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Ksanthos Tiyatro Caveası: Erken İmparotorluk Dönemi'nin Rekonstrüksiyonu

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The Xanthus Theatre Cavea: Reconstruction of Early Empire Period

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Aytaç DÖNMEZ*

Abstract: Xanthus Theater is located on the west side of the city centre. Located between the Western Agora and the Lycian Acropolis, the building draws attention especially with its topographic and physical characteristics of the area. The theater, the first phase of which is dated to the IInd century BC, was badly damaged after the great earthquake in the IInd century A.D., and was almost rebuilt with major architectural changes and additions made during the Antonine and Severan periods. However, the capacity of the cavea decreased from 4628 to 2826 people, with the architectural changes implemented in the ima cavea, firstly the conversion of the theater into an arena in the second half of the IIIrd century A.D., and then the use of the seats removed from the summa cavea for the construction of the castron wall in the VIth century A.D. In addition to these changes, the vomitorium and the cavea support vaults in the east were demolished at a later period, which we do not know yet, and the cavea took its present form. In this study, the architectural structure of the Early Imperial Period cavea, about which we have limited information, has been tried to be reconstructed on the basis of detailed descriptions and evaluations.

Keywords: Theatre, Cavea, Xanthus, Arena, Roman Period

Öz: Ksanthos Tiyatrosu kent merkezinin batı yakasında yer almaktadır. Batı Agora ile Lykia Akropolisi arasında konumlanan yapı özellikle bulunduğu alanın topoğrafik ve fiziki özellikleri ile oldukça dikkat çekmektedir. İlk evresi MÖ II. yüzyıla tarihlendirilen tiyatro, MS II. yüzyıldaki büyük deprem sonrası oldukça hasar görmüş, bunun üzerine Antoninuslar ve Severuslar dönemlerinde gerçekleştirilen büyük mimari değişiklikler ve eklemelerle neredeyse yeniden inşa edilmiştir. Ancak, öncelikle MS III. yüzyılın II. yarısında tiyatronun arenaya dönüştürülmesi için ima cavea'da uygulanan mimari değişiklikler, sonrasında ise MS VI. yüzyılda kastron duvarının inşası için summa caveadan sökülen oturma sıraları ile birlikte cavea'nın kapasitesi 4628 kişiden 2826 kişiye düşmüştür. Bu değişikliklerin yanı sıra henüz bilmediğimiz daha geç bir dönemde doğu yöndeki vomitorium ile cavea destek tonozları yıkılmış ve cavea günümüzdeki son halini almıştır. Bu çalışmada, bugüne kadar hakkında sınırlı bilgiye sahip olduğumuz Erken İmparatorluk Dönemi cavea'sının mimari yapısı, ayrıntılı tanımlamalar ve değerlendirmeler temelinde yeniden oluşturulmaya çalışılmıştır.

Anahtar sözcükler: Tiyatro, Cavea, Ksanthos, Arena, Roma Dönemi

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Introduction

The Xanthus Theatre is located on the west side of the city centre (Fig. 1). At this point, the building between the Western Agora and the Lycian Acropolis attracts attention especially with the topographic and physical characteristics of the area[1]. In fact, there are many public and burial structures around it, since the area where the building is located has been constantly subject to vital activities, starting from the earliest known, Late Archaic - Early Classical Period until the end of the East Roman Period. These pillar tombs and the sacred Dynastic agora, which are thought to have had a cult function and are located in the immediate vicinity of the theater, show that the religious and traditional factors suggested by Ferrero outweighed the site selection for the construction of this theatre[2].



Fig. 1.The Xanthus Theatre. Air Photo From West (Excavation Archive)[3]

The cavea of the Xanthus theater reveals the different phases very clearly in terms of its architecture. Architectural observations, in particular, provide sufficient data to show the changes made to the cavea section of the theatre in terms of the architectural features of successive periods. These observations and excavations show that the cavea, which was first built in the Hellenistic Period, was almost rebuilt in the Early Imperial Period and became a Roman Theatre[4]. However, with the change from the staging plays to the bloody arena games in IIIrd century A.D., the architecture of the cavea underwent significant changes so that orkhestra was transformed

This article is derived in part from my doctoral thesis entitled: "Xanthos Theatre". I would like to thank Terrance M. P. Duggan for proofreading my English text.

1 Vitruvius (V. 3. 1) emphasizes that theaters should be built in the most suitable place possible in the city, and that this is very important for the audience. Ferrero on this subject; he used the expression "*…the place of the theater was chosen considering the religious and traditional factors that are closely related to the morphology of that city*". See. Ferrero 1990, 19.

2 Ferrero 1990, 19.

3 All drawings and photographs without sources are belong to the author.

4 For the detailed information about phases of Xanthus Theatre see. Dönmez 2022.

into the arena[5]. Afterwards, in the VI[th]century A.D. the rows of the seats of the western part of the summa cavea and west vomitorium were dismantled and blocks from this part were reused in the construction of the castron wall. Also the east vomitorium and eastern part of the summa cavea were destroyed at a later time, the date is presently undetermind. Therefore, in this study, the attempt is made at reconstruction of the architectural structure of the Early Imperial Period cavea, of which to datewe have limited information, on the basis of detailed descriptions and evaluations.

Research History

The first excavations dates back to the 1950's, when the first scientific research at Xanthus began[6]. Under the chairmanship of P. Demargne, three excavations (1953, 1954 and 1956 excavation seasons) were carried out in the theatre between the 1950-60 excavation seasons[7]. In following years, due to the fact that the researches focused on the Letoon, theater researches were interrupted for 30 years. E. Frezouls and the architect D. Longepierre, started to work again at the Xanthus Theater in 1989[8]. As a result of these researchs, a short article entitled, "L'exploration du théâtre de Xanthus" was published in 1990 by E. Frezoul, in which the architectural description of the building was made[9]. In this work, the plan of the building and the façade of the paraskenion section in the east were drawn. The results of the excavations of 1991 and 1992 were presented by Chr. le Roy at the "International Symposium of Excavations in Turkey"[10]. Afterwards, after the death of E. Frezoul, theater research was again interrupted[11]. After this sad separation, in 1998 J. C. Moretti wrote a short introduction concerning the Xanthus Theater[12]. After the death of E. Frezoul, work on the theater resumed in the 2001 excavation season[13]. In these works, approximately 400 architectural blocks located inside the theater's orchestra and stage building were arranged on the empty space in the north-east of the building. Again in 2001, J. des Courtils and L. Cavalier dealt with the theater from an urbanistic perspective in their study on the urbanism of Xanthus[14]. In 2005, L. Cavalier presented to the world of science a book on the architecturally ornamented blocks of Xanthus, including the architecturally ornomanted blocks of the theater[15]. During the research carried out in 2009, after an interval of about eight years, some of the architecturally ornomented blocks found in the rooms in the postskene transferred to the place

