

Sinan and Bramante: analogies and differences in the evolution of Renaissance and Ottoman religious building

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At first sight the similarities of Sinan's mosques and some 16th century projects for St. Peter's in Rome look striking, and recently the possibility of an influence in one way or the other has been stressed again¹. After a more detailed analysis, however, most analogies cannot be explained with any certainty by a direct influence but seem to go back either to common late antique and Byzantine prototypes or to a parallel evolution².

Church and mosque: common roots and different functions

If one tries to understand the complex relation of both, one has first of all to remember the essential cultural and functional differences between catholic and Muslim religion, between church and mosque. One of their common roots was certainly the synagogue, the Jewish hall of common prayer furnished with a pulpit and a holy niche. While Jews as well as pagans had put the place of sacrifice outside of the temple, Christians erected the altar above the tomb of the martyr and made it the centre of the church, the place where mess was celebrated and bread and wine transformed in the sacrificed body of Christ. The priest had to be learned and ordained and from the Middle Ages onward in Western Europe also celibate. In the sacristy he was clad in

- 1 G. Goodwin, *A history of ottoman architecture*, London, 1971; W. Müller-Wiener, *Bildlexikon zur Topographie Istanbuls*, Tübingen, 1977; G. Necipoğlu, *The Age of Sinan: Architectural Culture in the Ottoman Empire*, London, 2005, pp. 71-124 with bibliography; H. Günther, "Die osmanische Renaissance der Antike im Vergleich mit der italienischen Renaissance", in *Sultan Mehmet II.: Eroberer Konstantinopels – Patron der Künste*, ed. N. Asutay-Effenberger and U. Rehm, Köln, 2009, pp. 93-138.
- 2 M. and Z. Ahunbay, "Structural influence of Hagia Sofia on ottoman mosque architecture", in *Hagia Sofia from the the Age of Justinian to the Present*, ed. R. Mark and A. S. Cakmak, Cambridge, 1992, pp. 179-194; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 49-51.

precious garments for the different feasts. In monastic and chapter-churches the area around the altar was reserved to the choir, which by and by could become as long as the strictly separated space reserved of the laymen, who sometimes could not even see the high altar, or even longer. The church had to be consecrated and the sitting order of the faithful was strictly hierarchical. Princes had their seats and their tombs in the choir and rich families built their own funerary chapels and were buried under the floor, while the common people often on a churchyard and in times of pest even in cumulative tombs. The bells of the tower did not only call the faithful to the service, but accompanied also the rite. With the increasing number of Saints, relics, altars, messes and chapels the common service split more and more in individual messes and prayers. Bigger churches had also a separate baptistery. Lavish figural decoration transformed the interior into an image of the heavenly Jerusalem. Thus religious architecture mirrored the hierarchical, mystical and individualistic mentality of western society. Princely or religious builders and towns competed in dimension, splendour and figural decoration of their cathedrals and palatine chapels, and St. Peter's or the Lateran basilica had to be big enough to house ten thousands of faithful.

The main religious rite of the Muslim is the common prayer, for which a hall is not indispensable. The hall does not need to be consecrated and their religious centre in Mecca does not need a building of comparable size as St. Peter's. The mosque has neither altar nor choir, neither sacristy nor baptistery³. In a still similar way as in the synagogue men look to the Mecca oriented *mihrab* and listen to the Imam standing in front of them or on the *mimbar*. As the word says, he is a guide, an administrator, preacher and exegete. There are neither sacraments nor priests and the assembly is in many ways more «democratic». Hygienic and rational functionality are much more important than in churches: the faithful has to get off his shoes and may wash his feet on a fountain, which can even be situated in the prayer hall as in the Ulu Ciami of Bursa. Many mosques are built by the sultan, but not always for these a privileged area is reserved. As in the synagogue there is no figural but only ornamental and literary decoration, which invites the faithful to prayer, propriety and reflection but does not as much create the illusion to stay in heaven. Female and children are not admitted to the central prayer hall, but have to stay in separate lateral areas, where in the early mosques of Bursa also the sultan could eat and sleep. The lavish mausoleums of privileged people and cemeteries are separate. The minaret is just thick enough for a spiral stair the muezzin has to climb up, and high enough that

3 J.I. Smith, "Islam and Christendom", in *The Oxford history of Islam*, ed. J.L. Esposito, Oxford, 1999, pp. 305-346.

his voice calling the faithful five times a day for prayer can be heard also from far away. There are schools and hospitals attached to the mosque. Thus the mosque is less alike to catholic churches than to the assembly halls of radical 16th century reformers, who wanted to return to the understanding of the bible and to the fraternal simplicity of early Christianity.

Humility, simplicity and material poverty had been typical of the roman basilicas of Constantine, but when he transferred his capital to the east, Christian architecture became imperial and reached already in Justinian's Hagia Sophia an architectural level unparalleled in the West⁴. Its huge cupola was still related to the entire interior and not just to the altar. The Muslims became soon the major rivals of Justinian's heirs and continued his imperial architecture. In the late 7th century they asked Byzantine architects to build on the site of the Jewish temple and on the spot, where Abraham had to sacrifice Isaac and from where Mohamed ascended to heaven, their key monument, the dome of the Rocks in Jerusalem which was supposed to attract also Jews and Christians. Its interior reminds of preceding centralized churches such as that of the Holy Sepulchre in Jerusalem or S. Stefano Rotondo in Rome, but the sequence of geometrical volumes of which its monumental exterior is composed, should become prototypical of Muslim architecture⁵.

Beginning and first climax of Ottoman architecture

One Moslem dynasty after the other succeeded to rule over great parts of northern Africa, Asia and even Europe, and their architects preserved the typologies and technological skill of the Romans much more consequently than their European contemporaries. In the 11th century the Seltshuks extended their empire into Turkey and at the beginning of the 14th century Ottomans took over and became lords of the Islamic world. In their first capital in Bursa and their second in Edirne they continued Seltuk architecture and used until the early 15th century a large variety of building types (*fig. 1*)⁶.

4 R. Krautheimer, *Early christian and byzantine architecture*, Harmondsworth, 1965, pp. 17-49.

5 R. Krautheimer, *Early christian...*, 1965, pp. 39-40, 65, 254; G. Necipoğlu, *The Age of Sinan...*, 2005, p. 77.

6 G. Goodwin, *A history...*, 1971, pp. 15-141; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 49-51.

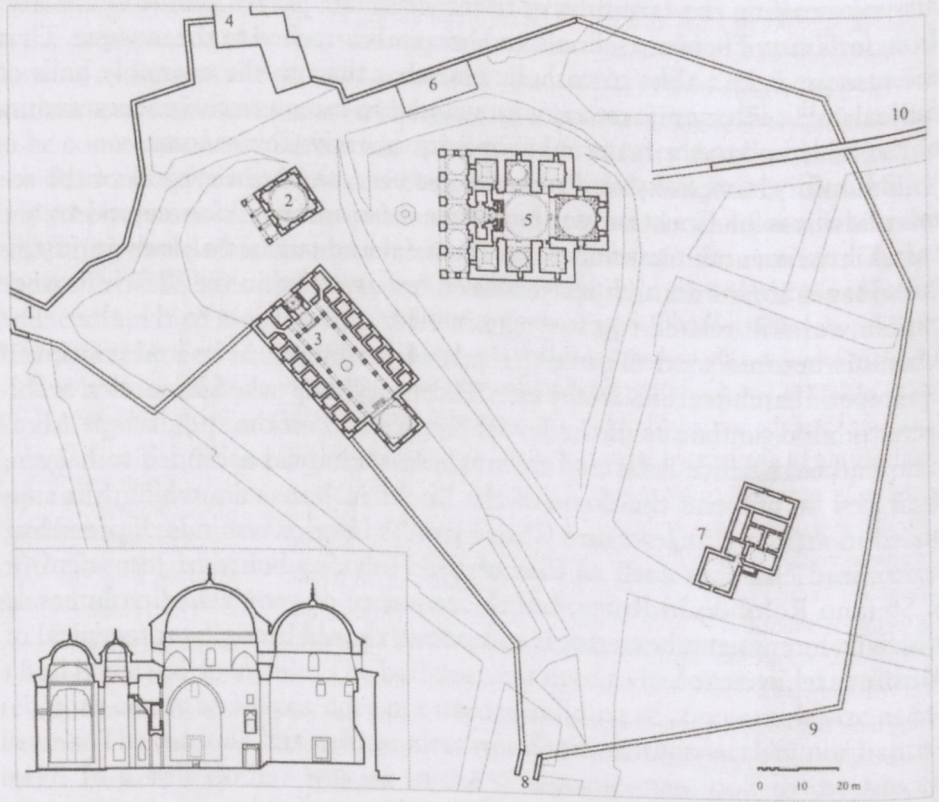


Fig. 1. Bursa, plan of Bayezid I complex

- | | |
|--------------------------------|------------------------------------|
| 1. Gate | 6. Hospice |
| 2. Mausoleum | 7. Bathhouse |
| 3. Madrasa | 8. Gate |
| 4. Site of royal garden palace | 9. Reconstruction of precinct wall |
| 5. Convent-masjid | 10. Aqueduct |

