# THE CENTRAL DOME SPACE COMPOSITION IN THE OTTOMAN CLASSICAL ARCHITECTURE

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***ABSTRACT***

*The Central Dome Space Composition, defines how the dome which is used as cover in buildings, has developted to dominate the central part of a building and secured uniformity of space. The composition goes back a long way in the history of construction. We see an example of it in İstanbul St. Sophia with the space of gigantic dimentions it created. This concept began during the Anatolian Turkish Architecture period, improved during the Ottoman Classic Architecture era and in the XV. century it reached its peak with Architect Sinan's application of it in mosque construction. Where a space had to be covered by a single dome, so that it would not be necessary to increase the number of load bearing columns, square, hexagonal or octagonal load bearing systems were designed to carry the roof. Edirne Selimiye Mosque (1569-1575), which Sinan himself desribes as the masterpiece of his proficient period where he employed the Central Dome Composition in the most effective manner, has become one of the most favoured works of the Classical Ottoman Architecture. The unbroken space achieved by the Central Dome brought central altitude and monumental status to the structure.*

**Keywords:** *Central, Dome, Composition, Sinan, Ottoman, Mosque*.

***ÖZET***

*Merkezi Kubbeli Mekân Kompozisyonu, yapılarda örtü sistemi olarak kullanılan kubbenin, yapıların merkezine hakim olacak biçimde gelişerek, mekân bütünlüğü sağlamak üzere kullanılmasını tanımlamaktadır. Kompozisyon, yapı tarihinde çok öncelere dayanmakta ve örneği, devasa ölçülerde bir mekân oluşumu ile İstanbul Ayasofya'da görülmektedir. Bu kavram, Anadolu Türk Mimarisi'nde başlayıp, Klâsik Osmanlı Mimarisi'nde gelişmiş ve XV. Yüzyılda, Mimar Sinan'ın camilerdeki uygulamalarıyla doruğa ulaşmıştır. Tek kubbe ile örtülü mekânlarda, örtü büyüklüğüne bağlı olarak taşıyıcıların artmaması için, kare, altıgen veya sekizgen planlı taşıyıcı sistem oluşturularak örtü taşıttırılmıştır. Sinan'ın, merkezi kubbe kompozisyonunu en etkin hale getirdiği ve ustalık dönemi eseri olarak ifade ettiği Edirne Selimiye Camii (1569-1575), Klâsik Osmanlı Mimarisi'nin en gözde eserlerinden olmuştur. Merkezi kubbeyle sağlanan mekân bütünlüğü, yapıya, merkezi yükselme ve anıtsallaşma getirmiş; içte de olgun bir kompozisyonla mekân birliğini sağlamıştır.*

**Anahtar Sözcükler:** *Merkezi, Kubbe, Kompozisyon, Sinan, Osmanlı, Cami.*

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## Introduction

The dome used as covering system in buildings which has developed in a manner dominating the center of a structure, supported on weight bearing pillars and giving wholeness to a space is defined as *Central Dome Space Composition,* (Concentric Dome Space Composition).

The concept of centrally placed dome plan (and volume) in architecture is a very old idea which has been used in a variety of buildings. *St. Sophia* in İstanbul, where the dome is both centrally situated and the space it creates of enormous dimensions, is a magnificent example.[1]

In Turkish Art, the *Central Dome Composition* came into use during the Anatolian Turkish Architecture period and continued to develop during the Ottoman Classical era. In the XV. Century, *Architect Sinan* employed the most advanced form of this system. In the architecture of mosques, the developed dome in front of the niche (altar) together with the *Central Dome Composition* provided the wholeness of space in structures.