5 Especially in the III[rd] century A.D., violent, bloody gladiatorial fights and venetiones, which were very popular in Rome in the I[st] century B.C., began to be organized in the Roman provinces of Anatolia. (Coleman 1993, 49; Sear 2006, 112; Meijer 2008; Alanyalı 2017, 5-16). Thus, the Hellenistic theater culture in the Anatolian provinces gave way to the arena culture of Rome. While many new amphitheaters were built for gladiatorial fights in Rome in the I[st] century B.C., this situation was implemented in Greece and Anatolia by making changes to the architectural structures of existing theaters instead of undertaking new construction activities. With these architectural changes; theaters were converted into arenas during the Middle and Late Imperial periods. See. Bieber 1961, 90, 213-220; Ferrero 1988, 55; Sear 2006, 112; Özdilek 2011, 272-272; 2012, 76-77; İsler 2017, 763; Dönmez 2019. For studies on the existence of gladiatorial fights in Anatolia, see. Robert 1940, 178; Ferrero 1988, 155; Akat 2001, Yurtsever 2012, 2018.

6 For the detailed research history of Xanthus Theatre see Dönmez 2022, 11-32.

7 For the excavations in 1953 see. Demargne 1954, 113-114. For the excavations in 1954 see. Demargne 1955, 106-107. For the excavations in 1956 see. Demargne 1957, 9-10.

8 For the excavations conducted by Frezouls in 1989 see. Le Roy 1990, 76.

9 Frezouls 1990, 875-890.

10 Le Roy 1993, 305-308.

11 Moretti 1998, 52.

12 Moretti 1998, 52-55.

13 For the excavations in 2001 see. Courtils & Laroche 2002, 306.

14 Courtils & Cavalier 2001, 149-171.

15 Cavalier 2005, 45-66.

where the other blocks had been placed. In addition, as a result of the cleaning work carried out in the orchestra, the traces of the early cavea were completely unearthed[16]. A small-scale work was carried out in the theater in 2011 under the chairmanship of B. Varkıvanç[17]. B. Özdilek, who made a general evaluation of Lycian Theaters, firstly in her doctoral thesis in 2011[18] then in an article in 2016, also mentioned the Xanthus Theater[19]. In the year 2015, L. Cavalier, J. des Courtils and P. Mora published an article about 3D the restitution of the Xanthus Theater which presented in 2013[20]. Lastly, druring the excavations, which focused heavily on the theater between 2017-2019[21], very important data were obtained and the results of these studies were completed as a doctoral thesis by the author of this article[22].

Description

The West Agora, which together gives the appearance of a complex, the Lycian Acropolis, on which it leans against the northern slope, and the Roman Bath to the east, are among the main public structures surrounding the building (Fig. 2). In this area, the most important public buildings of the Roman Imperial Period are gathered together and constituted the cultural center of the city[23].

There are three pillar tombs surrounding the building. These tomb structures entered the literature termedthe Harpy, Sarcophagus and Theater Pillars. The Harpy and Sarcophagus Pillars are located just to the northwest of the theatre, while the monumental tomb called as the Theater Pillar is located just southwest of the cavea. Especially the Harpy and Sarcophagus Pillars are in a very important position as they remain within the view point of the cavea[24].



Fig. 2. The Location of Theatre. (Excavation Archive)

The cavea of the Xanthus Theater leans against the northern slope of the Lycian Acropolis. For this reason, the cavea facing the north

16 For the excavations in 2009 see. Courtils 2010, 297.

17 Varkıvanç 2012, 57.

18 Özdilek 2011, 423-425.

19 Özdilek 2016, 139-185.

20 Although some points are quite true in this restitution, the text focus is directly on three-dimensional modelisation, without mentioning either measurement or archaeological methods and building phases. See. Cavalier *et al.* 2015, 121-127.

21 For the excavations in 2017 see Dönmez & Erdoğan 2018, 71-73. For 2018 see Dönmez & Erdoğan 2019, 248-250. For 2019 see Dönmez 2020, 65.

22 For the thesis see. Dönmez 2022.

23 For the Western Agora, see. Cavalier & des Courtils 2012, 247-261; Dönmez 2018a; 2018b. For the Lycian Acropolis, see des Courtils 2003, 45. For the Roman Bath, see. Farrington 1995, 4; For the plan of the building, see Farrington 1995, pl. 12.

24 For Harpy Pillar, see; Demargne 1958, 45; Langlotz 1927, 105; Pryce 1928, 122; Tritsch 1942, 48; Akurgal 1942, 30; Demargne 1958, 45; Fuchs 1969, 433-434; Berger 1970, 128; Shahbazi 1975, 48-49; Zahle 1975, 83; Özgan 1978, 91; Polat 1998, 113; Özüdoğru 2008, 144 ff; Cavalier & Courtils 2012, 247; Karademir 2016. For the Sarcophagus, see Demarge 1958, 47, ff. For the theatrical construction, see Demargne 1958, 107, ff.

is facing the opposite direction of the south direction, which Vitruvius stated on the use of the sun's effects in the context of positioning the theater caveas[25]. However, considering the proximity of the city to the sea, the fact that the cavea was positioned facing north rather than south, in order to protect the spectators from the humid wind coming from the sea in the south, for the orientation of the cavea makes sense[26]. In addition, this orientation would have been preferred, since it would have been understood that the theater would be less affected by the sun's rays due to the topographical features of the area where the cavea is located, as well as the fact that the theater plays were performed during the afternoons in antiquity[27].



Fig. 3a. The Sections of the Cavea



Fig. 3b. Air Photo

Apart from the changes and natural destruction that took place in the late period, the cavea is still standing today. The cavea consists of two maenianum, ima and the summa cavea. These sections are separated from each other by a not very wide diazoma (Fig. 3-4).