While the prayer hall of the relatively small and simple Yesil Cami in Iznik (1378-1387) and of other mosques of this period are restricted to a single domed bay, the Ulu mosque of Bursa (1389-1401) is composed of twenty domed bays of equal size. The lime-stone walls of the rectangular block are articulated by blind arches and from the roof rise octagonal fenestrated drums which are topped by flat round cupolas. It is not provided with a portico but with a rudimentary façade. The disposition of Baiazet's Yildirim Cami (1391-1395) and Mehmet's Yesil Cami (1419-1424) in Bursa follows still the particular needs of the sultan: the entrance wall of the square prayer room topped by a cupola of about 12 meters is lit by drum and a lantern

and opens in the balcony of the sultan and two doomed lateral rooms, where he could rest and eat. Five steps lead to the elevated second bay with a slightly smaller cupola, which houses *mihrab* and *minbar* and is directly illuminated from three sides. Both mosques were to have an entrance portico and the refined framework and richly decorated windows of their marble entrance front look already like façades.

A first decisive step in evolution can be seen in Murad's II great Üc Serefeli mosque (1437-1448) in Edirne (*fig. 2:a*)⁷. The prayer room is enlarged and unified in a hexagon topped by a cupola of about 14 meters. Its pointed arcades are, however, still as massive and squat as those of the Eski mosque of Edirne (1403-1414) with its nine smaller cupolas. On both sides the arcades are buttressed by the low and equally cupola topped secondary rooms and on the rear wall by fragmentary counter-pillars⁸. Parts of the buttressing system are also the small turrets on top of the pillars, which repeat the hexagon around the flat dome. The lead covered area of the cupola contrasts again beautifully with the brighter lime stone walls beneath. The four imperial minarets of the new capital, each different and one of them higher than anyone before, surround the forecourt. The three by five cupolas topped square bays which surround the transversal courtyard open in pointed columnar arcades⁹. As in some of Sinan's mosques the entrance loggia is higher than the three other ones and provided with bigger columns.

In 1453 Mehmet II conquered Constantinople, made it his capital and transformed the Hagia Sophia in his main mosque (*fig. 2:b*)¹⁰. On the site of the Justinian church of the Apostles he started in 1463 the Fatih Cami known only from drawings (*fig. 2:c*)¹¹. The influence of the Hagia Sophia is now evident: with its diameter of about 24 meters the cupola is much bigger than in earlier Ottoman mosques and sustained by four fenestrated arches, which were, however, pointed¹². The front one was buttressed by the square courtyard, the lateral ones by the secondary rooms and only the rear one as the half-cupola of a similar short bay as in the Hagia Sophia, which distinguished *mihrab* and *minbar* instead of altar and choir.

7 G. Goodwin, *A history...*, 1971, pp. 9-102; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 79-80; H. Günther, "Die osmanische Renaissance...", 2009, p. 113.

8 G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 230-231.

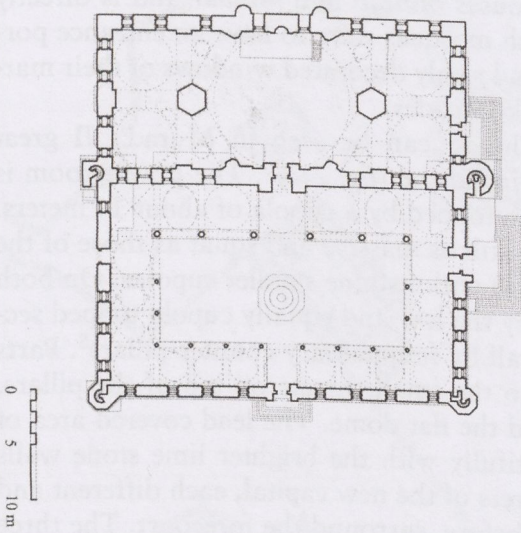
9 R. Krautheimer, *Early christian...*, 1965, pp. 175-176.

10 F. Babinger, *Mehmet der Eroberer und seine Zeit. Weltenstürmer einer Zeitenwende*, München, 1987 (paperback edition), pp. 229-230.

11 G. Goodwin, *A history...*, 1971, pp. 121-131; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 85-86.

12 M. and Z. Ahunbay, "Structural influence...", 1992, pp. 179-194.

Fig. 2. Plans of 15th and 16th century Ottoman mosques:



a: Edirne, Üc Serefeli.

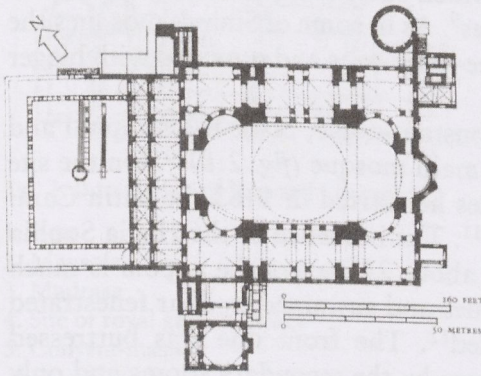
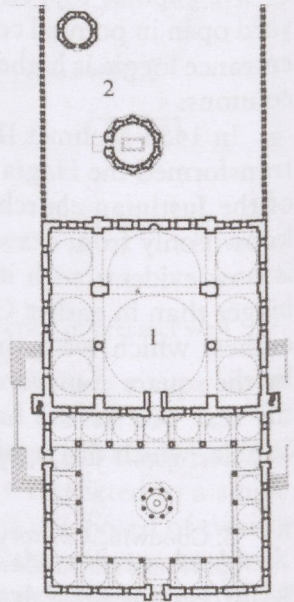
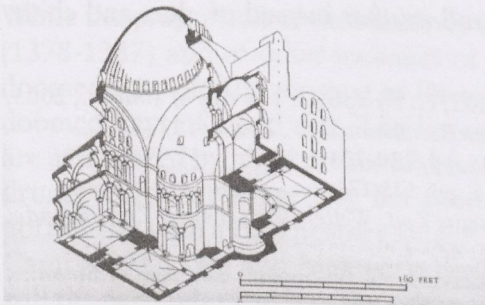


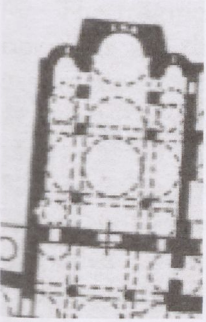
Figure 61. Constantinople, H. Sophia, 532-7. Plan (1 : 1250)



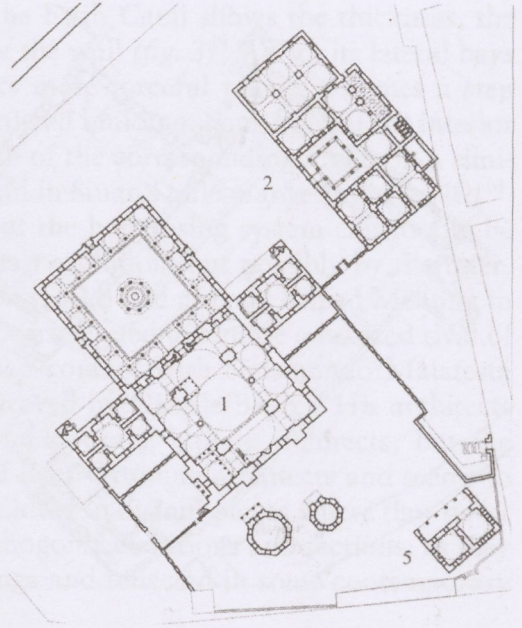
c: Istanbul, Mehmet II.