It is well known that in Western Anatolia, the buildings in which the central plan system incorporating the dome is used as the main cover, had shown a consistent development since the beginning of the XIV. Century.[2] Before *Sinan*, all the main elements of a single dome architecture were used[3] and although Anatolia projected an appearance of being free from the archaic and highly decorative conceptions of the middle ages, the structures were still on cubic footings joined to the spherical cover in the simplest manner, with massive walls, little broken and static in character.[4]

*Sinan*, persistently made use of the dome covering for mode creating and with his skill and mastery he succeeded in establishing connections between space and variations of external mass and also between the main dome, secondary domes and other units of the structure.[5] If, while covering a baldaquin with a single dome of exceptional dimensions, it is desired to increase the number of

[1] O. Arık, "Ölümsüz Sinan", *Sanat Dünyamız,* Year 3, No: 7 (May 1976), İstanbul, p. 45.
[2] D. Kuban, "Mimar Sinan ve Türk Mimarisi'nin Klasik Çağı", *Mimarlık 11*, Year 5, No: 49 (November 1967), İstanbul, p. 16.
[3] Kuban, 1967, p. 16.
[4] Kuban, 1967, p. 16.
[5] Kuban, 1967, p. 16.

load bearing columns a square, hexagonal or octagonal plan system can be employed[6] (Fig. 1a, 1b, 1c).

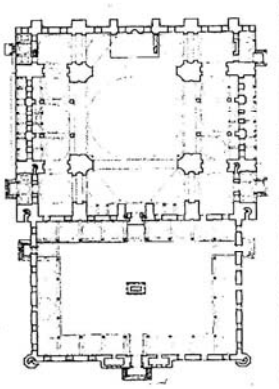


Fig.1a- Square Plan Aslanapa -1988)

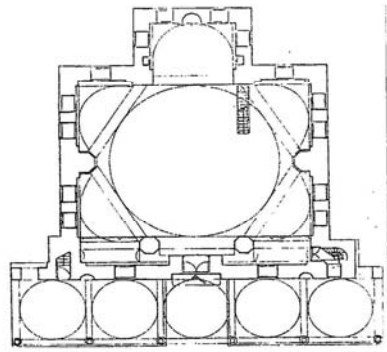


Fig.1b- Hexagonal Plan (From Aslanapa -1988)

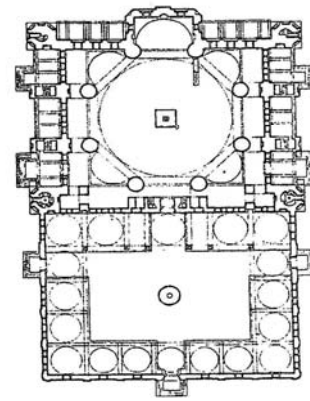


Fig.1c- Octagonal Plan (From (From Aslanapa -1988)

## Traditional Lines That Lead to the Central Dome Composition

Many different types of mosque architecture in Anatolia during the Seljuk and Principality periods attained the desired perfection with *Architect Sinan*'s *Central Dome Composition* which has developed during the classical Ottoman Art era. As a result of these developments the standard plan types came into being.[7] In the Anatolian Turkish Architecture, the mosques built before *Sinan* typologically, can be grouped as follows:

1- Seljuk Period
- a) Kûfe type,
- b) Emevi type,
- c) Single dome cubic type,
- d) The type that extends along the axis of the Mihrab (niche)
  (i- Basilica type, ii- Pavilion type)
- e) The Aiwan type.

[6] D. Kuban, "Architecture of the Ottoman Period", *The Art and Architecture of Turkey,* Switzerland, 1980, p. 145.
[7] Arık, 1976, p. 46.

2- Principality Period

a) Single dome cubic type,
b) Kûfe type,
c) Basilical type,
d) Emevi type,
e) Equivalent multi-unit type,
f) The Reverse "T" type,
g) In back to back equivalent two dome type,
h) Central type,
i) Dome in the center, aiwan on the side.

