

# Religious Layering: An Architectural Study of Hagia Sophia's Conversion from a Basilica to a Mosque

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**Abstract:** This project combines my interest in religious architecture and symbolism with modern GIS technology. Hagia Sophia, as it stands today, was completed during the reign of Byzantine Emperor Justinian in 537 A.D. It was the most magnificent structure in all of Christendom, complete with exquisite mosaics, an unparalleled dome, and an awe-inspiring magnitude. After the Ottoman conquest in 1453, it was converted into a mosque, the mosaics were plastered over, and four large minarets were constructed. Since 1935, Hagia Sophia has been a museum. Many of the mosaics have been uncovered and now this structure offers a unique opportunity to compare religious architecture and symbolism. This site was a holy place for Christians for nearly 1000 years and then for Muslims for almost 500. In this study, I have demonstrated the primary features of both the Basilica and the Mosque separately to give a visual representation of the significant features of each. Next I overlaid the two plans, one on top of the other to show the primary additions and changes. Finally I created a map with some significant points of interest—though many more could certainly be added.



**Methodology:** I found plans of Hagia Sophia before 1453 when it was a Basilica and after 1453 when it was converted to a mosque. I then scanned them and georeferenced them to lay one on top of the other. I did not have control points with which to reference the maps – so I referenced the Basilica map in terms of the Mosque map in order to rectify the lack of an actual geographical position. After I imported them into ArcMap, I was able to create shape files – I created polygon data for the first two maps representing areas in the structure, polygon and line data for the third map, and point data, with prominent locations in the building for the final map. I was also able to get a satellite image of the structure through Google Earth, seen at the top right.

Some problems I encountered:

- Georeferencing the maps
  - I obtained building coordinates from Google Earth, but was unable to satisfactorily reference the maps to them.
  - ArcMap would not preserve the georeferenced maps, so I had to use another program in order to save the reference points.
- Finding consistent plans
- Finding consistent details to map

## Post 1453 Additions and Changes to Hagia Sophia

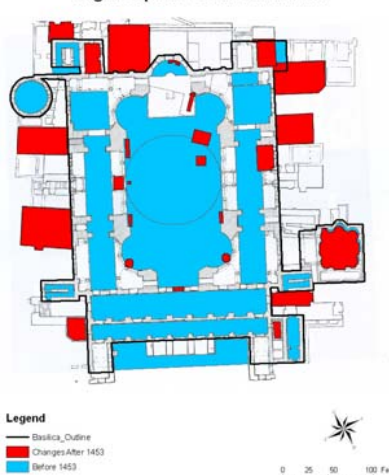


(2) This map shows the prominent additions made to Hagia Sophia after the Ottoman conquest in 1453.

**Results:** I was pleased with the maps I ended up with. The study is relatively simplistic considering the extent to which Hagia Sophia has been analyzed and mapped, but I was able to observe some interesting overlaps between sacred points and orientations between the two periods. The eastern end of Hagia Sophia is of great significance to both Islam and Christianity. All Christian Churches are traditionally built facing east, while Mosques are oriented toward Mecca. Based on the location of Istanbul, it just so happened that the apse was facing approximately the correct direction. The Mihrab was shifted slightly, but the overlap is quite interesting. The Ottomans converted the Baptistry into a Mausoleum and covered over the mosaics with plaster and traditional Arabic calligraphy. Though the plaster and calligraphy will forever cover some of the most exquisite mosaics the world has ever seen, the layering of religious symbolism is certainly worthy of appreciation. The Ottomans also added pews and two decorative marble urns to the nave during later periods.

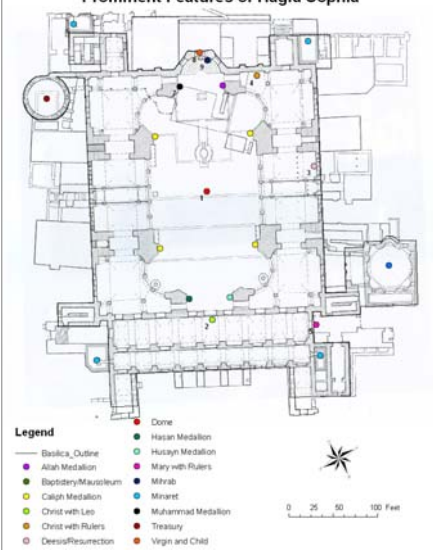
**Conclusions:** GIS could be used to go into a much more in-depth analysis of the architectural features of Hagia Sophia. Many more points of interest could be studied, as well as less obvious features of the building. A 3-dimensional analysis would also be possible, whereby one could study the actual dimensions of the structure. These possibilities were outside the scope of this project. My goal was to demonstrate visually and spatially the changes made between the Byzantine Period and the Ottoman Period, and these maps effectively do just that. The results, though relatively simplistic, demonstrate the power GIS can have in the field of comparative religion and philosophy. A much more detailed comparison of religious buildings could be undertaken, revealing many more significant correlations. I think that scholars of religion and architecture would benefit greatly from utilizing this tool in their studies. I hope that this project demonstrates just a taste of what could be done in the future.

## Hagia Sophia - Before and After



(3) This map overlays the two plans – the Basilica and the Mosque – on top of one another while spatially and visually demonstrating the changes made.

## Prominent Features of Hagia Sophia



(4) This final map shows some key points of interest that can be seen in Hagia Sophia today. Some of the points are numbered with the corresponding images shown to the right.

## Citations and Sources:

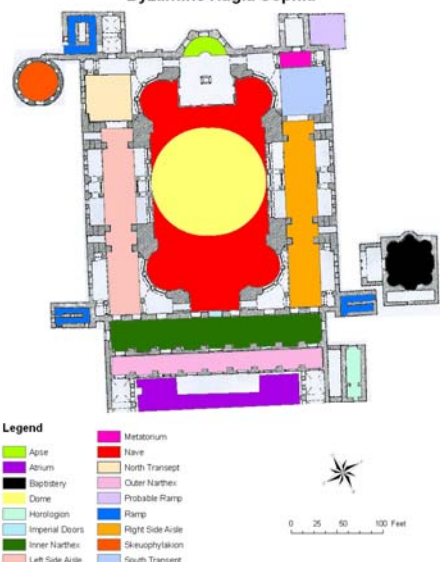
- (1) There were two floor plans used in these maps from: Mainstone, Rowland. *Hagia Sophia: Architecture, Structure, and Liturgy of Justinian's Great Church*. New York: Thames and Hudson, 1988.
- (2) Google Earth, satellite image of Hagia Sophia as it appears today.
- (3) Web resources and my own pictures for the images (January, 2006).
- (4) Other floor plans used:

<http://www.islamicarchitecture.org/architecture/hagia.sophia.mosque.html>,

<http://www.sacred-destinations.com/turkey/istanbul-hagia-sophia-floor-plan.html>



## Byzantine Hagia Sophia



(1) This map shows the key features of the Byzantine Basilica, built under Emperor Justinian in the 6<sup>th</sup> Century.