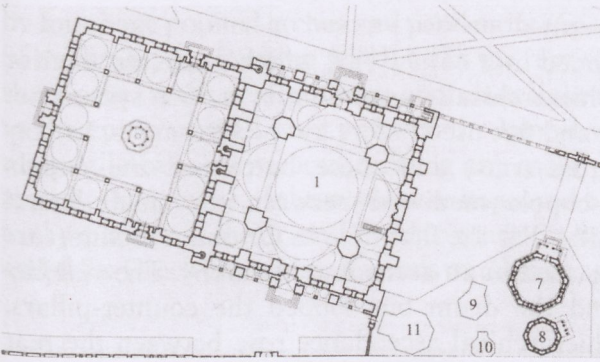
b: Hagia Sophia.



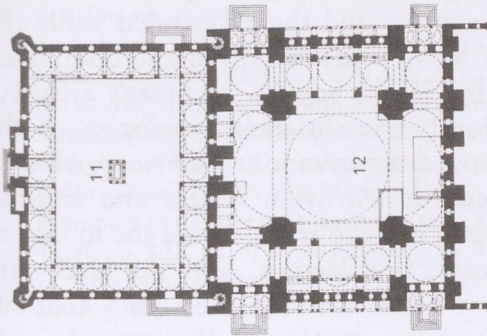
d: Hosios Meletios.



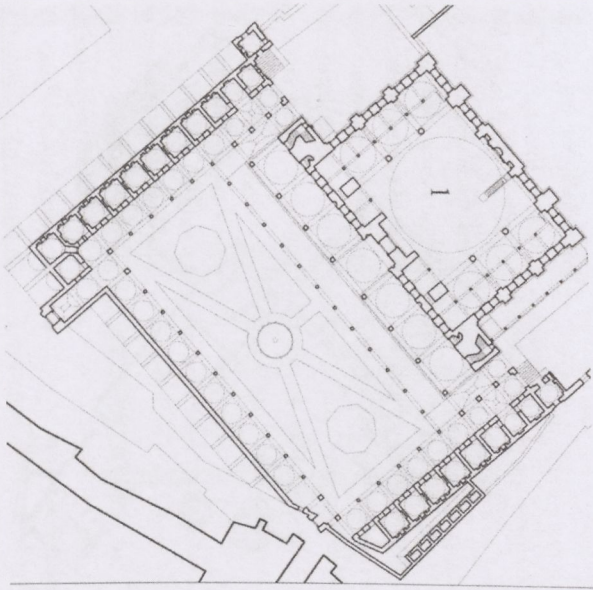
e: Istanbul, Bayezed II.



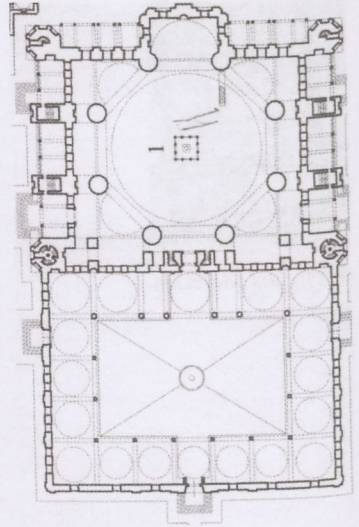
f: Istanbul, Shehadze Mehmet.



g: Istanbul, Sülemaniye.



h: Istanbul, Edirnekapi.



i: Edirne, Selimiye.

The secondary rooms continued in a corner bay, which made the interior a fragmentary *quincunx*, a hierarchically ascending byzantine system not yet known in Justinian time and not used before by the Ottomans. Its corner bays buttressed the cross-arms, and these buttressed the cupola topped crossing. The half-cupola mediated between the small lateral cupolas and the big central one. For the first time in Ottoman architecture the exterior was also transformed in an ascending hierarchy. The stabilizing turrets did not surround the drum but topped the counter-pillars, which contributing to this hierarchical ascendance rose between the rear and corner bays. The drum was diagonally reinforced by twin relieving arches. Rising above the flanking cupolas and the fenestrated walls the drummed cupola made the exterior look more centralized and dominated it even more majestically than in the Hagia Sophia. Mehmet's architect Atik Sinan thus combined ingeniously the different typologies of the Ottoman mosque, the Hagia Sophia and the byzantine *quincunx*. Already Justinian architects had abandoned the Vitruvian orders and Muslim architects had not tried to revive them, but had transformed the foliage of the byzantine capitals in more geometrical stalactites. As in the partly preserved courtyard they mediate even better between the round columns and the square section of the arches.

The fragmentary project for the Fatih Cami shows the thickness, the openings and the reinforcements of the wall (*fig. 3*)¹³. With its lateral bays assimilated to the rear one and its more forceful pillars it comes a step nearer to the *quincunx* than the realized building. Four sides of the interior pillar answer to the changing width of the corresponding arches in a similar way as in gothic architecture and in Sinan's Süleimanye (*fig. 2:e, 10*)¹⁴. These professional improvements of the buttressing system can hardly be explained by the preceding Ottoman evolution, but possibly by the intervention of North-European engineers, who had already helped Mehmet to conquer Constantinople¹⁵. It may be attributed to a more advanced rival of Mehmet's architect. The sultan had contact with Sigismondo Malatesta and Filarete and in 1480 was portrayed by Gentile Bellini. His architects must have known projects of contemporary Italian architects, but the drawing resembles exactly those of later Ottoman architects and seems to derive from Muslim tradition¹⁶. Building in distant places where they never went, they must have used also orthogonal elevations and sections, as they are preserved in a few later drawings and reflected in some contemporary miniature.

The square mosque Bayezed II built in 1484-1488 for the hospital complex of Edirne is smaller, but its cupola of about 20 meters is also sustained by four huge pointed arches and pendentifs (*fig. 4, 5*)¹⁷. The twenty windows of the drum, the fourteen windows in the rear wall and the nine to ten in the three other walls create a more abundant light than ever before. In contrast to the entrance wall only parts of the lateral walls are buttressed and the rear wall not at all without creating any major problem. As in much earlier mosques the statics of the cupola are improved by four heavy blocks attached to the exterior of the drum. The secondary rooms are only accessible by doors and their Greek cross plan reminds of the cathedral in Filarete's Sforzinda¹⁸.

13 G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 84, 168-173.

14 S. below pp. 165-170.

15 F. Babinger, *Mehmet...*, 1987, pp. 213-215, 416-418, 441-443, 463, 552-553; G. Goodwin, *A history...*, 1971, pp. 121-122.

16 M. Restle, "Bauplanung und Baugesinnung unter Mehmet II. Fatih. Filarete in Konstantinopel", in *Pantheon*, 39, 1981, pp. 361-367; F. Quadflieg, *Filaretos Ospedale Maggiore in Mailand. Zur Rezeption islamischen Hospitalwesens in der italienischen Frührenaissance*, PH dissertation, Köln, 1980, pp. 242-246; C.L. Frommel, "The beginning of the architectural drawing", in *Architecture from Brunelleschi to Michelangelo*, p. 102, fig. 5; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 86-88, 135-136.