Fig. 4a. the Cavea (T. Yıldırım)

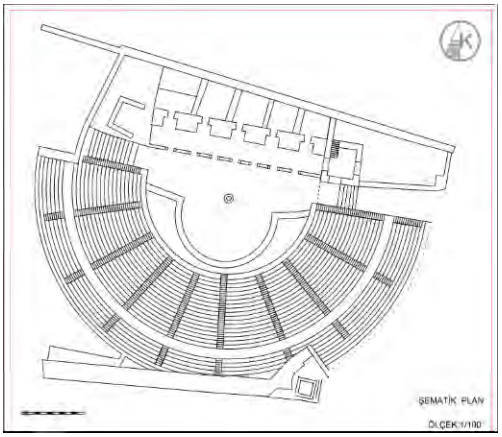


Fig. 4b. Plan of the Cavea. (M. Çelebi)

At the border point of the diazoma and the ima cavea, that is, at the top border of the ima cavea, there is a row of seats. To the east and west of the diazoma, there is a two-arched passage

25 Vitruvius, in his work *De Architectura* (V. 3. 2), stated that the cavea section of the theaters should face south.

26 In the context of positioning the caveas, another important factor other than the direction of the sun is the wind. See. Vitr. V. 3. 1; see also Ferrero 1990, 28. Although the southern slope of the high hill seems to be a more suitable area for the construction of the theatre, the humid wind, especially from the sea, would have had a very negative effect on the audience. For a different perspective on the location of the cavea see. Özdilek 2011, 171.

27 For the directions and cavea placements of the Lycian Theaters, see. Özdilek 2011, 159-164. The caveas of the theaters in the cities of Patara and Tlos, which are located in the immediate vicinity of Xanthus, are also positioned facing north. For the cavea of the Patara Theatre, see. Piesker & Ganzert 2012, 48, abb. 47. For the cavea of the Tlos Theatre, see. Korkut & Özdemir 2019, 802, res. 18, 21.

opening to the diazoma. Today only the eastern one can be clearly identified. It is connected with a vomitorium, which is entered through an entrance located just east of the parados to the east. This area is almost completely destroyed today. The parodos and the *pseudo* parodos in the western section are quite well preserved.

Ima Cavea

Although the ima cavea, which is divided into 11 klimakes and 10 kerkides, is generally intact, the preservation is more evident especially at the central part (Fig. 5a-b). A few rows of seats are missing at the point where the section meets with the orchestra underwent a later renovation.



Fig. 5a. Ima Cavea



Fig. 5b. Ima Cavea

While the kerkis were preserved and intact at the central points, only 5 steps remained from the section above the parodos. The two kerkides in the most southwestern direction of the ima cavea are now slipped over the main axis due to the destruction caused by earthquakes. There is a special section in the upper row of the ima cavea where the bisellia are placed. Today, none of these bisellia have been preserved *in situ*. A total of 21 bisellia were identified, 17 of which are at the southeast end of the castron wall (Fig. 6a-b). The widths of the bisellia, whose heights are equal to each other 1.10 m, differ from each other.

Summa Cavea

Summa cavea is divided into 23 klimakes and 22 kerkides. It has a podium of 1.50 m. Although the podium elevation consists of 3 parts, it consists of a molded leg at the bottom, a row of isodomic blocks of different sizes on it, and a profiled block row like the lower leg. The klimakes located in the summa cavea are accessed by stairs built laterally with 4 steps that rise to the right and left. The average height of the steps is 0.30 m and their depth is 0.30 m. These steps lean towards the west in the east of the cavea and in the east direction in the west of the cavea. On the podium, there are 10 separate steps in total, although only 5 are visible in the central section (Fig. 7a).



Fig. 6a. Castron Wall



Fig. 6b. Bisellia on the Castron Wall

There is an arched and vaulted entrance opening to the diazoma in the southeastern part of the summa cavea (Fig. 7b). Although this passage, which is connected with the vomitorium, is

today in a very damaged condition, the first two rows of the feet from the arch and a reciprocal keystone remain *in situ*. The other blocks belonging to the arch, on the other hand, are located in front of the entrance as they have been demolished. While a 4.00 m section of the podium is observed in the eastern continuation of this vaulted entrance, only the lower row of feet, the rectangular blocks in the upper section, and the archisolated blocks with crown decoration decorated with a protruding profile with three faskia are located in the upper section. The width of the entrance is 2.70 m. From this direction to the northeast, the summa cavea was completely destroyed and dismantled.

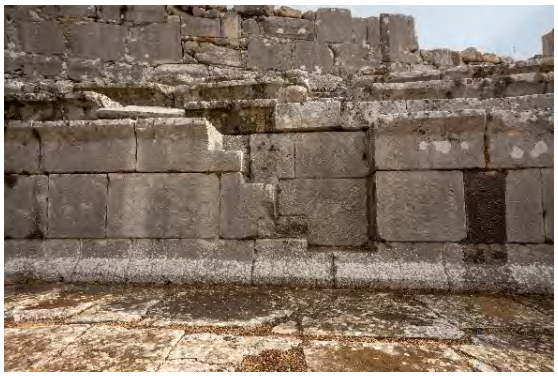


Fig. 7a. Summa Cavea. Stairs



Fig. 7b. Summa Cavea. Vomitorium

Klimakes and Kerkides

There are 34 Klimakes and 32 Kerkides arrangements in total. In the ima cavea, there are 11 klimakes, 10 kerkides, and in the summa cavea, 23 Klimakes, 22 kerkides. Klimakes in the ima cavea were placed according to the geometrical order within the orchestra circle, which determines the characteristics of the Hellenic Theater, as Vitruvius explains[28]. In this context, the intersecting squares placed in the orchestra circle approximately correspond to the klimakes.

The widths of the rows of seats in the kerkides are different from each other butthey are all equal in height 0.40 m. The average depth of the sitting blocks varies between 0.95-1.00 m. When we look at the klimakes, only 7 steps have survived to the present day in the most northeastern klimax (Fig. 8a). This is because the theater was converted into an arena at a later stage. This situation is also encountered in the first klimax just south of the *pseudo* parodos. The widths of the klimakes vary between 0.57 m and 0.61 m. Two klimakes blocks were detected between the blocks on the walking floor in the diazoma. One of these blocks is 0.55 m wide and the other 0.45 m wide. It is highly probable that this small-scale klimax block, especially with a width of 0.45 m, belongs to the Hellenistic cavea (Fig. 8b). Klimakes blocks are produced with 3 different cutting techniques. These are the blocks formed by the combination of half cut blocks facing the right and left directions and the flat sitting block, as well as full cut U-shaped stair blocks. The other half cut blocks are placed from top to bottom as a right and a left side cut. The sizes of the blocks differ from each other. At some points, full cut blocks were used in between. These blocks are generally located in the upper part of the cavea at the point opening to the diazoma (Fig. 8c).