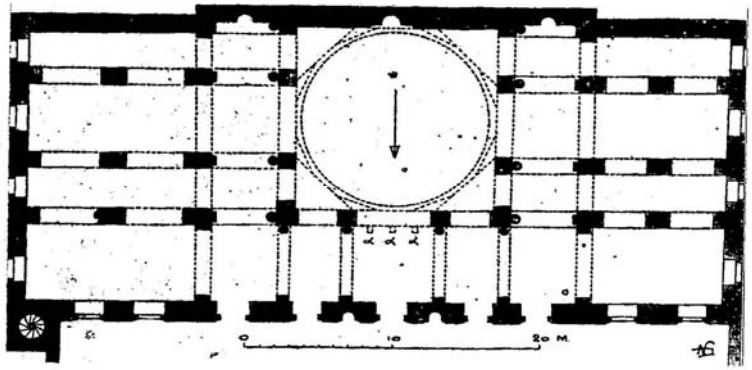
We can observe the main trend (line) in some of these types developing into the classical mosque type in the following order: *Silvan Ulu Mosque* (1157), *Manisa Ulu Mosque* (1366), *Edirne Üç Şerefeli Mosque* (1447), *İstanbul Eski Fatih Mosque* (1470), *Manisa Hatuniye Mosque* (1489), *İstanbul Zincirlikuyu Atik Ali Paşa Mosque* (1497) and *İstanbul Bayezid Mosque* (1506).[8]

Although *Edirne Üç Şerefeli Mosque* is looked upon as the first important example of the *Central Dome Composition* architecture, it can fairly be said that this was the result of constant trials along these lines in Anatolia since the XII. Century.[9] *Silvan Ulu Mosque*, *Manisa Ulu Mosque* and *Manisa Hatuniye Mosque* are the same type as *Umeyye Mosque* in Damascus built by Emevies, with an important dome incorporated into the plan. The development of domes in front of the Mihrab (niche) in the crosswise rectangular plans, supported on pillars away from the walls, exemplify the transition to the central dome concept (Fig. 2a, 2b). We can now examine four different plan diagrams of four different mosques built one after the other during the Ottoman Classical Art era where we can see clearly the development of the *Central Dome* Composition.[10]

a) *Edirne Üç Şerefeli Mosque*; is a rectangular enceinte with a hexagonal baldaquin positioned in the center and each of the lateral spaces covered by two small domes. The four corners of the centrally situated hexagonal baldaquin rest on supports fixed to north and south walls, the east and west sides are supported

[8] Arık, 1976, p. 46.
[9] M. Sözen, R. Arık, K. Asova and others, *Türk Mimarisinin Gelişimi ve Mimar Sinan*, İstanbul, 1975, p. 58.
[10] O. Arık, *Turkish Art and Architecture*, Ankara, 1985, p. 145.

by two free standing hexagonal pillars and the dome is placed on the arches between these supports (Fig. 3).




2a- Silvan Ulu Mosque Plan (From C. E. Arseven)

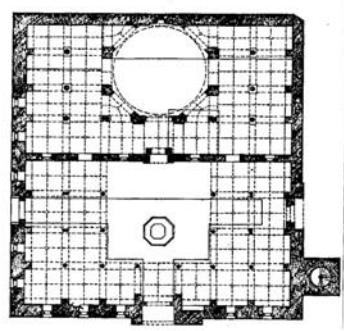


Fig.2b- Manisa Ulu Mosque Plan (From O. Aslanapa -1989)

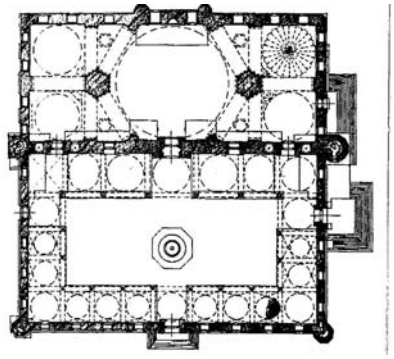


Fig.3- Edirne Üç Şerefeli Mosque Plan (From O. Aslanapa -1989)

b) *İstanbul Eski Fatih Mosque*; the cover system which consists of the dome in front of the Mihrab (niche) attached to the dome in the middle and the three lateral small domes, is considered the first stage of the central dome concept development in İstanbul (Fig. 4).

c) *İstanbul Beyazıd Mosque*; is a continuation of the development in *İstanbul Eski Fatih Mosque*. The central dome in İstanbul *Beyazıd Mosque* is balanced by attaching two half domes to its north and two to its south sides. The spaces on the east and west sides were covered by four small domes (Fig. 5). Within this development period it is in this example that we see the similarity to *İstanbul St. Sophia* (Fig. 6).