17 G. Goodwin, *A history...*, 1971, pp. 143-148; G. Necipoğlu, *The Age of Sinan...*, 2005, p. 95.

18 G. Necipoğlu, *The Age of Sinan...*, 2005, fig. 65.

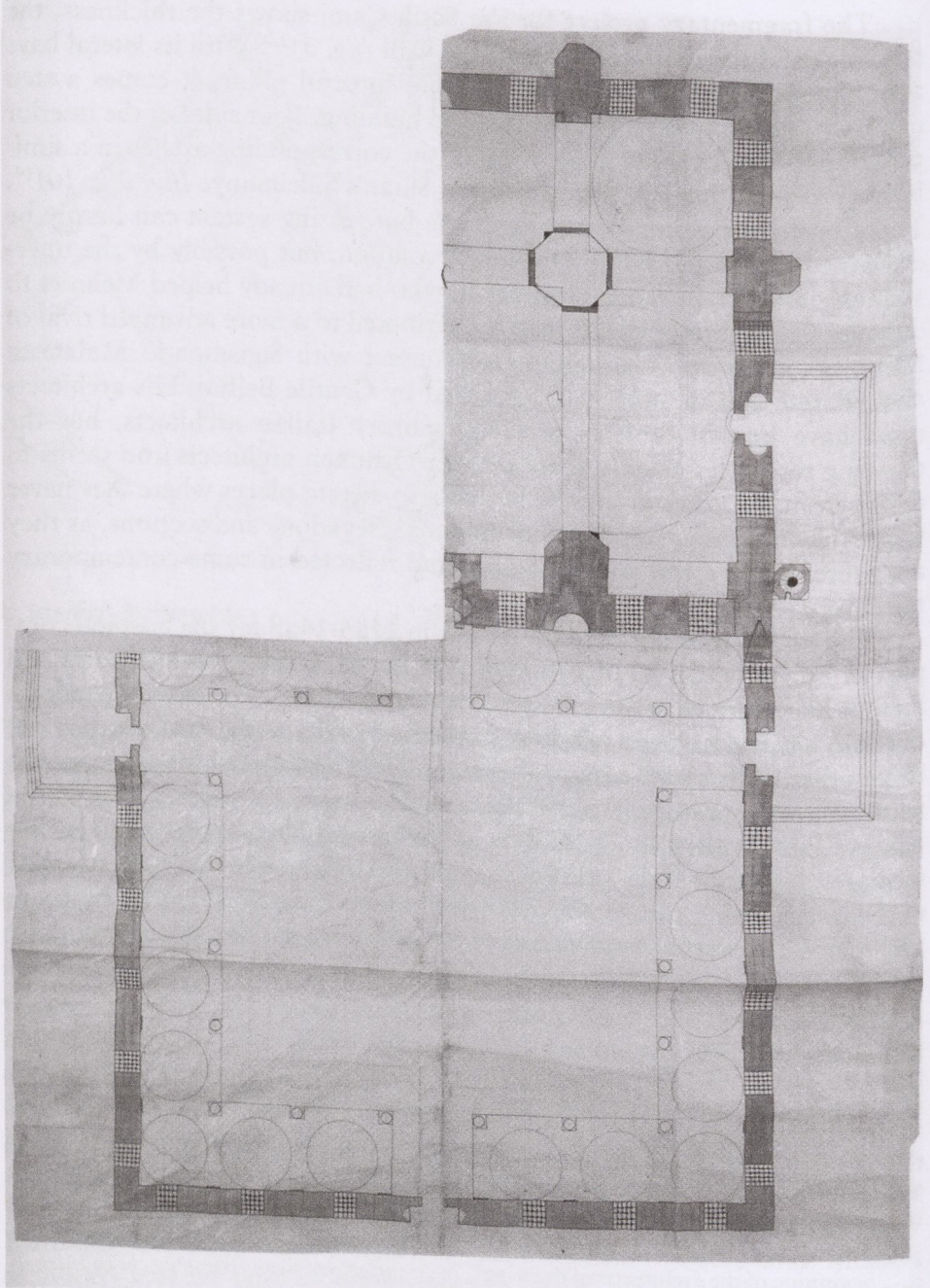


Fig. 3. Alternative project for the old Fatih mosque.

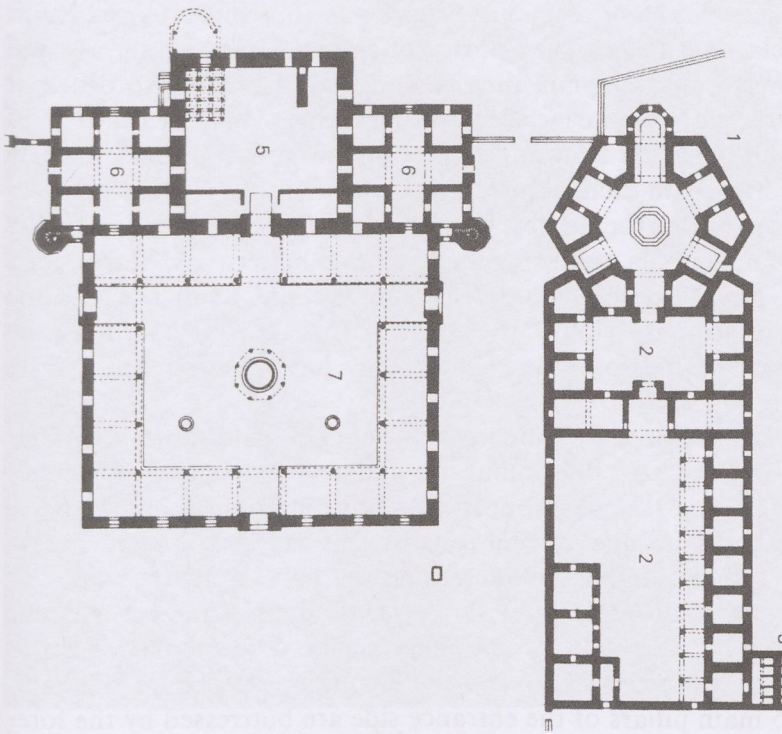


Fig. 4. Edirne, hospital of Bayezid II, plan (da Necipoğlu, *The age*, fig. 62).



Fig. 5. Edirne, hospital of Bayezid II.

The two minarets rise from their outer edges and thus much more distant from the cupola than before. The purity of the perfectly volumetric and centralized exterior and its plain lime stone walls, which are so different from the picturesque brick surface of most byzantine churches, still remind of preceding buildings in Edirne and Bursa and are similar in spirit to early Florentine Quattrocento architecture.

This is also true of the nearby hexagonal hospital. Its interior hall is topped by a round cupola and lit by its drum and lantern and surrounded by the square chapel-like rooms of its different sections. Only the rear one is longer and projecting like an apse from the hexagon. It continues the longitudinal axis of the forecourt, which may have been symmetrically planned.

The architect was probably already the great Hayreddin, who in 1501-1505 reached in Bayezed's II Istanbul mosque a first climax of Ottoman architecture (*fig. 2:e, 6*)¹⁹. The proportions of the interior are still slenderer than in the old Fatih mosque. By repeating its rear bay with the half cupola also on the entrance side and by increasing the number of the windows Hayreddin imitated still more directly the Hagia Sophia and came at the same time a step nearer to the byzantine *quincunx*. The cupola is only 17 meters wide but its buttressing system more consequent than in the Fatih Cami: the two main pillars of the entrance side are buttressed by the forecourt and by lateral wings, from which the two high minarets rise in a similar distance as in Bayezed's Edirne mosque. As in the Fatih Cami the four counter-pillars, which buttress the two main pillars of the rear side, are topped by little turrets and the drum is diagonally reinforced by twin relieving arches. But the counter-pillars are now much stronger and even stronger than those of the project for the Fatih Cami.

Superior is also the exterior. As in the Üc Serefeli mosque the wall above the bigger central arcade of the entrance loggia is upward projecting but its cornice is now decorated with a stalactite ornament and its projection with a foliage, which reminds the palmettes of antique *akroteria*. This upward projection is echoed in the massive basis of the half-cupola rising behind the central cupola. Only the drum of the cupola is not covered by lead but rhythmically surrounded by pairs of corner buttresses and round turrets, which top the four main pillars. Above the fenestrated drum the nearly hemispheric exterior of the cupola is even more dominant above its square platform.

19 G. Goodwin, *A history...*, 1971, pp. 18-19; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 30, 155.



Fig. 6. Istanbul, mosque of Bayezed II.

Hayreddin's extraordinary sense for proportion can also be felt in the rectangular cornices and thin wall-layers of Bayezed's nearby octagonal mausoleum and the harmonious simplicity of the exterior of the entrance side, while the simple counter-pillars which articulate the three secondary fronts of the mosque, which on the rear wall are thicker than on the two sides, are merely functional.

The dialogue with Justinian and byzantine architecture had contributed to the dynamically increase of hierarchy, centralisation, illumination and structural perfection after the conquest of Istanbul, but also the extraordinary panorama of the new capital must have had an essential impact on the exterior, which only now was becoming as important as the interior. Notwithstanding some possible Italian influence the decisive steps of this astonishing evolution in the course of only forty years cannot be explained by any major influence from outside. In their ever more spacious and illuminated mosques the Ottoman Muslims must have felt a sacred and unified community. Their ascending hierarchy, their centralization and their dominating cupola reflect the unity of secular power and monotheistic religion, reflect the empire which the Ottomans governed in a more absolute,

centralized and illuminated way than any European prince of the time or the following two centuries without betraying their millennium old tradition, but reflect also a sense of freedom and a passionate longing for beauty. They were Justinian's heirs and felt the centre of the world, were strong and audacious enough to conquer it as well as to outdo the most famous monuments of antiquity. They knew themselves favoured by God and must have enjoyed a unique sense of optimism. Looking at the triumphal panorama of the many cupolas and minarets, Moslems had every reason to consider Istanbul superior to any other capital.

