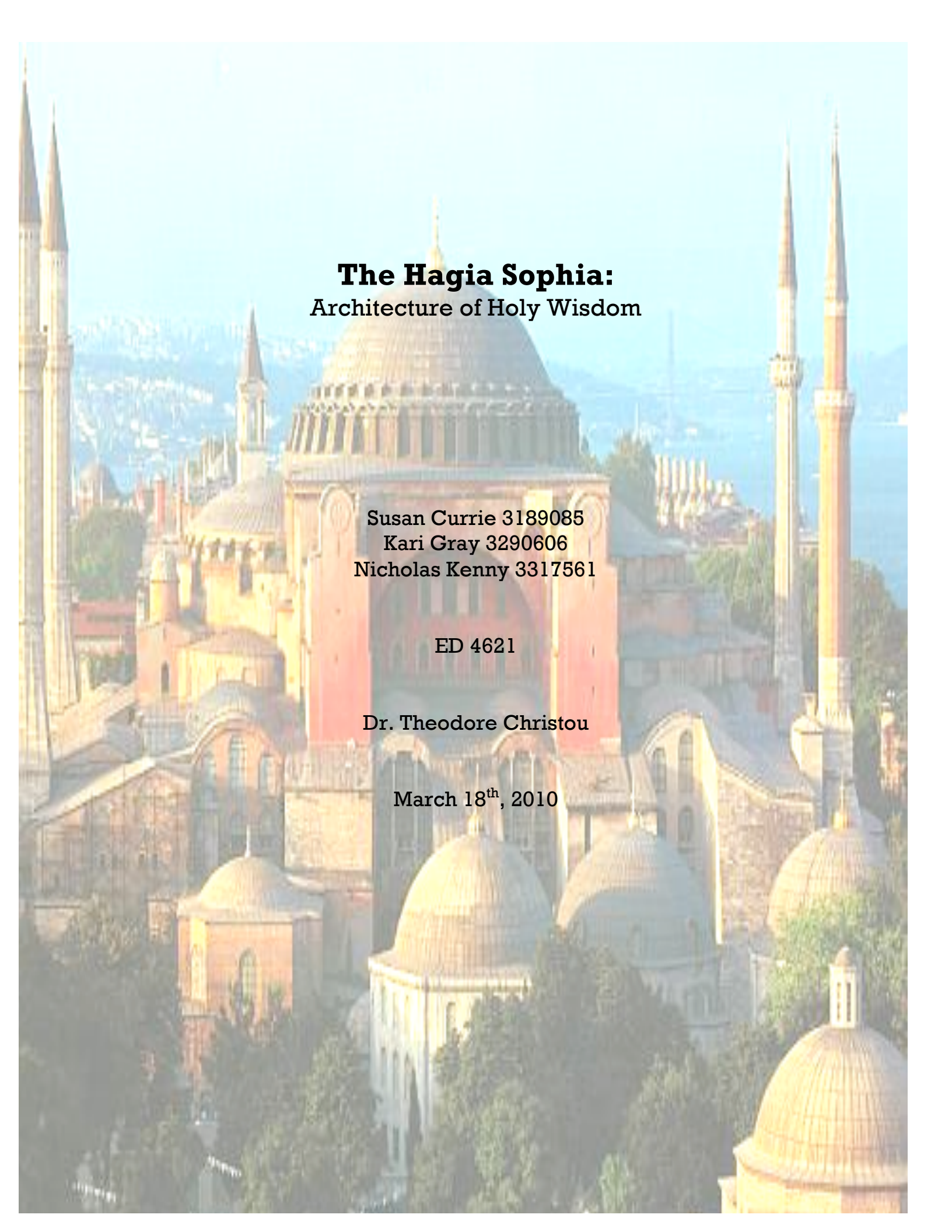




The Hagia Sophia: Architecture of Holy Wisdom

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Thesis:

The architectural features and symbolism represented throughout the Hagia Sophia are partially the artifacts of cultural influences within the realm of the Byzantine Empire, and are also unique and unlike anything known to humankind during its era. The Hagia Sophia itself became a great influence on the architecture of the generations that followed its construction under Justinian I.

Sources:

- (1) Schibille, Nadine. "Astronomical and Optical Principles in the Architecture of Hagia Sophia in Constantinople." *Science in Context* 22, no.1 (March 2009): 27–46.