[28] Vitr. V. 7. 2; see also Dörpfeld & Reisch 1896, 162 ff.

Diazoma and Vomitorium

While the diazoma, located between the summa and ima cavea, has survived to the present day in a well-preserved condition on the central axis, it has been severely damaged in the northeast and northwest directions. In this context, some of the architectural blocks in the area where the vomitorium crossing is located, especially in the northeastern section, which is in ruins today, are the architectural blocks that collapsed from the diazoma as a result of the destruction caused by severe earthquakes. A section of approximately 12.00 m in the southwest direction is completely absent today. Some of the architectural blocks in these sections were used in the castron wall. The width of the diazoma is 1.20 m.

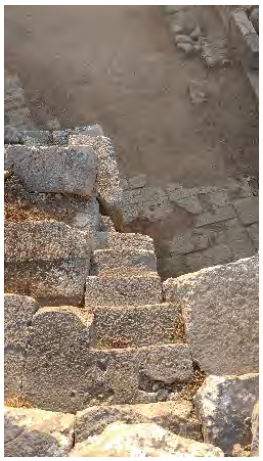


Fig. 8a. Cuted of Klimakes



Fig. 8b. Klimakes on Diazoma

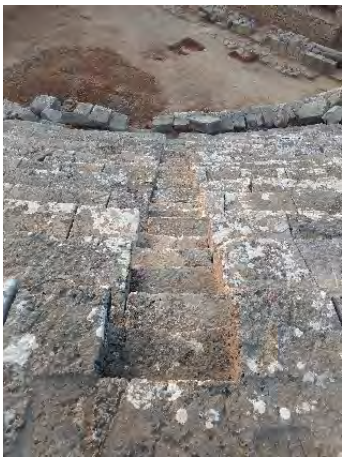


Fig. 8c. Klimakes

There are two vomitoria, one in the east and the other in the west, providing access to the diazoma. The one on the east is entered by passing through an arched entrance, which is located just east of the parodos, but which is in ruins today, to the section with vaults supporting the summa cavea in the eastern section. In this section, on the support walls of the vaults, there is an arched passageway going south at the level of the cavea and two radial chambers covering the vaulted spaces. To the south of the arched entrance on the support wall of the last vault in the south supporting the Summa cavea, there is a corridor covered by a vaulted cover. This vomitorium, 1.50 m wide, equal to the diazoma, rises to the south. Passing through this corridor, which turns immediately to the northwest of the Theater Pillar, with the steps of the stairs, a flat area is reached from this entrance, which is in ruins today, and from there to the diazoma with a 0.36 m high staircase.

On the southwest side of the building, there is a vaulted entrance opening to the diazoma and a related vomitorium. However, today, this place is completely dismantled and its blocks reused in the castron wall. The entrance to this vomitorium was provided from a door on the south stoa of the West Agora, from a colonnaded hall just east of the Harpy Monument, and from the vomitorium entrance on the narrow pathway used today as the passage to the Lycian Acropolis.

Parodos and Cavea Supports Vaults

Although it is perceived at first glance that the building has two parodos opening up to the orchestra, the Xanthus Theater had only one parodos in the Early Imperial Phase. Although the similar arched architecture and the entrance on the west side of the vaulted room façade evoke a second parodos perception in its symmetrical position, the cavea is actually a support vault in terms of its architectural function. The parodos in the east is 3.25 m wide and 2.80 m deep. There

is a cavea support vault on it connected to the paraskenion. There are rows of seats on this vault, a part of which has been demolished today. The arch, which has 11 blocks on its façade, consists of 3 side-by-side blocks in total (Fig. 9a-b). While the decoration in the form of two fascia and an archivolt crown is dominant on the arch stones on the west façade of the vault, which has a height of about 4 m, the east façade was left completely trimmed flat (Fig. 9c).



Fig. 9a. Parodos. From West



Fig. 9b. Parodos

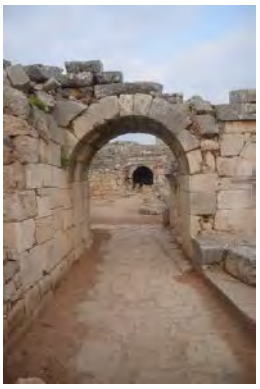


Fig. 9c. Parodos. From East

This indicates that there is a vault continuing in the east, similar to the *pseudo* parodos in the west, and a kerkis must have been formed by placing rows of seats on this arch and vault. The fact that the rows of seats on the arch and the foundation blocks advancing eastward from the paraskeneion are angled towards the north supports this argument. In this context, when we consider the symmetry, the vault should continue to the west as much as the length of the kerkis on the eastern vault.

The *pseudo* parodos on the west is 3.20 m wide and 8.00 m deep. The height of the arch is 4.00 m and consists in total of 11 keystones. Only the load-bearing wall under the lowest keystone on the south side of the arch has been damaged (Fig. 10a-b).



Fig. 10a. *Pseudo* Parodos

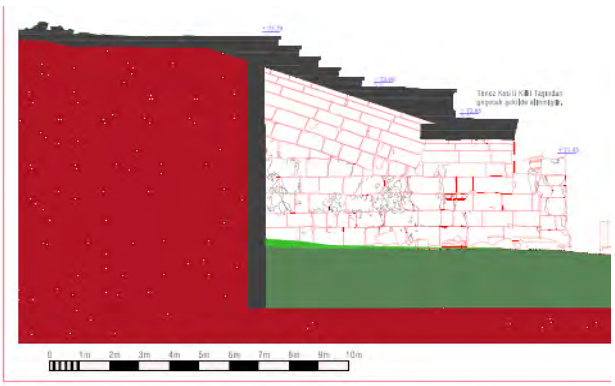


Fig. 10b. *Pseudo* Parodos. Section (T. Yıldırım)

While the arch extends to the west in the form of a barrel vault for about 3.00 m, it breaks and rises to the point where the Harpy monument is located and continues in the form of an inclined vault. As in the eastern parodos, rows of seats were placed on this vault and a kerkis architecture was formed. In this way, the cavea was enlarged. While the interior and top cover of the place have survived to the present day, only the southwest corner has collapse destruction. As the support wall collapsed as a result of this destruction, the filling material on the vault flowed into the space from this point of destruction.

