ground floor arcades (width module)
4	Macula lutea	$7{,}04^0$	14,5 m	plan diameter
5	Accurate vision	$29{,}2^0$	58,4 m	tower height
6	Binocular vision	96^0	233 m	context: Piazza Duomo – diagonal (field of view – width)

2.9. British Museum – London

Author: Weronika Anioł

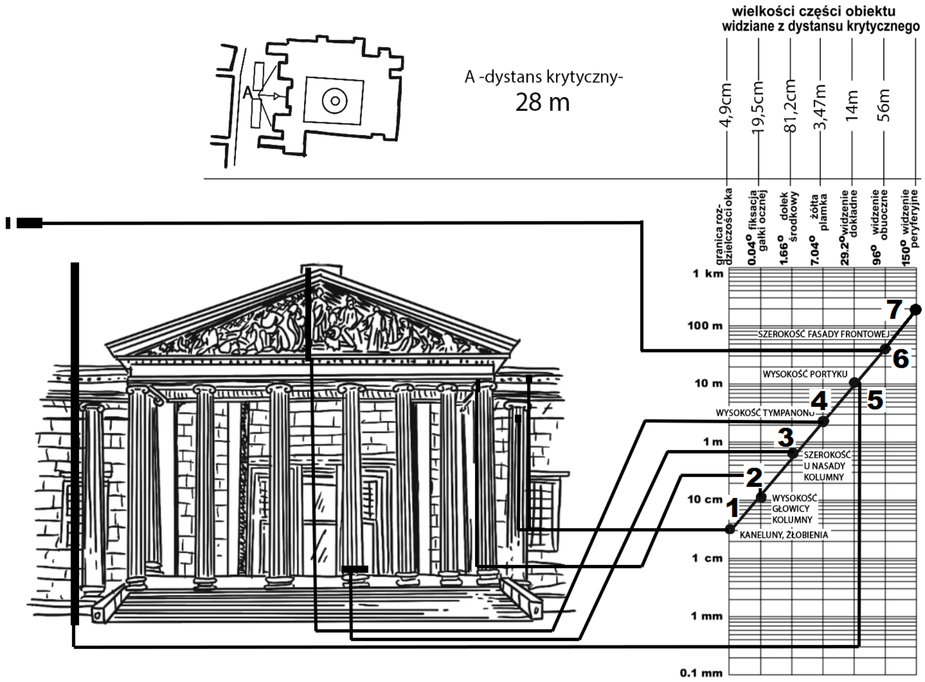

Fig. 17. British Museum – London. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 28 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	4,9 cm	width of the channel, grooves
2	Eyeball fixation	$0{,}04^0$	19,5 cm	column head – height
3	Fovea centralis	$1{,}66^0$	0,81 m	column width at the base
4	Macula lutea	$7{,}04^0$	3,47 m	tympanum height
5	Accurate vision	$29{,}2^0$	14 m	height of the portico
6	Binocular vision	96^0	56 m	facade width
7	Peripheral vision	150^0	174 m	width with side wings