Stable URL:

<http://journals.cambridge.org.proxy.hil.unb.ca/action/search?searchType=CITEADVANCE&journalParam=Science+in+Context&journals=All&author=schibille&year=2009&volume=22&issue=1&page=27&cite=all&cmd=Find#>
(accessed February 25, 2010)

- (2) Taylor, Rabun. "A Literary and Structural Analysis of the First Dome on Justinian's Hagia Sophia, Constantinople." *Journal of the Society of Architectural Historians* 55, no. 1 (March, 1996).

Stable URL: <http://www.jstor.org/stable/991056> (accessed February 25, 2010)

- (3) Gordon, B. L.. "Sacred Directions, Orientation, and the Top of the Map." *History of Religions* 10, no. 3 (February, 1971): 221-227.

Stable URL: <http://www.jstor.org/stable/1062011> (accessed February 25, 2010)

- (4) Macdonald, William. "Design and Technology in Hagia Sophia." *Perspecta* Vol. 4 (1957): 20-27.

Stable URL: <http://www.jstor.org/stable/1566853> (accessed February 25, 2010)

- (5) Kentucky Educational TV, 1996-2010. "The Church of Hagia Sophia." <http://www.dl.ket.org/humanities/connections/class/religions/hagia.htm> (accessed February 25, 2010)

- (6) "Engineering an Empire," History Channel, December 25, 2006

- (7) “Byzantium: The Lost Empire,” The Learning Channel (TLC), 1997

- (8) http://www.archnet.org/library/sites/one-site.jsp?site_id=2966 (accessed March 12, 2010)

(9) "Hagia Sophia."

<http://www.hagiasophia.com/listingview.php?listingID=20> (accessed March 12, 2010)

(10) "The influence of Hagia Sophia on Ottoman architecture."

http://www.qantara-med.org/qantara4/public/show_document.php?do_id=706&lang=en (accessed March 12, 2010)

(11) "Blue Mosque," in Encyclopaedia Britannica online,

<http://www.britannica.com/EBchecked/topic/70290/Blue-Mosque> (accessed March 12, 2010)

Perspectives and awareness of perspectives not taken:

The sources used form only a partial perspective on the cultural and religious symbolism associated with the architectural features of the Hagia Sophia; secondary sources were used in conjunction with images (primary), as well as anthropological/historical resources to draw conclusions about the validity of the thesis.

Argument/Discussion/Evidence:

Background Information of the Hagia Sophia

The Hagia Sophia now sits as a museum in modern day Istanbul (formerly Byzantium, Constantinople), but during its lifetime it has served as both a church and mosque (Ayasofya Mosque)¹. The original church was built by Constantius II in 360 AD on the grounds of a former pagan temple. This church burned in 404 AD and was rebuilt by Emperor Theodosius in 415 AD. Theodosius' church stood until 532 AD, when rioters during the Nika Riots burned it down. The Emperor Justinian I commissioned professors Antemios of Tralles and Isidoros of Miletus, the *mechanikoi*, to rebuild the Hagia Sophia to something the world had never seen before. The grand church was completed in 537 AD, and is essentially the church which stands today. Justinian invested a large amount of the state treasury in the rebuilding of the Hagia Sophia, almost emptying the state treasury; he invested in costly materials including: marble, acres of gold mosaics, and rich liturgical furnishings. Through the study of architectural details of the Hagia Sophia, one is able to decipher some engrained cultural and religious beliefs which the Byzantines held.

¹ http://www.archnet.org/library/sites/one-site.jsp?site_id=2966 (accessed March 12, 2010)

The *Mechanikoi*

Anthemios of Tralles and Isidoros of Miletus² were the mathematical minds behind the great rebuild of the Hagia Sophia commissioned by Justinian I in 532 following the Nika riots. As Schibille states:

“Anthemios and Isidoros seem to have been thoroughly conversant with the ancient corpus of astronomical and optical writings and, as will be shown, implemented their theoretical knowledge in the design of Hagia Sophia.”³

The two were professors educated in the mathematical sciences of the time.⁴ The two kept the tradition of the *mechanikos*, or early Byzantine architect, who held true to the ideal of Vitruvius.⁵ Vitruvius created his treatise, *On Architecture*, in the first century BC which “emphasized the need for a mathematical education of the architect, particularly in the fields of arithmetic, geometry, and astronomy.”⁶ The *mechanikos*’ education and training consisted of “a comprehensive liberal arts education and it can furthermore be assumed that he was acquainted with the mathematical sciences according to the standards of his time.”⁷