Due to the fact that the elevation of the slope on which the cavea leans, gradually decreases as you go north from the central axis in the east, a large part of the cavea rises on two support vaults standing side by side at this point (Fig. 11a-b). Although the one in the south of the vaults has survived to the present day in better condition than the one in the north, some of the vaults extending to the east are in ruins. At this point, due to the fact that the summa cavea was almost completely destroyed, the radial space created by the vault was filled with these blocks and soil flowed over it over the course of time. Its viewable height is 4.35 m, its width is 3.55 m, and its depth is 9.50 m. The other vault in the north has been damaged more. Under the cavea, which was destroyed up to the midpoints of the ima cavea, the vault, which can be seen very little, has a height of 2.35 m, a width of 2.20 m and a preserved depth of 5.65 m. The two support vaults are the same size, although they seem to have different dimensions today due to destruction.



Fig. 11a. Cavea Support Vaults



Fig. 11b. Cavea Support Vaults (T. Yıldırım)

The vaults, which were largely destroyed, previously extended to the wall that curved towards the south and continued in this direction at the easternmost end of the analemma wall to the south of the parodos. Because this wall is the only boundary wall in the east, and the direction of extension of this wall and the linear extension of the ruined summa cavea are the same. In this context, this wall should be considered as the limit point in order to calculate the original dimensions of the vaults. Therefore, when we take this wall as a reference, the original depth of the vaults is 15.50 m.

The cavea support vaults are also connected with the vomitorium opening to the diazoma at the southeast corner of the cavea. On the side walls of the vaults, there are six arches that allow the vaults to rise to the east and to pass between each other. From these, the first support vault in the south is reached with the arched west entrance located in the south of the parodos. From here, the other south vault is entered via an arched entrance (Fig. 12a-b).



Fig. 12a. West Vomitorium



Fig. 12b. West Vomitorium

Just south of this arched entrance is another arch supporting the south wall of the south vault and

possibly providing the entrance to a room under the summa cavea. However, only a small part of this belt can be observed due to the dense filling soil. The first entrance to the east of the parodos is the arch connecting the vaults with the vomitorium. There is another connection and support arch that provides access to the second vault, exactly parallel to this arch, whose arch above it has collapsed, and which is in ruins today. Parallel to this arch, with an arched entrance, the vormitorium corridor, which is 5.80 m long and 2.80 m wide, is today in ruins. Since this corridor, which has been badly damaged, coincides with the lower part of the summa cavea after the vault in the south, it is covered with a vault cover to support the cavea at this point. The ground level where this corridor is located rises at an angle of 50 percent from north to south, and there are stairs in the area where this elevation is located. The diazoma is reached by another corridor 1.90 m wide and 3.65 m long, curving to the right from an entrance at the end of the corridor.

Evaluations and Reconstruction

The present form of the cavea does not reveal the original form of the structure in the Early Imperial Period, since the front part of the ima cavea was removed when the theater was converted into an arena in the IIIrd century A.D. Also the western seating rows of the suma cavea were removed for the construction of the castron wall in the VIth century A.D. In this context, in order to reveal the original form of the building, it is necessary to determine how many rows of seats were removed from the cavea. While revealing this, the ratio of the width and height of the seats to the height of the cavea podium should be calculated.

The height of the last step of the sitting rows of the cavea podium is 2.65 m and the height of each step is 0.35 m and the depth is 0.60 m, indicating that a total of six rows of seats were removed from the building. These calculations show that today's cavea will extend a further 3.65 m. Therefore, the ima cavea must have had, including the missing ones, a total of 24 rows of seating (Fig. 13).

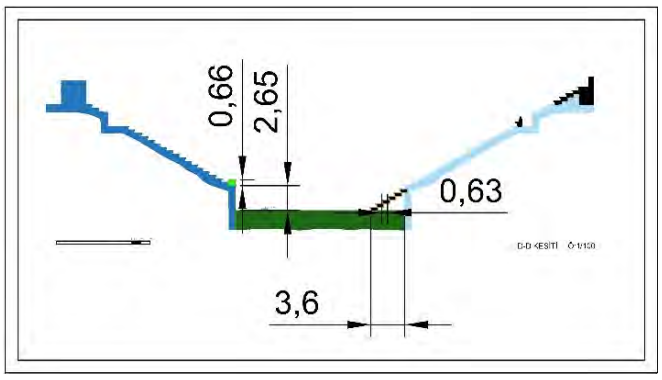


Fig. 13. Reconstruction of the Ima and Summa Cavea

In the summa cavea of the building, there are traces of five rows of seats in total, except for the transition row at the first exit to the podium. However, the summa cavea, which was damaged especially by the construction of the castron wall and from natural disasters, must have included more rows of sitting chairs. The most important point when making this calculation is to determine the extreme point where the original cavea curve of the structure extends. In this context, although the western side of the summa cavea does not provide much data, since it was dismantled during the construction of the castron wall, the traces of the support vaults in the eastern direction, which were destroyed by an earthquake, can be followed. Particularly, the boundary where the eastern legs of the first support vault in the north are located can be clearly observed. In addition to this finding, the boundary walls of the southern vault and the vormitorium vault also extend in line with the boundary wall of the first vault towards the South, on an axis that will form a circularity. Therefore, the circular axis of the summa cavea of the building should extend up to this point, which corresponds to the width of four sitting steps in total. However, considering that the extreme point was left empty to allow traffic inside the summa cavea, it is likely that there were seven rows of seats in total in its original formin the summa cavea.

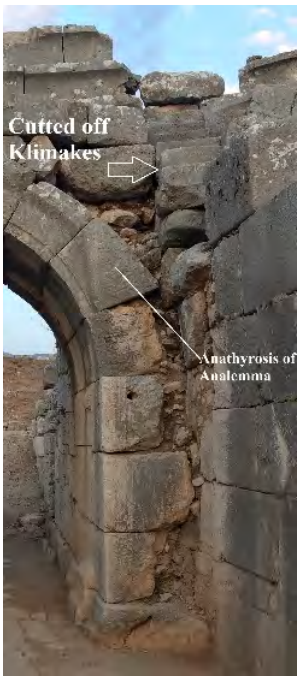


Fig. 14a. Anathyrosis Detail of Parodos


Fig. 14b. Anathyrosis Detail of *Pseudo* Parodos

Apart from determining the circular border of the cavea that unites with the orchestra, the direction where the analemmata will join with this circular point and the architectural details determined in the parodos and the vaulted space to its west are very important. Many architectural data of the analemma can be observed at the point of the parodos. The first of these appears in the eastern direction of the cavea. At the junction of the arched passage in the cavea and the parodos, there is a klimax with only five steps remaining[29]. This klimax, which did not continue with the fact that the building was converted into an arena, starting from the sixth step, must have been the last klimax in the northeastern corner of the cavea and was limited by the analemma wall. Because, two of the keystones on the western façade of the vaulted passage in the parodos, the south and the bottom two, have a different profilewhen compared to the other keystones. The wiping section, which continues on the stones and reveals a circular pattern, was processed differently in these two stones and anathyrosis was formed on the surfaces of the blocks (Fig. 14a-b) This anathyrosis is also present on the front facades of the arch pillar wall blocks under these stones. Therefore, there must be other blocks to coincide with the anathyrotic parts of these blocks and keystones. This data shows us that the analemma extended from this point towards the orchestra, before the building was converted into an arena.