2.10. Pantheon – Rome

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

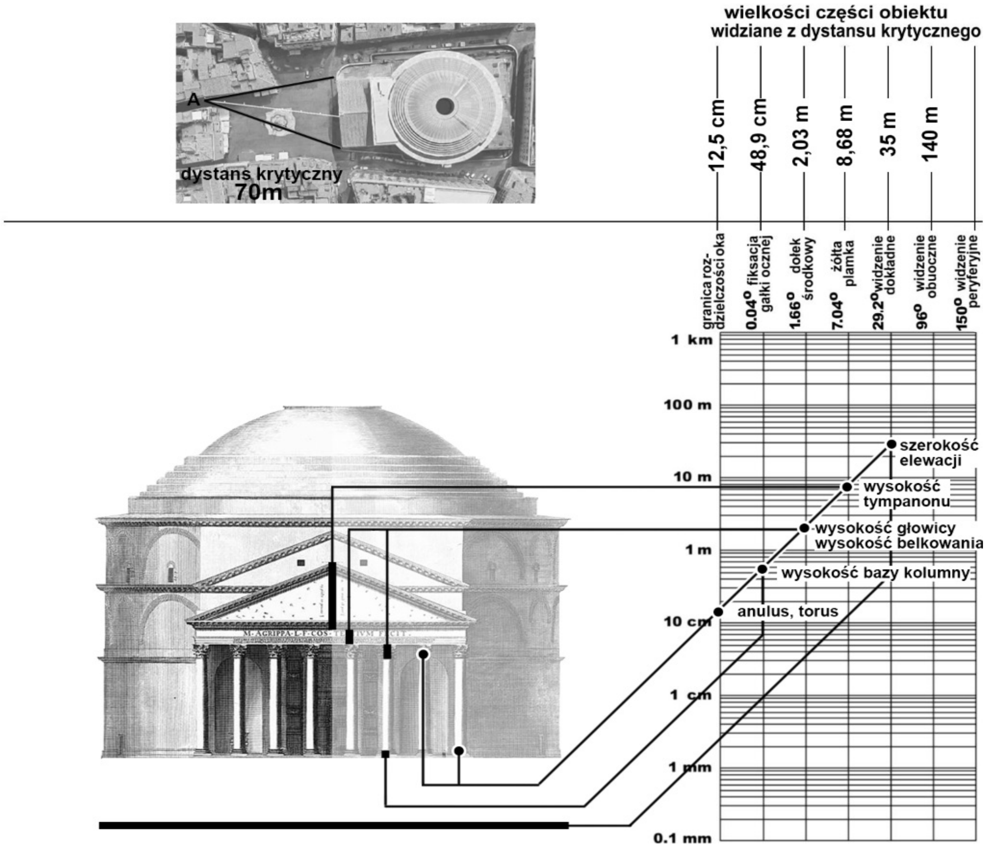

Fig. 18. Pantheon – Rome. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 70 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0,01^0$	12,5 cm	details (anulae, torus)
2	Eyeball fixation	$0,04^0$	49 cm	column base height
3	Fovea centralis	$1,66^0$	2 m	head height, beam height
4	Macula lutea	$7,04^0$	8,7 m	tympanum height
5	Accurate vision	$29,2^0$	35 m	width of the portico, height of the cylindrical body
6	Binocular vision	96^0	140 m	context: urban interior western frontage – length

2.11. Santa Maria Novella – Florence

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

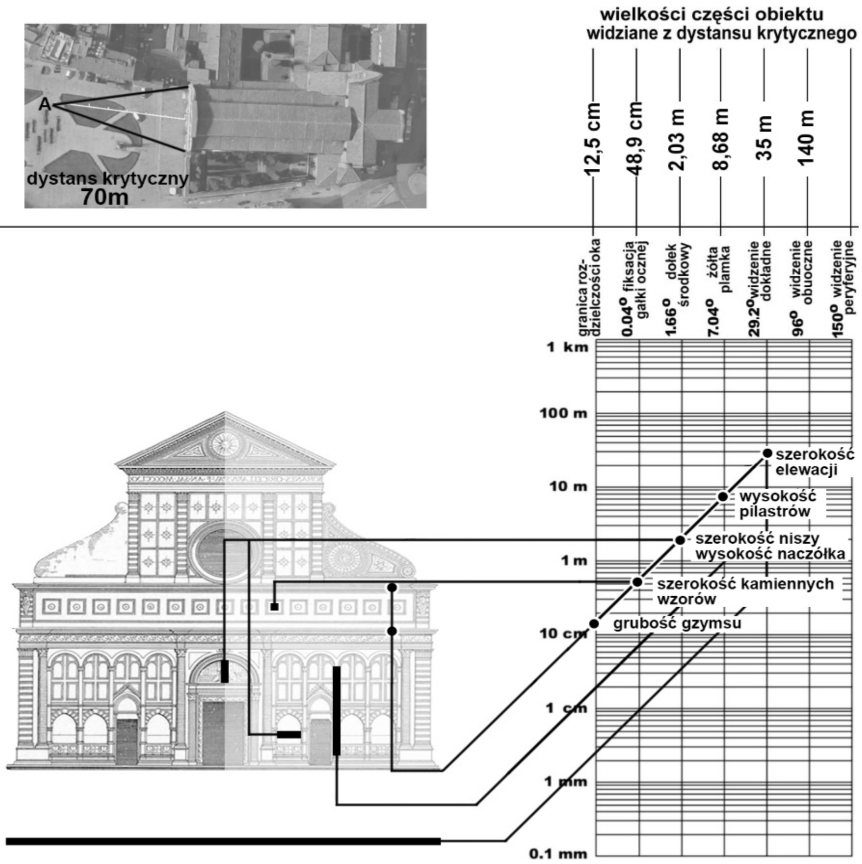

Fig. 19. Santa Maria Novella – Florence. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 70 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	0,01^0	12,5 cm	the thickness of the cornice
2	Eyeball fixation	0,04^0	49 cm	smaller encrusting module
3	Fovea centralis	1,66^0	2 m	larger encrusting module, internal supraport field – height
4	Macula lutea	7,04^0	8,7 m	the height of the pilasters on both storeys of the facade
5	Accurate vision	29,2^0	35 m	facade width
6	Binocular vision	96^0	140 m	context: average length of the interior of Piazza