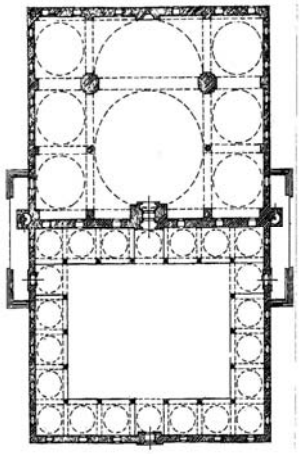


Fig.4- İstanbul Eski Fatih Mosque Plan (From C. E. Arseven)

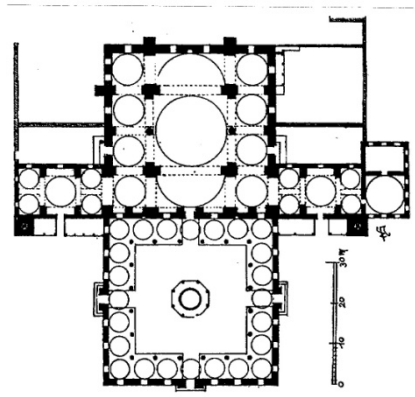


Fig.5- İstanbul Bayezid Mosque Plan (From C. E. Arseven)

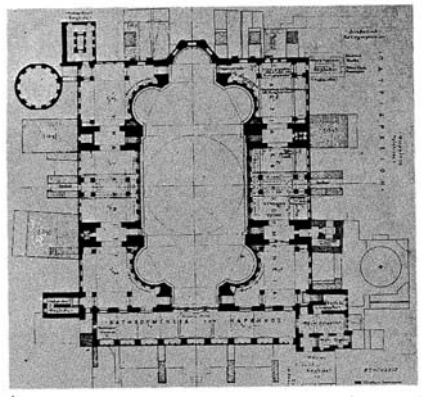


Fig.6- İstanbul Saint Sophia Plan (From C. E. Arseven)

d) *İstanbul Şehzade Mosque*; is the mosque where the central dome space covering design was the final stage in dome design by *Sinan.* The completed covering system is composed of a central dome resting on four pillars with four half domes attached to it on all four sides and four small domes on each corner 4 (Fig. 7).

In the process of development we have summarised above we can see that the square baldaquin reached its best form in *Sinan*'s first great work *Şehzade Mosque*. After attaining this result *Sinan* worked on early hexagonal and octagonal baldaquin diagrams of pre-classical era and perfected each one of them. As examples of hexagonal baldaquin we can mention: *Beşiktaş Sinan Paşa Mosque* (1555), *Topkapı Kara Ahmet Paşa Mosque* (1558), *Fındıklı Molla Çelebi Mosque* (1561), *Babaeski Semiz Ali Paşa Mosque* (1565). *Eminönü Rüstem Paşa* (1561) and *İstanbul Azapkapı Sokullu Mehmet Paşa Mosques* (1577) are examples of the octagonal baldaquin.[11]

In the process of this development there exist applications of other designs. One of the best among these is *Mihrimah Sultan Mosque* in Üsküdar-İstanbul (1543 -1548). In this work, *Sinan* made some changes to the design by doing away with one of the half domes, the half dome attached to the central dome in the north, and the four small domes in the corners.[12] (Fig. 8).