A similar determination is possible for the arched space in the west direction. There is a klimax cut at a point in the north-west direction of the cavea, and an arch block similar to a keystone in the arched passage in the parodos, and anathyrosis on these stones. Therefore, similar to the eastern parodos, the analemma in this section with anathyrosis must have extended towards the orchestra before the building was converted into an arena. In this context, considering that the ima cavea extends a further 3.65 m, the wall should extend about 0.50 m further, so that the analemma should have an extension of approximately 4.15-4.20 m (Fig. 15a).

In the context of this reconstruction work, it shows that the diameter of the cavea should have been 64 m and the diameter of the orchestra was 20 m. The form of the orchestra constitutes a semicircle. So, in the harmony of cavea and orchestra, a harmony of klimakes and orchestra chambers, close to the architectural and engineering data written by Vitruvius on the Hellenic Theaters, was achieved (Fig. 15b). According to this harmony, the ends of the squares located in the orchestra circle and intersecting each other are placed in a way that corresponds to each klimax[30]. This harmony is observed even if there are slight shifts between the orchestra and the

[29] See. Fig. 8a.

[30] Vitr. V. 7. 2; see also Dörpfeld & Reisch 1896, 162 ff.

cavea of the Xanthus Theater. This shows that the cavea was designed in the Hellenistic style. According to this completion, the lengths of the eastern and western analemmata are calculated as 23.65 m.

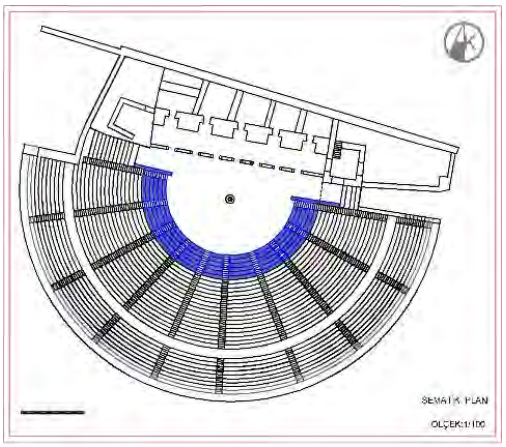


Fig. 15a. Reconstruction of the Cavea

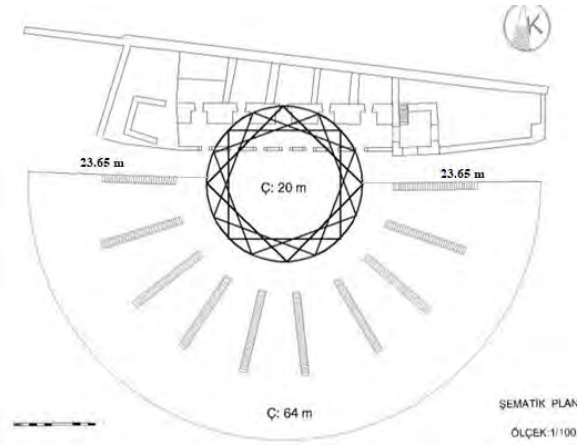


Fig. 15b. Reconstruction of the Cavea

This data shows another new situation. Reconstructing the cavea in the calculated circularity requires that the west wing be enlarged approximately 4 m further west in the section. The point reached by this enlargement coincides with the line of the independent walls on the east side of the Hellenistic Period tower-tomb to the east of the theatre, and from this point it moves south in line with the circular axis. In this context, a barrel-vaulted vomitorium should have been located on the narrow road between the theater and the tombs to the west. The arched passage providing the entrance to the diazoma from the vomitorium must have been made from the space above the cavea 7 m south of this entrance. With a width of 2.20 m, it is the same as the width of the arched passage located in the east of the cavea and provided access from the vomitorium to the diazoma. However, since this part of the cavea was dismantled during the construction of the castron wall, no fragments have survived to the present day. Likewise, due to the excavations carried out in this narrow area that provides access to the Lycian Acropolis and different arrangements in late antiquity, not much data has remained from the traces of the support vault, except for some wall remains. All this data reveals that, contrary to the fact that the summa cavea of the building was built only due to the vaults in the eastern direction due to the topography, there must have been a barrel-vaulted entrance in the western direction, although it was not as high as that in the eastern direction (Fig. 16).

Vaults was widely used in the context of supporting the cavea in theaters. At this point, some theaters were supported by vaults from both sides of their cavea, while others were supported only one way in terms of their topographic features[31]. At this point, although both sides of the Xanthus Theater were supported, the main support vaults are in the east.

Since a large part of the west is leaning against the hillside, only a part of the summa cavea is supported by the vomitorium vault. Tlos[32], Anazarbos[33], Sagalassos[34], Pergamon[35] and Limyra[36]

31 For vault and arcade sections of Lycian Theaters see. Özdilek 2011, 219-225. For the use of vaults in theaters in Anatolia, see. Sağnak, 2017.

32 Korkut 2015, 37; Korkut & Özdemir 2019.

33 Spanu 2001, 447; Sağnak 2017, 87, pl. 14.4.

34 Ferrero 1969, 44; Vandeput 1992, 99; Sağnak 2017, 182, Pl. 56.1.

35 Hoffmann 2011, 205; Radt 2011, 232; Sağnak 2017, 169, Pl. 50.2.

36 Ferrero 1969, 157; Dinstl & Knoblauch 1993, 103; Yılmaz 2009, 125; Özdilek 2016, 157 fig. 20; Sağnak 2017, 136, Pl.

theaters are among the examples of theaters that were supported only from one direction, depending on the structure of the area where they were placed. Among these examples, the support vaults in the Pergamon (Asclepius Sanctuary) and Limyra Theaters are similar to the Xanthus example, with their simple architectural structures. While there are three vaulted rooms carrying the cavea of the Pergamon Theatre, there are two vaulted rooms to the east of the cavea in the Limyra example[37].