2.12. Villa Rotonda – Vicenza

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

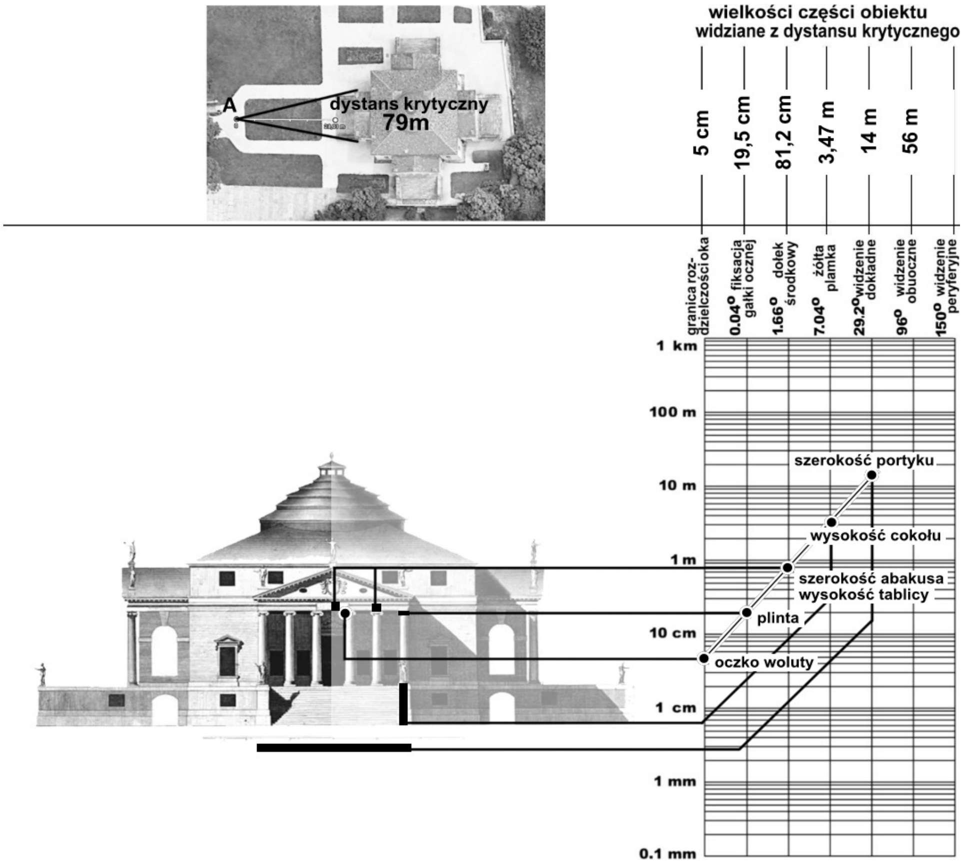

Fig. 20. Villa Rotonda – Vicenza. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object: critical distance 28 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0,01^0$	5 cm	the eye of the volute
2	Eyeball fixation	$0,04^0$	19,5 cm	thickness of plintus
3	Fovea centralis	$1,66^0$	81,2 cm	abacus width, height of the architrave (with fasciae)
4	Macula lutea	$7,04^0$	3,47 m	plinth height, the height of the tympanum and the frieze
5	Accurate vision	$29,2^0$	14 m	the width of the porticoes
6	Binocular vision	96^0	56 m	context: courtyard surrounding the building