Axis Mundi and Astrological Orientation of the Hagia Sophia

The base of the Hagia Sophia is a rectangular in dimension and oriented roughly on an east-west axis which suggests the sacredness of the structure; an east-west orientation is generally symbolic of cyclical time due to the fact the sun rises and sets along this axis. Choosing to build along the east-west axis indicates a spiritual connection to the heavens through the cycle of birth and death.⁸ This connection between the orientation of the structure and its latitudinal placement is referred to as the Axis Mundi: a form of communication between human and spiritual realms which may be expressed through architectural features such as height (allowing humans to be closer to the heavens) or by construction along cardinal points (North and South, or East and West). The dome itself is 178.3 feet (54.3 m) above the

² Incidentally, Isidoros’ nephew, Isidoros, had to rebuild the dome of the Hagia Sophia when an earthquake collapsed the dome in 562 AD. He raised the pitch of the dome to increase the weight displacement 21 feet. This is the dome we see today. “Engineering an Empire,” History Channel, Dec 25, 2006.

³ Nadine Schibille, “Astronomical and Optical Principles in the Architecture of Hagia Sophia in Constantinople,” *Science in Context* 22, no. 1 (March 2009): 27.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid, referencing Vitruvius [1931] 1970, I.1.4

⁷ Ibid, 28.

⁸ Rabun Taylor, “A Literary and Structural Analysis of the First Dome on Justinian’s Hagia Sophia, Constantinople,” *Journal of the Society of Architectural Historians* 55, no. 1 (March, 1996).

floor, and surrounded by four main piers which define the corner of the dome. According to Schibille:

“The orientation of the building’s longitudinal axis coincides with the sunrise on the winter solstice according to ancient computations, implying that the orientation was intentionally calculated in order to secure an advantageous natural illumination of the interior. Light and visual effects served to reinforce the symbolic significance of the sacred space that furthermore provides evidence for optical considerations with respect to late antique concepts of light and vision”⁹

The *Constitutiones Apostolorum* and the *Testamentum Domini*, two texts from the late fourth and early fifth centuries AD, recommended that Christian churches be set on the east-west axis with the altar on the eastern end to take advantage of the lamination of the rising sun.¹⁰

“Astronomical studies flourishing in Athens and Alexandria in the fifth and sixth centuries cultivated strong relations in Constantinople, where astronomy tradition was transferred in the early 7th century.”¹¹

Aligning religious services along axis lines are a feature of many cross-cultural practices. In fact, when Constantinople fell to the Ottoman Muslims, a special niche called the Mihrab was built into one of the Hagia Sophia’s walls to assist in the direction of prayers towards Mecca. This alternative axis of religious practice led to the worshippers needing to askew their mats so they were no longer aligned with the building.¹²

The Dome and Four Corners of the Hagia Sophia



The architecture of the interior space of the Hagia Sophia guides the observer towards the dominating central feature of the dome, the largest the world had ever seen. The *mechanikoi*’s structural technique was the utilization of the pendentive, something the Romans had not perfected.¹³ The dome was the crowning architectural achievement of

⁹ Nadine Schibille, “Astronomical and Optical Principles in the Architecture of Hagia Sophia in Constantinople,” *Science in Context* 22, no. 1 (March 2009): 27.

¹⁰ Ibid, 31.

¹¹ Ibid, 29.

¹² B.L. Gordon, “Sacred Directions, Orientation, and the Top of the Map,” *History of Religions* 10, no. 3 (February, 1971).

¹³ “Engineering an Empire,” History Channel, Dec 25, 2006.

the rebuilding of the Hagia Sophia by emperor Justinian I;¹⁴ the dome symbolically represents the heavens, while the and the four corners of the structure on the outside, as well as the four piers used to support the structure from within are symbolic of the four corners of the world. Again, as we discussed earlier about the tiles and axis mundi, we see the meeting of the spiritual realm and the human realm through architectural design.

Other Features of the Interior

As described in a most expressive and poetic way by Egyptologist and archeologist John Romer:

“Inside, a forest of columns rises up in ecstasy. The walls, glass and gold and marble, light and dark, insubstantial in illusory, seem to simply fade away; a perfect sea of space for God’s holy wisdom to come down and touch the earth. A perfect theatre for the anthems of Byzantium; ‘Lo the lords of heaven and earth have come!’ Blood red columns of Egyptian porphyry were taken, so it was said, from the Temple of the Sun at Rome; the church’s wooden doors from Noah’s Ark; the building’s bronze was stripped from the temple of the goddess Artemis, one of the seven wonders of the pagan world. No wonder the building has itself become a legend. Poets said, the church combined the size of sunset and the scale of quarries; the hues of birds and fish, and precious stones; all the textures and experience of that ancient everyday; the living pink of baby’s fingernails, the rising of the bright red star Arcturus.”¹⁵

The interior of the infamous church is definitely unique. The entire place is full of incredible mosaics.