Analogies of Italian and Muslim architecture before Sinan

In his palatine chapel of Aix-la-Chapelle Charles the Great had imitated a Justinian church for similar reasons of legitimation as the sultans, but remained the great exception within West-European builders. Not by chance vaulting became again a foremost goal only from the 11th century onward, when the crusades led their engineers to the Orient. The genesis of gothic architecture is, in fact, hardly imaginable without a direct Islamic influence²⁰.

Since the 11th century the evolution of Italian architecture split, however, from that of northern Europe and Spain. The merchants of Pisa extended their affairs and their increasing power to the eastern Mediterranean and when building their cathedral were less interested in high vaults, a sophisticated structural system and abundant illumination than in a magnificent facade, a huge cupola and a return of both typology and language to their Latin origins. In the oval cupola, the pointed arches and the use of differently coloured marble blocks it was inspired by byzantine as well as by Moslem architecture and succeeded to outdo all earlier basilicas. The cupolas of Western Europe were, however, related to altar and choir and not to the faithful and therefore did not change the longitudinal orientation of the churches²¹. Not by chance the Venetians imitated in late 11th century San Marco not the centralized Hagia Sophia but the Latin cross of the

20 J. Bony, *French gothic architecture of the twelfth and thirteenth centuries*, Berkeley, 1985, pp. 12, 30.

21 A. Peroni, *Il duomo di Pisa*, Modena, 1995; C. L. Frommel, "Presbytère et chœur de Saint-Pierre de Rome de Nicolas V à Jules II", in *La place du chœur: architecture et liturgie du Moyen Age aux temps modernes*, ed. S. Frommel, Paris, 2012, pp. 103-120.

equally Justinian Holy Apostles. In the 13th century the cupolas of Siena and Florence cathedrals surpassed those of Pisa but at the same time followed the new gothic fashion. In mid 14th century the octagonal choir of Florence cathedral was further extended and the buttressing of the drum of its enormous cupola with three polygonal choir-chapels may have been inspired by the Hagia Sophia, the legendary Justinian church with the biggest Christian cupola. Rather than any Ottoman mosque the buttressing system of Florence cathedral seems to have inspired still in 1508 the centralized church of S. Maria della Consolazione in Todi²². At the time the Florentines started their cathedral the new centres of the Islamic in Bursa and Edirne and after 1453 also in Istanbul were much easier accessible to westerners than preceding Muslim capitals and the striking analogies of some buildings of these capitals to those of the Tuscan Quattrocento suggest a direct influence²³.

The Renaissance of Italian architecture started in much smaller towns, under much more modest conditions and independently from the great Western rulers. Brunelleschi, the first who succeeded to build the cupola of Florence cathedral, superseded the gothic language and recognized Latin identity not only in antiquity but also in Tuscan Proto-Renaissance²⁴. He made the cupola a central element of his architecture and studied it in Rome, the Veneto and other places. For the same reason he must have been highly interested in the structural as well as formal achievements of the Ottoman hemispherical cupolas and saucer vaults. He must have liked their symmetrical and axially oriented plans, their clear-cut stereometric exteriors, about which travellers such as Ciriaco d'Ancona (1391-1452) may have informed him²⁵. Superficially the Old Sacristy and the Pazzi chapel look more similar to Iznik's Yesil Cami (1378-1391) than to any building on Italian ground (*fig. 1*)²⁶. It is, however, more likely, that in this early stage of the Renaissance the Tuscan Proto-Renaissance, the buildings of ancient

22 U. Vogt-Göknil, *Türkische Moscheen*, Zürich, 1953, pp. 40-42.

23 U. Vogt-Göknil, *Les mosquées turques*, Istanbul, 1953, pp. 16-17; G. Goodwin, *A history...*, 1971, pp. 215-218, 480, n. 8; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 49-51.

24 A. Bruschi, "Filippo Brunelleschi", in *Storia dell'architettura italiana. Il Quattrocento*, ed. F. P. Fiore, Milan, 1998, pp. 38-113; C. L. Frommel, *The architecture of the Italian Renaissance*, London, 2007, pp. 13-25.

25 C. Raby, "Cyriacus of Ancona and the Ottoman Sultan Mehmet II", in *Journal of the Warburg and Courtauld Institutes*, 43, 1980, pp. 242-246; C. Smith, "Cyriacus of Ancona's seven drawings of the Hagia Sophia", in *The Art Bulletin*, 69, 1987, pp. 16-32; G. Paci and S. Sconocchia, *Ciriaco d'Ancona e la cultura antiquaria dell'umanesimo*, Reggio Emilia, 1988; H. Günther, "Die osmanische Renaissance...", 2009, pp. 128-130.

26 H. Saalman, *Filippo Brunelleschi. The buildings*, London, 1993.

and Cosmatesque Rome and few *quincunx* buildings of northern Italy were more influential and that the similarities are the consequence of a convergence of the two cultures, which had the same late-antique and Justinian roots²⁷. Brunelleschi could never finish his only centralized prayer room, the oratory of S. Maria degli Angeli, and though Nicholas V commissioned in 1452 an altar in the centre of the 5th century rotunda of S. Stefano Rotondo, during the following decades no round and cupola topped church was built. Brunelleschi's followers concentrated on facades and did not try to confer to the entire exterior body of their buildings the same visual impact, as the Muslims had already done for centuries. Cosimo de' Medici, Brunelleschi's patron, put his tomb under the cupola of S. Lorenzo, and from now onward many influential patrons tried to be buried or prayed for in a cupola topped mausoleum-choir. This is true of the round choir, which Lodovico Gonzaga added in 1440 to the single nave of the SS. Annunziata. His architect Michelozzo was inspired by the church of the Holy Tomb in Jerusalem, the Minerva Medica and the Pantheon, but the exterior of its hemispheric cupola rises only slightly above the nude decagon and cannot compete with ancient or Ottoman cupolas²⁸. In Sigismondo Malatesta's analogous project for S. Francesco in Rimini of about 1450 Alberti was inspired by imperial roman architecture and provided its exterior for the first time again with a huge hemispherical cupola which could be seen from afar. When cardinal Francesco Gonzaga saw Alberti's project for the centralized church of S. Sebastiano, probably planned as funeral church of his father Lodovico which was started in 1459 and also to be topped with a round cupola, he wondered, whether it would be a church, a synagogue or a mosque, and thus must have had some idea of these different typologies. This tendency to distinguish not only the high altar but also the own tomb by a cupola is characteristic of Renaissance builders and fundamentally different from Muslim religiosity. The increasing cultural and functional differences evidently limited an influence in one direction or the other.

No Italian architect has as often been compared with Sinan as Bramante²⁹. According to Vasari he had been attracted to Lombardy by the cathedral of Milan³⁰. Gothic construction helped him, indeed, more than

- 27 See the Chalke gate and the porch of the Senate House of Constantinople in R. Krautheimer, *Early christian...*, 1965, p. 174.
- 28 H. Burns, "Leon Battista Alberti", in *Storia dell'architettura italiana. Il Quattrocento*, ed. F.P. Fiore, Milan, 1998, pp. 114-165; *Leon Battista e l'architettura*. Catalogue of exhibition (Mantua, Casa del Mantegna, 16 September 2006-14 January 2007), ed. M. Bulgarelli, A. Calzona, M. Ceriana and F.P. Fiore, Cinisello Balsamo, 2006.
- 29 G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 88-92 with bibliography.
- 30 A. Bruschi, *Bramante*, Bari, 1969; C.L. Frommel, *The architecture...*, 2007, pp. 78-86.

any other Renaissance architect, to realize his architectural dreams. He was also one of the first to rediscover the *quincunx* with central cupola and corner chapels, which corresponded best to his idea of a hierarchically ascending structure. He knew it from the Marche, Venice and Milan and probably also from Alberti's reconstruction of the synagogue of Capernaum on the Louvre plaque of about 1455. He thought it to be of ancient origin and so did his pupil Cesariano, who in the Vitruvius edition of 1521 identifies the *quincunx* with the Greek *amphiprostylos*³¹. When representing a Christianized pagan ruin in his 1481 Prevedari engraving Bramante reduced the walls to a gothic skeleton of supporting pillars and arches with classicizing detail. He was again inspired by late gothic buildings such as Florence cathedral, S. Petronio in Bologna and the Marian Basilica in Loreto in his 1485 project for Pavia cathedral, which possibly was to be the funeral church of cardinal Ascanio Sforza and resembles in plan vaguely the 5th century church of Qalat Siman in Syria³². He had been asked to follow the Hagia Sophia, but did so only in the vault of the crypt and the huge arcades of the crossing. In the ascending hierarchy of the exterior he came already a step nearer to the Fatih Cami³³. As the Florentines and the 15th century Ottomans he tried to construct as large cupolas as possible and shortly before Bayezed's Edirne mosque added for Lodovico Sforza and his wife a cupola topped mausoleum-choir to the church of S. Maria delle Grazie in Milan, which is as large as the entire gothic nave.