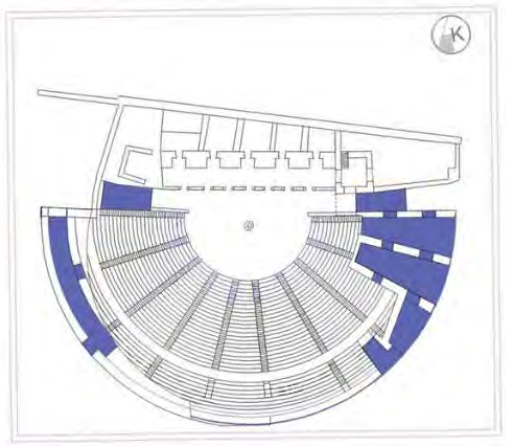


Fig. 16. Reconstruction of the Vomitoria and Cavea Supports Vaults

These vaults, which were built to support the cavea of the theaters, were also functionally used as tabernas, warehouses, latrinas, entrances and exits, and places where the audience would be protected in abruptly changing weather conditions. At this point, the writing of "the place of the traveling tradesman Gaius"[38] on the west gallery wall of the Myra Theater not only supports this thesis, but also suggests the idea that snacks and some small items were sold here[39]. Another example with tabernae spaces in its vault is the theater of Rhodiapolis. Kitchen-restaurant and souvenir shops were found adjacent to the eastern back analemma of the theatre[40]. The support vaults to the east of the Xanthus Theater must also have been used as functional spaces with their very large dimensions, since the eastern aspects of the rooms are directly connected to the vomitorium in relation to the entrance and exit. However, excavation could not be carried out at this point due to the technical conditions, as the western interiors of the rooms were filled with collapsed blocks of the summa cavea and filled soil. Therefore, since we do not have any archaeological data at this point, it has not been possible to determine exactly for what purpose the western sides of the rooms opening into each other were used. Despite this shortcoming, the possibility that the rooms were used as places where mobile tradesmen sell, as in the example of the tabernae of Myra, is more likely than other functional possibilities, since these rooms coexist with the vomitorium and are in this context very close to heavy human traffic[41]. When we consider the connection of the blind parodos in the west with the orchestra and the stage building, we can say that it was most likely used as a warehouse. However, this place must have been used as a room where animals were kept, after the theater was converted into an arena.

Except for the parodos, access to the cavea was made from three points in total, from the vomitoria in the east and west directions. The vomitorium in both directions completely supports the infrastructure of the cavea.

Vomitoria are the sections built to provide access to the theaters and speed up the spectators' entrance and exit. The construction and number of these sections vary according to the size, capacity and topographic suitability of the building. In this context, some theater buildings can

34.5.

37 Özdilek 2016, 159; Sağnak 2017, 169, lev. 50. 3-4.

38 Çevik & Bulut 2010, 35.

39 Özdilek 2011, 273; Sağnak 2017, 232.

40 Özdilek 2011, 273; 2012, 50.

41 E. Sağnak stated that this section was used as a warehouse or taberna, see. Sağnak 2017, 232.

have a single vomitorium, while others have two, three or even more vomitoria. There are two vomitoria in the Xanthus Theater that provide entrance to the cavea from both the east and west directions[42]. Since these two vomitoria have different architectural features due to the topographic features of the area, there is no symmetry in their axis and forms. At this point, there are many similar theater examples with two vomitoria[43]. Among these examples, although the Patara Theater differs from the Xanthus example in terms of the plan structure of the vomitoria, it is almost the closest example in terms of the placement of the vaulted entrances of the vomitoria opening to the diazoma. While only the Patara examples were placed symmetrically, symmetry could not be applied to the Xanthus examples due to topographic necessity. In Patara, there are two vaulted passages opening to both the east and west of the diazoma. The arched section on the front façade of these vaulted passages is decorated with three fascia and archivolt crown decorations, similar to the Xanthus examples[44]. In addition, both the architectural structure of the diazoma and the row of seats placed on the top step of the ima cavea are exactly similar to the Xanthus Theater[45]. Apart from this, the podium of the high summa cavea and the lateral stairs on the podium are other similar architectural features[46].

The upper part of the parodos, which provides access to the orchestra and thus to the cavea, is covered with a barrel vault approximately 4 m wide. However, there are some points to be noted at this point. The first of these is that although the keystones on the interior of the vaulted section are decorated, the exterior façade providing the entrance to the building was left completely flat. In this context, it is necessary that the façade of these stones is not visible somehow, otherwise, if the original state of the building was of this structure, the keystones on the facade of the vault should have been decorated on the inner face of the vault and even on the outer facade of the arch at the entrance opening to the paraskene next to it. Another point is that between this entrance, which provides the entrance to the orchestra, and the paraskene, there are foundation blocks adjoining the wall, extending towards the east. These blocks follow an axis, not straight but inclined to the northeast. So much so that this axis catches the same axis as the vault on the *pseudo* parodos. Therefore, in the continuation of this cradle vault in the parodos, another inclined vault should extend, as in the *pseudo* parodos. In this way, both the capacity of the building should be increased and internal symmetry should be provided. As a result of his observations at this point, E. Sağnak evaluated the structural structure here as a partial vault application and stated that similar applications of this application were also encountered in Selge, Olympus, Myra, Tieium, Pisidian Antiochia, Rhodiapolis and Laodicia (North) theaters[47]. However, contrary to this idea, from our recent evidence, similar examples of structuralism here are that, like the vault system applied in the *pseudo* parodos to the west of the Xanthus Theatre, carriers in the form of a cradle and then an inclined vault were placed on it. Similar to the vaults in this architecture, we see the north parodos of the Aspendus Theater[48] and the parodos of the Perge

42 E. Sağnak states in his thesis that the building has only one vomitorium. See. Sağnak 2017, 243.

43 There is a vomitorium in both wings of the Tlos, Patara, Komana, Tieium, Cnidus Lower Theatre, Alinda, Alabanda, Trallis, Telmessus, Elaiussa Sebaste and Assus theatres. For more detailed information on the subject, see Sağnak 2017, 240-243.