¹⁶The circles within the squares are believed to have a symbolism of the four elements and an eternal spiritual connection.¹⁷

¹⁴ William Macdonald, “Design and Technology in Hagia Sophia,” *Perspecta* v. 4, (1957).

¹⁵ “Byzantium: The Lost Empire,” The Learning Channel (TLC), 1997

¹⁶ “Hagia Sophia.” <http://www.hagiasophia.com/listingview.php?listingID=20> (accessed March 12, 2010)



The Southern Vestibule Mosaic in the tympanum of the southern doorway to the narthex dates back to 944 AD and features the Virgin Mary holding baby Jesus accompanied on the left by Justinian I and on the right by Constantine the Great.¹⁸

The Apse Mosaic, like its southern vestibule counterpart, features the Virgin Mary on a backless jeweled throne holding the baby Christ. It is located at a high point in the apse at the eastern end of the church. It was inaugurated in 867 AD.¹⁹



In the Comnenus Mosaic, the Virgin Mary stands, again holding the infant Christ, between Emperor John II Comnenus and his wife Irene. This mosaic is located at the upper south gallery on the east end.²⁰

¹⁷ Kentucky Educational TV, 1996-2010. "The Church of Hagia Sophia." <http://www.dl.ket.org/humanities/connections/class/religions/hagia.htm> (accessed February 25, 2010)

¹⁸ "Hagia Sophia." <http://www.hagiasophia.com/listingview.php?listingID=20> (accessed March 12, 2010)

¹⁹ Ibid.

²⁰ Ibid.

The Emperor Alexander Mosaic dates to the 10th century, and features the emperor in ceremonial Byzantine dress with a camelaucum, which is a Byzantine imperial crown.²¹



The interior was not only decorated by mosaics. One remarkable feature of the Hagia Sophia is the marble door. The door is at the upper southern gallery of the church, and is assumed to have been removed from another Hellenistic building.²²

The Hagia Sophia's Influence on Mosque Architecture

The Ottoman conquest of Byzantium in 1453 led to the incorporation and influence of architectural features from the Hagia Sophia to Mosques built within the Ottoman Empire. The dome was the main architectural feature which had been adopted in the construction of mosques in the time following the conquest of Byzantium. It's due to the influence of the Hagia Sophia's revolutionary architecture that many mosques following its construction, and the cities conquest, show such a great similarity in design. One particular Ottoman architect, Sinan, was greatly influenced by the Hagia Sophia's architecture that he incorporated design elements into many of his mosques, including: "the Mosque of Süleyman (1520–66), built between 1550 and 1556, and the Mosque of Kılıç Ali Paşa, built in 1580."²³ The Ottoman architects were able to adopt, and create new architectural design based on the structure of

²¹ Ibid.

²² Ibid.

²³ "The influence of Hagia Sophia on Ottoman architecture." http://www.qantara-med.org/qantara4/public/show_document.php?do_id=706&lang=en (accessed March 12, 2010)

the Hagia Sophia; they were also able to improve upon the structural integrity design of the dome through the use of additional buttressing in the construction.²⁴



Completed in 1616, Sultan Ahmed Cami's great Blue Mosque in Istanbul was inspired by the Hagia Sophia architecture and built to outshine it.²⁵

Relation/Significance for contemporary society or education:

As teachers, we should be interested in learning and teaching about our architectural surroundings and the values and beliefs they embody. Architecture is reflective of the culture which designs and builds it, and as such it is important to study and interpret frameworks of thoughts expressed through structures to understand where our own belief structures are rooted. Architecture, especially in the context of the Hagia Sophia, is largely representative and expressive of a particular class ideology – In this case of emperor Justinian I and others within his class. It is of interest to examine whose ideals become dominate and perpetuated through architecture. Our western culture draws on many architectural influences from the Byzantine era, which subconsciously perpetuate Christian and cultural ideals through the symbolism represented.

Conclusion:

The architectural features and symbolism represented through the construction of the Hagia Sophia are indeed the artifacts of cultural belief structures which existed in the region of the Byzantine Empire, and the Church of Holy wisdom itself has culturally influenced architectural design the world over.

²⁴ "The influence of Hagia Sophia on Ottoman architecture." http://www.qantara-med.org/qantara4/public/show_document.php?do_id=706&lang=en (accessed March 12, 2010)

²⁵ "Blue Mosque," in Encyclopaedia Britannica online, <http://www.britannica.com/EBchecked/topic/70290/Blue-Mosque> (accessed March 12, 2010); The Blue Mosque features six minarets instead of the four at the Hagia Sophia.