After having settled in 1499 in Rome and having studied roman antiquity, Bramante proposed in 1505 to Julius II a *quincunx* system for New St. Peter's and must have convinced him of its ancient origin and of its functional advantages (*fig. 7*)³⁴. As in Pisa, Siena, Florence and in so many Quattrocento churches its cupola was to distinguish the high altar and the «teatro sacro» of the ceremonies. The western cross arm was to house the chapter and Julius' funerary chapel and the three other arms, each accessible through an own vestibule, would have housed thousands of pilgrims. The huge corner chapels would have served for secondary services, sacristies and a baptistery and the many niches for the infinite relics and altars often related to tombs. Though corresponding only to about a third of the entire plan the about 42 meters wide cupola was much bigger than those of Florence cathedral, the Hagia Sophia and the mosques and reached nearly that of the Pantheon.

31 H. Günther, "Die osmanische Renaissance...", 2009, p. 115.

32 R. Krautheimer, *Early christian...*, 1965, pp. 111-113.

33 R. Krautheimer, *Early christian...*, 1965, p. 130.

34 C.L. Frommel, "Presbytere et chœur...", 2012, pp. 108-120.

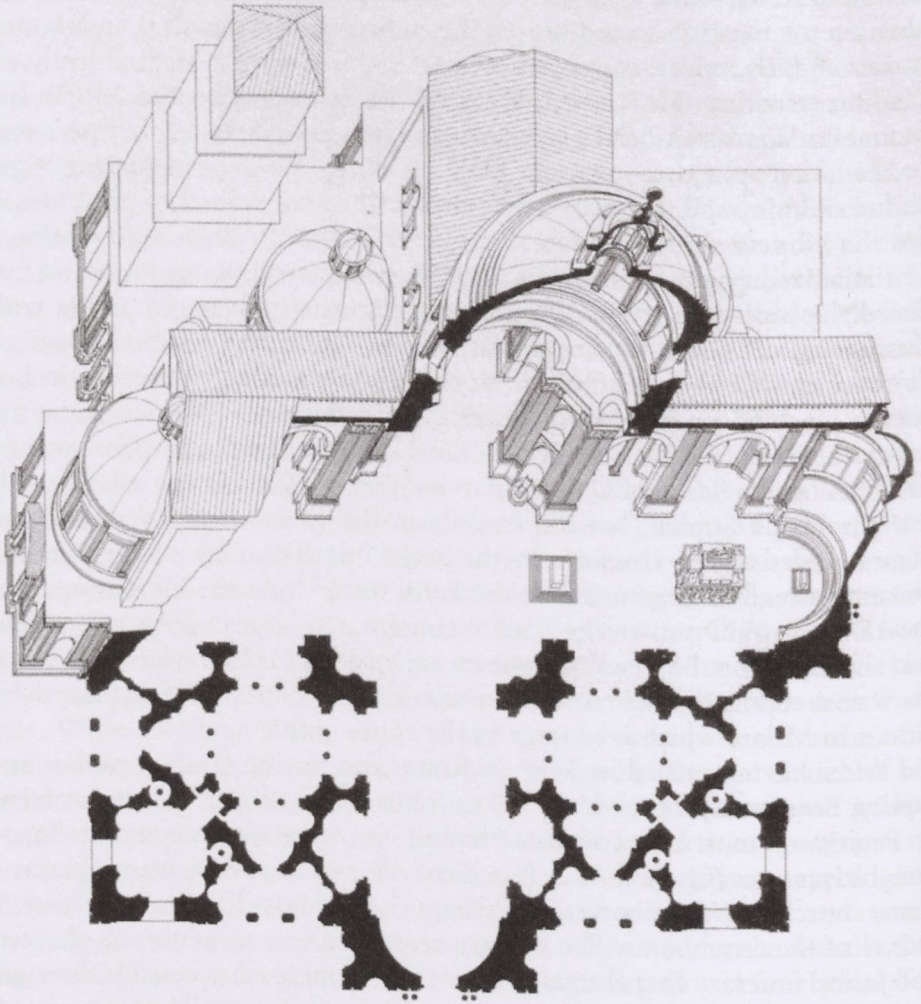


Fig. 7. Hypothetical reconstruction of Bramante's centralized project for St. Peter's (reconstruction C.L. Frommel, drawing P. Föllbach).

Though the semi-cupolas of the apses, which on the foundation medal seem to accompany its four sides, would have been about 45 meters distant and are not really comparable to those of the Hagia Sophia, the buttressing system of the *quincunx* was superior to those of antiquity and the Italian Quattrocento. Already Nicholas V had planned two square clock-towers with many stories, but they rise now above the corner sacristies and are much

less comparable to minarets than those of Palladio's Redentore³⁵. Pope Julius II published the medal, but before putting the foundation stone in April 1506, asked Bramante to abandon the *quincunx* and to return to the Latin cross. The plans Bramante made for Julius were never published or copied, and it is unlikely that the Turks knew more than the medal or its engraving published by Agostino Veneziano in 1517.

Bramante's tendency towards centralization, hierarchy and abundant illumination is comparable to that of contemporary Ottoman architecture and reflects the universal ambition of his patron. But though Julius' II projects were megalomaniac, his resources were limited and only few of them could be finished. The successive architects of St. Peter's had to follow Bramante's beginnings and under Paul III even returned to the *quincunx* (fig. 12), but already in the 1518 competition for S. Giovanni dei Fiorentini the unified interior of the Pantheon had become a more admired prototype than the *quincunx*³⁶. Italians tried as passionately as the Ottomans to explore and conquer the world and to survive in miraculous buildings and were even more progressive and inventive in science, literature, visual arts. Similar forces led to analogous results in both cultures and made it easier to learn from each other. Italian Renaissance architecture must have appeared to Ottomans inspiring, but somehow incoherent and Ottoman architecture to Italians enviably grand and professional but repetitive and without secret.

Milestones of Sinan's evolution and their relation to Italian architecture

Born in the 1490s as son of Anatolian Christians Sinan had been active only as leading military engineer³⁷, when Süleiman the Great made him his first architect and ordered him in 1544 to commemorate his beloved son and chosen successor Mehmet, who had died very young in 1543, in a mosque and a mausoleum (fig. 2:f, 8, 9)³⁸. In Hungary, Austria and Apulia

35 D. Howard, *Venice and the east. The Impact of the Islamic World on Venetian Architecture 1100-1500*, New Haven, 2000.

36 C.L. Frommel, "Raffaello e Antonio da Sangallo il Giovane (1511-1520)", in *Architettura alla corte papale nel Rinascimento*, ed. C.L. Frommel, Milano, 2003, pp. 299-300 with bibliography.

37 G. Goodwin, *A history...*, 1971, pp. 199-200.

38 G. Goodwin, *A history...*, 1971, pp. 206-211; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 191-202.

Sinan had seen gothic and Renaissance buildings and knew about the revival of antiquity in Italian architecture. As in the mosques of Mehmet and Bayezed the fenestrated walls of the square ground-floor are visible behind the four pillars. However, only the lighting of the *mihrab* bay is direct, while it is filtered on the three other walls by deep arcades and loggias. In a completely different way from Italian churches Sinan thus stressed the unequivocal orientation of the prayer hall without unbalancing the centralization of the interior. Imitating the Hagia Sophia more consequently than his teacher Hayreddin he opened also the lateral sides of the Sehzade mosque into a perfect *quincunx* and subdivided the four arms of its Greek cross in three slender arcades with four rows of windows. Sinan hardly knew the only Italian building, where this hierarchical tri-partition is also imitated, Bramante's «Ninfeo» in Genazzano³⁹.