*Edirne Selimiye Mosque* (1569-1575) (Fig. 9) is one of *Sinan*'s most significant works; "The masterpiece of my life" as *Sinan* himself put it. He was 80 years old at the time. In this building *Sinan* employed the *Central Dome Composition* most effectively. Here the lateral domes were removed and the central dome with a diameter of thirty-one and a half meters covered the entire space. The central dome is supported on eight pillars and the arches in between. The *Central Dome Composition* which has been going through constant development until now in this work of *Sinan*, reached its peak both in expanse and height.[13]

[11] O. Aslanapa, *Mimar Sinan'ın Hayatı ve Eserleri*, Ankara 1988, pp. 50-96.
[12] M. Sözen, 1975, p. 167.
[13] O. Aslanapa, *Türk Sanatı*, 2nd ed., İstanbul 1989, pp. 26 -264.

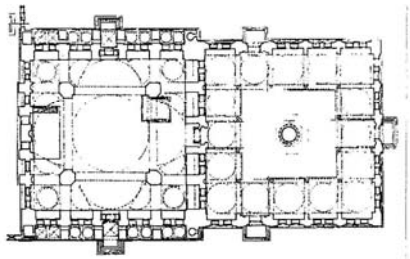


Fig.7- İst. Şehzade Mosque Plan (From M. Sözen)

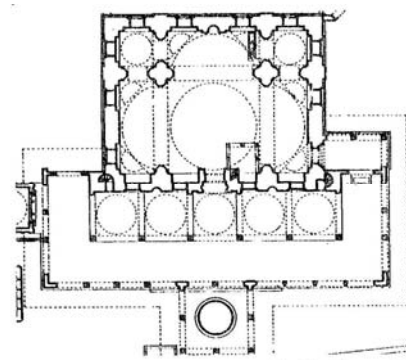


Fig.8- İst. Üsküdar Mihrimah Sultan Mosque Plan (From M. Sözen)

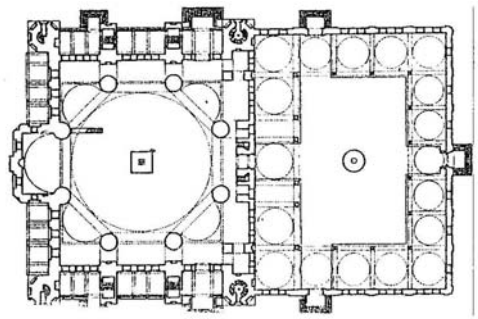


Fig.9- Edirne Selimiye Mosque Plan (From O. Aslanapa -1988)

## The Connection of "Single Dome Cubic Mescit" Type to the Development of the Central Dome

In Anatolia there are many examples of "Single Dome Mescit"[14] type buildings erected during Seljuk and Principality Periods. The domes in these buildings rest on four load bearing walls planned in the form of a square.

We can show *Bursa Alaaddin Bey Mosque* (1326) as example for the standard type; *Bilecik Orhangazi Mosque* (from technical and workmanship points of view, it is believed to belong to the first half of the XIV. century) for the crosswise type; *Mudurnu Yıldırım Bayezid Mosque* (1382) for the type where the dome is supported on eight pillars attached to the walls and *İznik Yeşil Mosque*

[14] M. Sözen, 1975, pp. 48-49.

(1391) for the type exemplifying the transition of the interior space into rectangular shape.[15] In the "Single Dome Cubic Mesjit" type, the non-existence of free standing load bearing pillars made it necessary to have thicker walls. Thicker walls form aiwans in places and these in turn spoil the uniformity of space that can be created by a central dome. At the same time the appearance of the exterior becomes a blunt and rough mass and the building devoid of the rising elegance and monumental appearance.

In İstanbul, *Silivrikapı Hadım İbrahim Paşa Mosque* (1551) (Fig. 10), which is taken as an example of the "Single Dome Cubic Mesjit" of the Classical Ottoman Art, it is noticeable that only the liveliness in the lower part of the arches enhance the appearance of the interior.[16] It will also be observed that the aiwans formed as a result of the thickness of walls supporting the dome spoil the uniformity of space inside the building. *İstanbul Edirnekapı Mihrimah Sultan Mosque* (1565) (Fig. 11) also is one of the notable examples of "Single Dome Cubic Mesjit" type because of its plan diagram and dome covering.