2.13. Cathedral – Amiens

Authors: E. Tomczak, M. Wabińska, A. Wlazły, W. Wodras

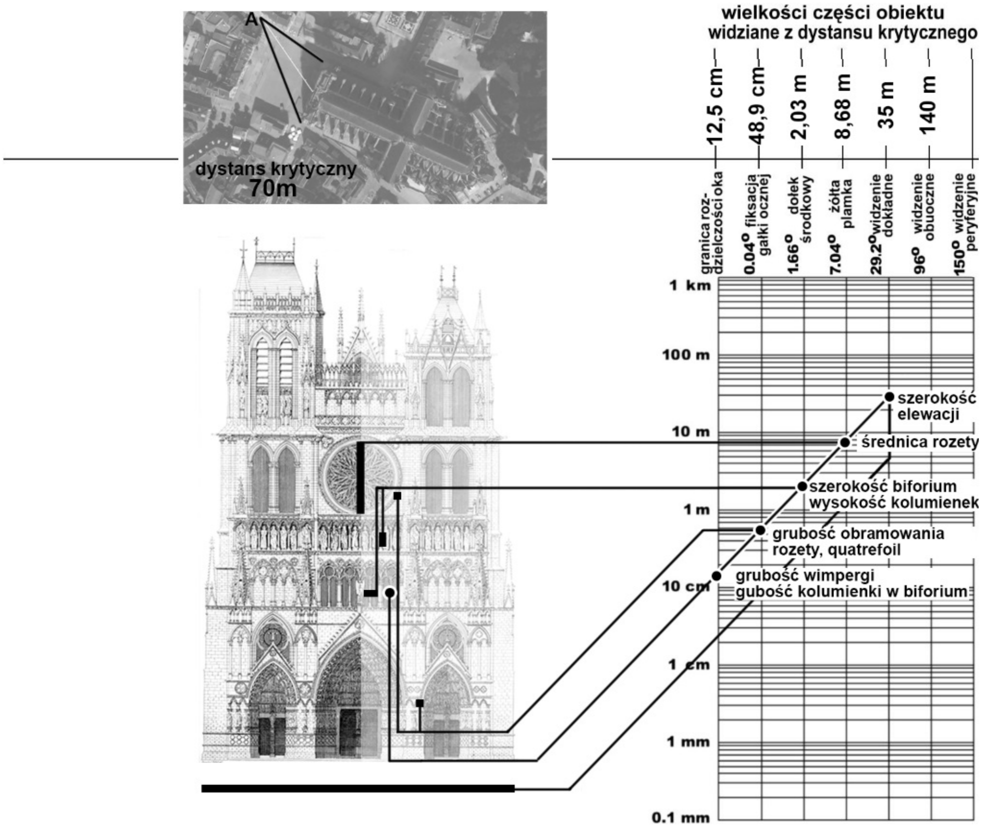

Fig. 21. Cathedral – Amiens. The numbers in the diagram correspond to the numbering in the description below

Tabular description of the object:
critical distance 70 m

↓	Field of view zone	angle	the size within the angle as viewed from a critical distance	
1	Eye resolution limit	$0{,}01^0$	12,5 cm	wimperg thickness, column thickness in biforium
2	Eyeball fixation	$0{,}04^0$	49 cm	rosette border thickness, quatrefoil
3	Fovea centralis gallery	$1{,}66^0$	2 m	width of the biforium, height of the columns in the royal
4	Macula lutea	$7{,}04^0$	8,7 m	rosette diameter
5	Accurate vision	$29{,}2^0$	35 m	facade width

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STREFY KOMPOZYCYJNE FORMY ARCHITEKTONICZNEJ. PRACE KOŁA NAUKOWEGO [PHI]

Streszczenie

Ewolucja dostosowała budowę oka do życiowych potrzeb. Efektem tej adaptacji jest strefowa struktura pola widzenia. Strefy są niezależnymi kanałami informacji. Obserwowane formy są już na siatkówce oka automatycznie, w procesach podświadomych, rozkładane na części.

Harmonia muzyczna wyłania się z akustycznego chaosu dzięki współbrzmiącym ze sobą wysokościom dźwięków. W podobny sposób z chaosu wizualnego wyłania się forma architektoniczna. Harmonia wizualna polega na odpowiednich wielkościach części zestrojonych ze sobą. O tej harmonii informują nas wprost naturalne strefy siatkówki oka. Mieszczą one w sobie miarę wizualnego konsonansu. W akcie percepcji strefy siatkówki wypełniają się przez odpowiadające im części harmonijnej formy, rezonując z wbudowaną w oko miarą harmonii.

Artykuł przedstawia prace Koła Naukowego [phi] dotyczące strefowej analizy kompozycji obiektów architektonicznych.

Słowa kluczowe: strefy pola widzenia, strefy strukturalne formy