The lower part of the interior is built with greyish stone and the pillars are slightly bevelled without preparing yet the pendentifs as organically as in Sinan's later Süleimaniye (*fig. 11*). Their upper part is fluted in a less tectonic way than ancient columns. It continues without any interruption in the stalactites, which bridge the lateral arcades and the arcades of the passages to the corner bays and prepare the half-cupolas. Sinan distinguishes the structural skeleton from the weightless suspended cupolas, as his Ottoman predecessors and the architects of the Hagia Irene and St. John in Ephesus had done. Bramante too had accentuated the supporting skeleton, but his coffered vaults and cupolas are more structural and heavier than those of the Ottomans, whose floating and completely ornamental decorations were mixed with calligraphic citations of the Koran⁴⁰. Thanks to the tectonic accentuation of load and support as well as to the abundant illumination of every level the mystic atmosphere of the Hagia Sophia is diminished. There the supporting pillars are hidden behind a precious incrustation and mosaics. They reflect the light, most of which is entering from above in a more metaphysical way. Alberti still recommended a limited illumination of churches, because obscurity would increase religiosity⁴¹, and only Bramante started to bring light diagonally down to the altar.

39 C.L. Frommel, "Il 'ninfeo' di Bramante a Genazzano", in *Architettura alla corte papale nel Rinascimento*, ed. C. L. Frommel, Milano, 2003, pp. 215-239.

40 Until the 17th century the interior of many mosques as well as that of many Italian churches was still whitewashed; H. Günther, "Die osmanische Renaissance...", 2009, p. 117; G. Necipoğlu, *The Age of Sinan...*, 2005, p. 104.

41 L.B. Alberti, *De re aedificatoria*, Florence, 1486, VII, chap. 12, f° 127r.



Fig. 8. Istanbul, Şehzade Mehmet mosque, exterior.

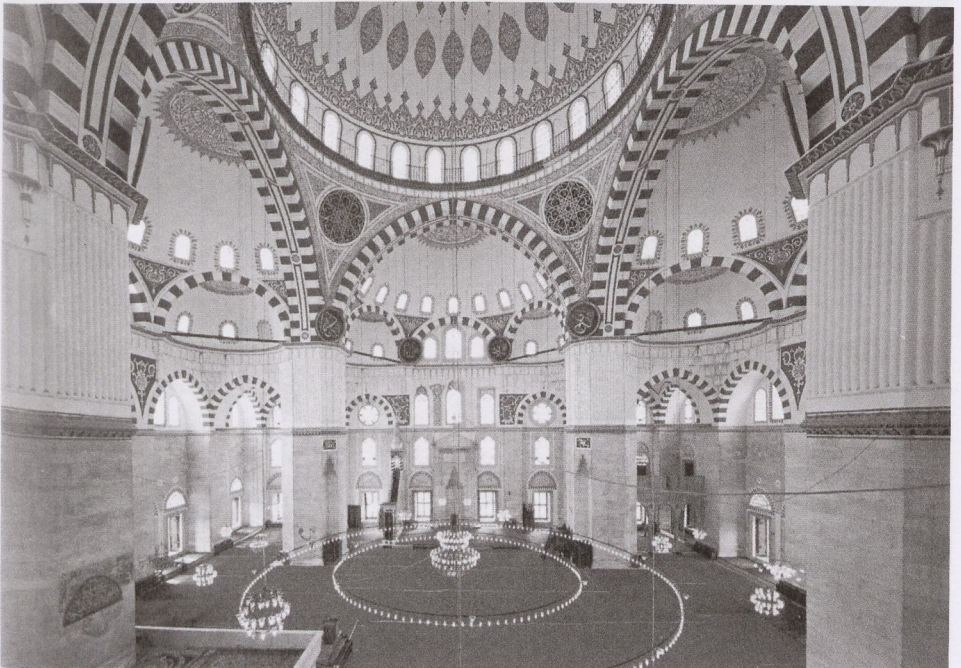


Fig. 9. Istanbul, Şehzade Mehmet mosque, interior.



Fig. 10. Istanbul, mosque of Süleiman exterior.



Fig. 11. Istanbul, mosque of Süleiman, interior.

Sinan was still more engineer than Hayreddin and divided the wall in unburdened window bays and counter-pillars, which he connected with more numerous relieving arches. On the structurally important corners the counter-pillars have become much more massive. The octagonal drums and cupolas of the corner-bays are diagonally ascending and culminate in the round turrets on top of the main pillars, which are now much heavier than in earlier mosques. Thus the panorama of cupolas has become still more organic, homogeneous and hierarchical than in Bayezed's mosque (*fig. 6*).

Sinan transforms the counter-pillars for the first time in elements of coherent façades. The four counter-pillars of the rear front are projecting horizontally as well as vertically from the doomed corner-bays, and the central bay is projecting more forward than the lateral ones. This articulation is more structural than the tectonic fiction of most Italian Renaissance façades. As in his later mosques Sinan may have been influenced by gothic architecture he had seen in Europe⁴². On the two lateral entrance fronts the pillars are reduced to flat lateral strips and at the corners completely eliminated. The articulation has become more decorative and more similar to the entrance front of Bayezed's mosque. The windows look like thermal windows, but their openings are transformed in three hierarchically ascending arcades as in byzantine churches and inscribed in blind fields with decorative spandrels as in the mausoleum of Bayezed II. This articulation is not really structural and continues in the upward projecting wall between the octagonal cupolas.

In the slightly earlier octagon of prince Mehmed's nearby mausoleum Sinan varied Hayreddin's Bayezed mausoleum in a similar decorative way. The outer frames have become slender colonettes, which project from the stalactite cornice and the blind octagonal drum is broken up in a circle of small stocky columns without entablature, which support a ribbed cupola.

In 1550-1557 Sinan built Süleiman's still much grander imperial Cami (*fig. 2:g, 10, 11*)⁴³. Probably not only for functional reasons he opened the lateral walls in arcades and in many windows of the huge lunettes above them as in Mehmet's and Bayezed's mosques, but also in order to approach the Hagia Sophia, its hierarchy and its longitudinal orientation still more directly. The exedras of the entrance and the *mihrab* side differ from those of the Sehzade mainly by the increased number of windows of the half-cupolas – a repetition characteristic of Muslim architecture but rather rare in the Renaissance. In order to increase lighting Sinan reduces the walls even more but is not as much interested in the width of the cupola, which still does not reach that of the Hagia Sophia.

42 S. below, pp. 168-170.

43 G. Goodwin, *A history...*, 1971, pp. 215-239; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 207-222.

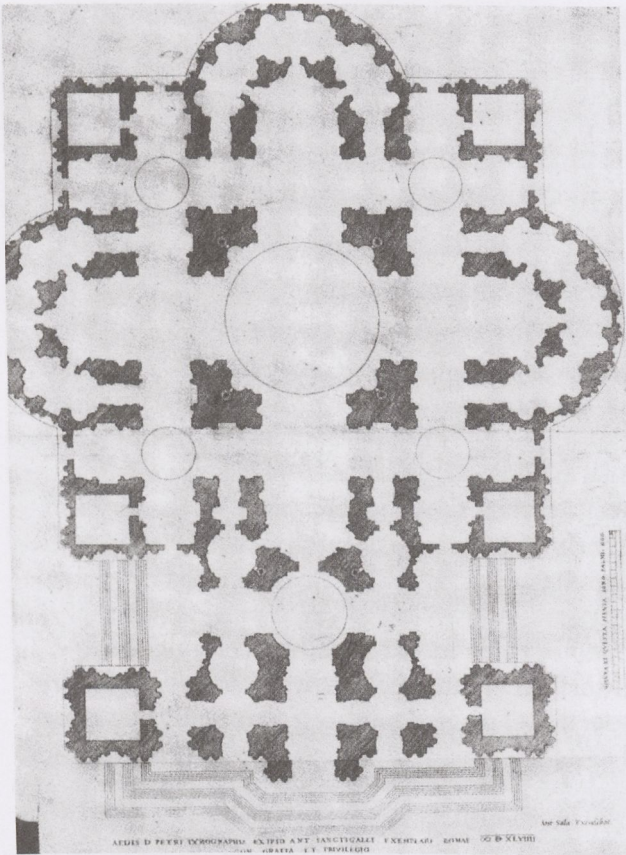


Fig. 12. A. da Sangallo the Younger, project for St. Peter's of 1539.

The bevels of the main pillars prepare the pendentifs of the cupola and their wall strips prepare the big and small arches. This consequent vertical continuity goes much beyond all preceding mosques and must have been inspired by gothic architecture and perhaps also by Sangallo's projects for St. Peter's, which had been printed before 1550 (*fig. 12*)⁴⁴. The wall strips are not provided with bases, capitals and entablature but projecting in the bracket supported cornice, which continues around the entire prayer hall and reminds those of gothic Florence cathedral.