It can be said, therefore, that "Single Dome Cubic Mesjit" type did not have any influence on the development of central dome.

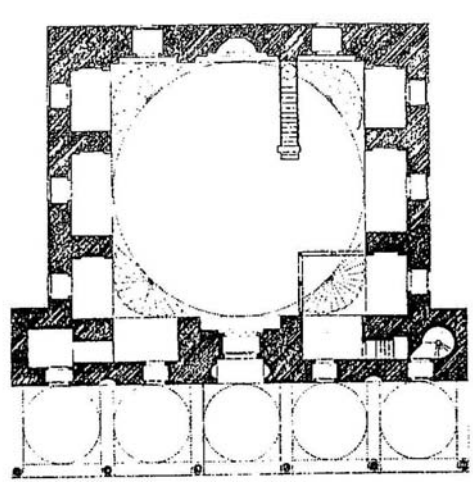


Fig.10- İst. Silivrikapı Hadım İbrahim Paşa Mos. Pl. (From O. Aslanapa -1988)

[15] Aslanapa, *Mimar Sinan'ın Hayatı ve Eserleri*, pp. 50-53.
[16] C. E. Arseven, *Türk Sanatı Tarihi*, III. Fascicle, İstanbul, p. 238.

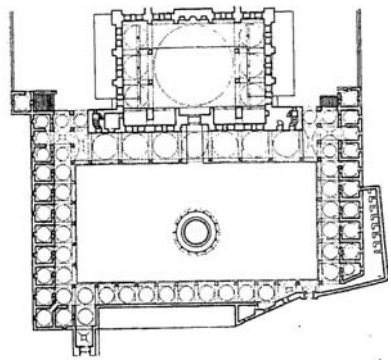


Fig.11- İst. Edirnekapı Mihrimah Sultan Mosque Plan (From O. Aslanapa -1988)

## The Contribution of Reverse "T" Type and Multi-Dome Space Concepts to the Development of "Central Dome"

In the reverse "T" type mosques the design of the plans resembles an upside down "T" and is composed of more than one space. The domed central part is used as a mosque and the spaces on the sides for other purposes. The spaces are separated by walls with passage ways in some parts. *Bursa Orhan Bey Mosque* (1339), *Bursa Yeşil Mosque* (1420), *Bursa Muradiye Mosque* (1426) are examples of this type (Fig. 12a, 12b, 12c).

The plan designs and load bearing systems lead to division of space resulting in loss of wholeness in space. The example to this type, which can be said to be nearest in design to the central dome system, is *Amasya II. Bayezid Mosque* (1486). However, even this building is a long way from exibiting the main features of wholeness of space which the *Central Dome Composition* can provide (Fig. 13).

In the "Equivalent Multi-Unit Mosque" type, which followed the multi-dome concept, because of the multi-unit space covering the number of load bearing pillars within the space and the arches connecting them also increase. Consequently, the space is broken up into many units and the central wholeness is spoiled. *Bursa Ulu Mosque* (1399) (Fig. 14), *Edirne Eski Mosque* (1414), *İstanbul Zincirlikuyu Atikali Paşa Mosque* (1497) can be shown as examples of this type.

So, it can be seen that the "Reverse T" type and the "Multi-dome Space" concepts, because of their both character and also, because of the load bearing

cover peculiarities, did not contribute anything to the development of *Central Dome Composition*.