44 Piesker & Ganzert 2012, 61, res. 67-68.

45 Piesker & Ganzert 2012, 64, res. 73-75.

46 Piesker & Ganzert 2012, 65, res. 76-77, 79.

47 Sağnak 2017, 234.

48 The width of the northern parodos in Aspendus is 3.57 m, which is quite close to the Xanthus example. At the exit of this north-south oriented parodos, it continues in the form of a barrel vault consisting of 11 stones and a conical vault rising in its continuation. Sağnak 2017, 99, lev. 19.3. In the same way, a similar application is encountered in

Theatre[49].

The summa cavea is reached by lateral stairs on the cavea podium. The lateral ladder application was widely used in the summa cavea. In this context, the closest example is provided by the Letoon Theatre[50]. Similarly, the summa cavea of the Letoon Theater has a high podium wall and lateral stairs that provide access to the summa cavea on this wall. Similar architectural structures are encountered in the summa cavea of the Patara[51], Ephesus[52], Myra[53], Aspendus[54] and Perge theaters[55].

The plan of the Xanthus Theater cavea is generally in the form of a semicircle. However, with the parodos and the kerkis on the opposite peseudo parodos, this form slightly exceeds the semi-circle. In this context, the closest similar structure to the Xanthus example in plan is the cavea of the Patara Theatre. The cavea of the Patara Theater also has a plan a little over a semicircle[56]. In addition, although it consists of two parts, the podium wall, lateral stairs and diazoma order in the summa cavea are almost the same as that at Xanthus. The cavea of the Aspendus Theater forms a complete semi-circle[57]. In addition, the fact that their parodos is covered with vaults, has two maenianums, and the podium and lateral stairs in the summa cavea are very similar to the Xanthus example.

In the studies of previous researchers, it was stated that the capacity of the cavea was 2200 people in total[58]. However, this capacity calculation does not constitute the original capacity of the theater in the Roman Imperial Period, for which we completed the architectural completion. In addition, since no calculations were made in the previous discourses, it was necessary to reconsider this study with the appropriate methodological approaches.

The most practical and rational method applied in theater capacity calculations is to divide the total length of the seating rows in the cavea by the seating share for one person. The most important point in this method developed by B. Özdilek is to accurately measure the length of the lowest and highest rows of the cavea. As a result of this measurement, the average of the sum of the lengths of the lowest and highest rows is multiplied by the total number of rows of the theater. Subtracting the total length of the climaxes from this result, the total length of the rows of the cavea is obtained. Finally, the capacity is calculated by dividing the total length of the cavea by 0.50 m, which is determined as the average seating for one person[59]. According to this method, the capacity of the theater in the Early Roman Imperial Period should have been 4,628 people[60]. In

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the southern parodos, see. Sağnak 2017, 100, lev. 19. 4. For Perge, see Sağnak 2017, lev. 52.1

49 In the three-dimensional modelisation study carried out by French scientists, they evaluated the vaulted section on the parodos as a partial vault and gave it as such. However, according to the available data, this point has been suggested incorrectly. See. Cavalier *et al.* 2015, 125, fig. 2.

50 Moretti 1998, 52-55; Sear 2006, 380-381, lev. 134.

51 For Patara example see. Piesker & Ganzert 2012, 65, fig. 76-77, 79.

52 Ataç 1995, 334ff; Liebich & Styhler 2009, 471ff; Hofbauer 2002, 182ff; Sear 2006, 335, lev. 114

53 Sear 2006, 370 Lev. 127; Çevik & Bulut 2010, 35; Özdilek 2016, 157 fig. 24.

54 Ferrero 1970, 164; Sear 2006, 366, lev. 122.

55 Ferrero 1990, 130 ff; Sear 2006, 372, lev. 129; Alanyalı 2012, fig. 2.

56 Piesker & Ganzert 2012, 49, fig. 47.

57 Sear 2006, 336, pl. 383.

58 Frezouls 1990, 882.

59 "A d + A u /2 xTotal number of rows of seats / 0.50 m = Capacity". Özdilek 2012, 24-26. For the detailed explanation of the formula see. Özdilek 2012, 24-26; Özdilek 2014. For other methods, see. Moretti 1954, 48ff; Forni 1968, 59 ff. In this regard, see. also Bingöl 2005, 149; Sear 2006, 26.

60 Lower arc length of the cavea: 33.803984 m, upper arc length of the cavea: 106.455734 m, average arc length: 70.129859 m, total number of seats: 33, capacity =70.129859x33/0.50 = 4.628 persons

this context, the capacity of the final stage of the theater, which was previously claimed to have an estimated 2200 people, is to be calculated as 2,826 people[61].

Conclusions

The theater must have begun to be rebuilt with the economic support given by Opramoas[62] from Rhodiapolis, as the building was probably damaged considerably after the great earthquake that affected all of Lycia in 141 A.D. Although they do not show the beginning of the new construction activities of the building The architectural blocks of the skene, which are dated to the Early Antonine Period according to the architectural decoration technique and style, are very important in terms of providing a terminus[63]. Therefore, this shows that the Roman Imperial Theater, although we do not know exactly when the first construction works started, was definitely built during the Antonine Period and started to be used again. This dating proposal is also consistent with the dates that Opromoas helped the city[64]. Although this construction process of the theater is related to this great earthquake, this situation should also be related to the planning made during the Romanization process[65].

In the Early Antonine Period, the cavea and the stage building were positioned independently of each other, as in the Hellenistic Period. With the support vaults added to both its east and west, the new cavea is quite wide and has a capacity of approximately 4500 people with its full circle form. The vomitoria at both the east and west points reaching the diazoma were added to the structure during this period. While the cavea of the old Hellenistic Period theater was curved towards the east when the agora direction was aligned, the new cavea built in this period was built exactly parallel to the agora with an almost semi-circular form.

During the Severan Period, significant changes were made in the structure. However, the changes made in this period can be observed in two different phases as the Early and Late Severan Periods. While some repairs were made only on the stage building in the Early Severan Period, the paraskene sections were added to the stage building in the Late Severan Period, and the cavea was combined with these sections by placing cradles and oblique vaults on the parodos in both directions. Thus, the capacity was increased by placing rows of seats on these vaults. In this way, the total capacity of the building was increased to 4650 people. In addition, the building became a single whole for the first time, as the cavea and the skene were combined organically[66].

61 A d: 43,96 m, A u: 97,34 m, average arc length: 70.129859x20 capacity =70.129859x20/0.50 = 2.826 people.

62 Balland 1981, 173 vd.

63 Cavalier 2005, 45-66; Dönmez 2022, 149-159.

64 Dönmez 2022, 179.

65 Courtils 2003, 13.

66 Dönmez 2022, 184.

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