Thanks to the transparent structure the exterior mirrors the interior nearly as much as in gothic churches and more clearly than in projects of the Bramante-circle: the counter-pillar separate the central triad of thermal windows from the single ones of the corner bays. On the rear wall they end under the big half-cupolas and the smaller diagonal half-cupolas, which

44 G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 91-92, fig. 74-77.

buttress the cupola, but rise on the lateral fronts as in gothic structures and culminate in the little cupolas on top of the main pillars. The huge fenestrated arcades are topped by steps, which create a harmonious transition to the inclined drum, and its equally inclined walls strips alternate with arched buttresses. The drum is part of the hemispherical cupola and thus corresponds also more precisely with the interior than in earlier mosques. Only on the entrance wall the counter-pillars are hidden by the entrance loggia. The four imperial minarets are rising from the corners of the rectangular forecourt and thus prepare, but do not surround the mosque. Sinan has overcome the decorativism inherited from Hayreddin but also given up his calligraphic detail, which distinguishes the works of the great Italian masters. Probably under some western influence he has become the most structural architect of his time.

A still stronger structural emphasis distinguishes exterior of the smaller Edirnekapi mosque in Istanbul, that Sinan built in the 1560s for Syleiman's only daughter Mihrimah (*fig. 2:b, 13*)⁴⁵. Columnar arcades of equal width, which are springing from narrow corner pillars, separate the doomed secondary areas from the square prayer hall, but do not continue in the nearly semi-circular arches of the lateral walls. So the interior is above the arcades wider but is less structural than that of the Süleimaniye mosque and its cupola looks even lighter and more suspended. More consequently than ever before the entire structural skeleton is transferred to the exterior. The polygonal counter pillars continue without the interrupting cornices of gothic or Renaissance buttresses in the four huge fenestrated arches. Since its lunettes, with the exception of the flatter entrance wall, are receding, the shadowy arches look even more structural and seem to be cut from the same lapidary substance as the pillars. Their crowning steps continue organically the leaden covered hemispheres, which top the pillars and are prepared by triangular walls which buttress the pillars. All buttresses of the drum are now equal and inclined and make it look still more as part of the hemispherical cupola. The ground-floor of the three secondary fronts is articulated by slender blind arcades, above which the mosque's upper part appears for the first time as a completely symmetrical and structurally transparent body. Though not as famous as Sinan's other mosques it is one of his most harmonious, original and innovative creations. There is no evident western influence and in many respects it is more akin to early 20th century taste than to that of the Renaissance.

45 G. Goodwin, *A history...*, 1971, pp. 252-255; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 296-314.



Fig. 13. Edirnekapi, mosque of Mihrimah.

With the boot Selim had brought back from Cyprus Sinan started in 1568 the huge Edirne mosque as a sort of victory monument, where he returned to nearly perfect centralization (*fig. 2:i, fig. 14, 15*)⁴⁶. As in the Justinian H. Sergios and Bakchos eight slender arcades rise from the square ground-floor and carry the round cupola. They are similar to those of the exedras of the Sehzade and the Süleimanye mosques but again the number of windows is considerably increased. The deeper half-cupola topped *mihram* bay stresses the longitudinal axis. There are no wall strips attached to the round pillars and no cornice interrupting their transition to the arches.

46 G. Goodwin, *A history...*, 1971, pp. 261-271; G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 238-256.



Fig. 14. Edirne, mosque of Selim.

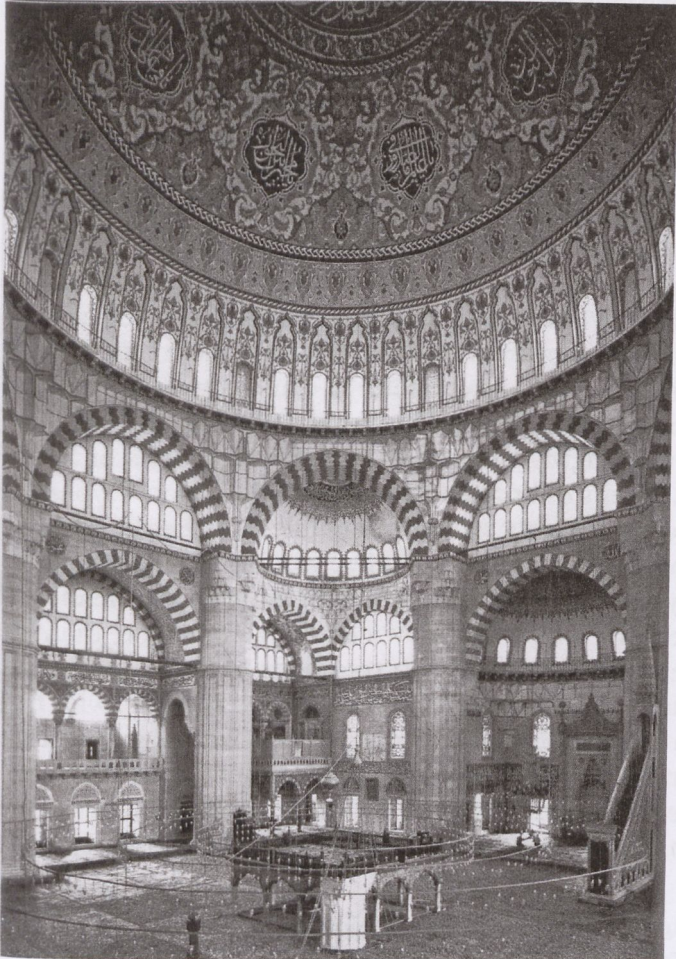


Fig. 15. Edirne, mosque of Selim, interior.

Following the sultan's wish Sinan made the dome now slightly bigger than that of the Hagia Sophia and making it also flatter showed at the same time his technical superiority. He is told to have said that he would never finish learning from the Hagia Sophia and that he reflected again and again on the secrets of its beauty⁴⁷. Few years before his death in 1588 he imitated it in the Kilik Ali Pasha mosque still more precisely than ever before⁴⁸.

As in the interior the square ground-floor of the exterior is becoming octagonal only at the level of the half-cupolas. The massive counter-pillars, which in their lower part hide small stairs, are again rising in rhythmical steps as in gothic cathedrals from the ground-floor of the entrance front and the lateral sides. They buttress the angles of the octagon and culminate in the lead covered hexagonal turrets on top of the interior pillars, which transform the eight walls of octagon in the circular drum. This is relatively high and makes the dome look even flatter. The centralization of the mosque is also stressed by the four imperial minarets, which now rise from the corners of the mosque and mark the space within which this sequence of square, octagonal, cylindrical and spherical volumes is hierarchically ascending. The dialogue of the old Sinan with antique and gothic construction is even more evident in the relieving arches of the Kilic Ali Pasha Cami which are similar to those of the Basilica of Constantine in Rome and which Sinan may have seen also in Istanbul's Constantinian buildings.

In Sinan's buildings the Ottoman architecture reaches its climax. Muslims had matured a relatively small number of fundamental typologies with similar consequence, as two thousand years before the Greeks had done in their temples. No builder in post-antique Europe could count on a similar tradition, similar financial resources and an equal technical skill. The dynamic evolution and the lengthy construction of the cathedrals of Siena, Florence, Milan or St. Peter's did not allow perfect unity. Sinan's evolution from a more decorative to a highly structural manner was hardly possible without gothic and probably also Italian influence, but his language remained always purely Ottoman. His great examples were Justinian and earlier Muslim architecture, which had grown out of it. Even more than his predecessors he succeeded to melt the two traditions without any break, and this was much easier for the Ottomans than for the Italians, who had been influenced much more profoundly by northern European architecture and who culturally and even religiously were much more distant from Imperial Rome than the Ottomans from the Justinian Constantinople. One could call the Ottoman revival of Justinian architecture also a «Renaissance».

47 G. Necipoğlu, *The Age of Sinan...*, 2005, pp. 144-145.

48 G. Goodwin, *A history...*, 1971, pp. 287-288.

sance», a Renaissance, however, which had little to do with the rediscovery and imitation of the pagan world of antiquity. The striking phenomenon in the relation of Ottoman and Italian Renaissance architecture are not so much their common late antique roots than the contemporary but independent return to them. 20th century architects have broken with the humanistic tradition of the Renaissance and for our eye it is easier to appreciate ottoman mosques and their geometric clarity, light flooded width and the sense of unlimited freedom than most of the Renaissance churches.

*II. Les modèles de la sculpture
et de la peinture*