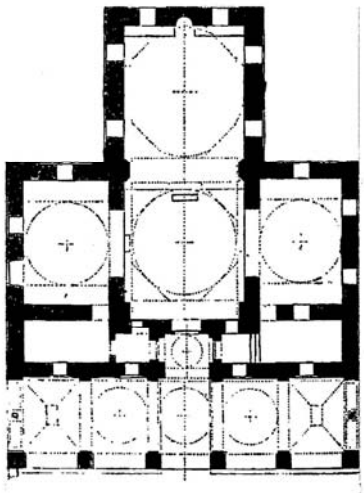


Fig.12a- Bursa Orhan Bey Mosque Plan (From C. E. Arseven)

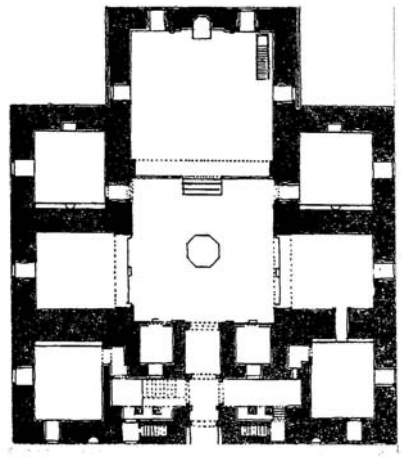


Fig.12b- Bursa Yeşil Mosque Plan (From C. E. Arseven)

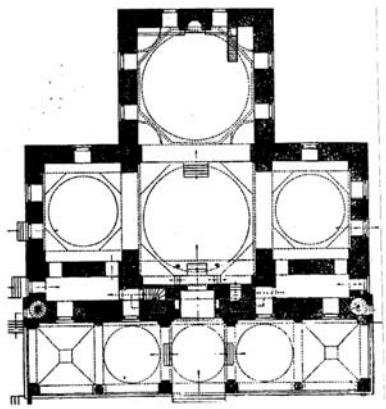


Fig.12c- Bursa Muradiye Mosque Plan (From C. E. Arseven)

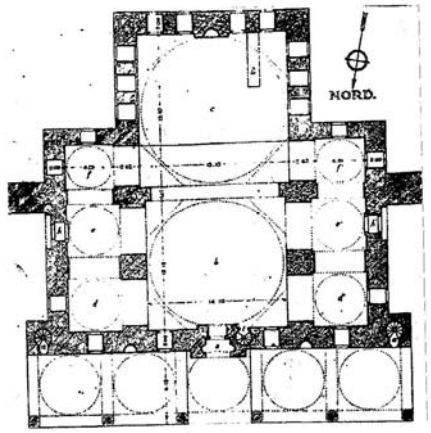



Fig.13- Amasya II. Bayezid Mosque Plan (From C. E. Arseven)

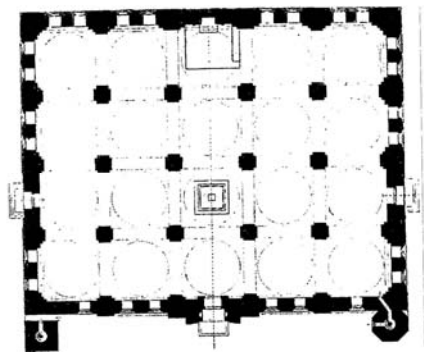


Fig.14- Bursa Ulu Mosque Plan (From C. E. Arseven)

## Conclusion

The *Central Dome Space Composition* of the Ottoman classical era, which contributed to architecture in general, had been in use at different times long before the Ottomans and with *St. Sophia* in İstanbul it reached monumental dimentions. But, its application in *St. Sophia*, which is a late Roman or early Bizantium work, is the only example of this type in monumental dimentions; it does not exhibit lines which we can call pre or post development. Viewed from this point, in Bizantium Art, *St. Sophia* is a trial effort.

In Ottoman Classical Architecture the development of the composition by *Sinan* came about by continuing to use and improving the traditional Anatolian

Turkish Art lines. The wholeness of space provided by the central dome brought central altitude and monumentality to the building.

The various trial works of *Architect Sinan* were based on the earlier Turkish Architecture. These lineal, square, hexagonal and octagonal baldaquin systems can be observed in buildings of Seljuk and Principality periods. Each and every one of these systems were perfected by *Sinan*. However, it can not be said that the "Single Dome Cubic", "Reverse T" or "Equivalent Multi-unit" type buildings have contributed anything to the development of the *Central Dome Composition* concept.

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