Perceptions Then and Now. The Aesthetic Features of Byzantine Architecture

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Introduction

This is yet another adventure inspired by the wondrous Hagia Sophia in Istanbul. Hagia Sophia stands as a well appreciated world heritage monument, which has had a strong influence on the formation of many architectural styles and approaches throughout the following millennia. Topographically situated on high ground, at the centre of the old city, Hagia Sophia shapes the skyline of Istanbul. The central dome supported by two semidomes covering the nave and the massive buttresses fortifying the load bearing structure form its dominant exterior features. Four exedras are situated where the semidomes meet the corners of the rectangular plan of the nave. The dome rises on four large piers, supporting four arches, and the transition from the square plan to the circular base of the dome is provided by pendentives.[1] Such a large dome resting on only four points of support introduced an unprecedented degree of flexibility in the plan. Aisles are separated from the nave and exedras by means of straight and undulating columnar screens which have been perceived as a hallmark of sixth century architecture.[2] The building had been an inspiration to its visitors, and its dome remained a constant challenge that could not be paralleled for another thousand years. It holds a key role in shaping the architectural aesthetics of the Byzantine Empire and spaces of Christian worship. Having provided a shared architectural vocabulary for the development of both European and Ottoman architectures throughout its afterlife, Hagia Sophia is a wealthy source of knowledge, befitting to the literal meaning of its name. It is a whole school of architecture in the body of one building. (Fig. 1)

In the spring semester of the 2018-2019 academic year, one of the professors tutoring the architectural design studio in Istanbul Technical University, Dr. Özlem Berber Özkendirci conducted a preliminary project within the fourth semester studio course with second year students, focusing on Hagia Sophia. The privileged location of this architecture faculty, in the neighborhood of Hagia Sophia, made it a natural choice for the instructor to direct her students to learn from this monument. The concept of "lightness" was to be handled through a series of conceptual and practical studio assignments, researching its possible meanings, its architectonic and programmatic expansions throughout the semester.[3] As a preliminary project, students were asked to make a spatial exploration on two opposing ideas — "lightness" and "weight" in Hagia Sophia. Students' evaluations and verbal descriptions of their experience had to be visualized in a series of presentations. The duration was short, and the results were composed of direct

1 The literature about the structural system of Hagia Sophia is immense. For a description of its general features and its plan layout see: Rowland J. Mainstone, *Hagia Sophia: Architecture, Structure, and Liturgy of Justinian's Great Church* (London: Thames & Hudson, 1988), 21-84; and Richard Krautheimer, *Early Christian and Byzantine Architecture* (Harmondsworth and Baltimore: Penguin Books, 1965), 153-170.

2 Slobodan Ćurčić, *Architecture in the Balkans: From Diocletian to Süleiman the Magnificent* (New Haven: Yale University Press, 2010), 197.

3 The introductory poster with the description of the concept and assignments can be found at: https://darch.itu.edu.tr/ad-4-ozlem-berber/ (last accessed: June 5, 2020).



Fig. 1: Hagia Sophia, exterior view

responses of the perceptions of these young architects, rather than products of research. For the presentations, the instructor decided to invite an architecture historian to the evaluation jury, which led to my involvement, that subsequently triggered the study presented in this paper.

Before considering the results of this assignment, the extent of the background knowledge of the subjects, in this case the students taking the course, should be clarified. In relation with its universal importance, and the extent of its spheres of influence, Hagia Sophia does require its rightful place in the curriculum of architecture education. The architecture history department was established within the architecture faculty of Istanbul Technical University in 1952, with the assignment of the Italian professor Paolo Verzone as its first chairman.[4] The compulsory courses in the curriculum were established at this time and its structure has persisted without many changes to this date. The structure of this curriculum requires students to take four compulsory architecture history courses (2hours/credits),[5] starting from the second semester of their bachelors' education within a duration of four years.[6] The earliest one of these in the program is titled "Ancient and Byzantine Architecture History". The content, as could be understood from the title, is quite broad, and within the limited time of the class hours only an outline and an introduction of the bibliography is possible. An introduction to the architecture of Hagia Sophia takes its place at the end of the semester, only in one of the class hours. This

4 İlknur Kolay and Zeynep Kuban, "İTÜ Mimarlık Fakültesi Mimarlık Tarihi Anabilim Dalı'nın Tarihi" [Department of History of Architecture at Istanbul Technical University: A History], *TALID Türkiye Araştırmaları Literatür Dergisi* 7 (13) (2009): 674. Today, in accordance with the administrative changes within the past few years, the department has merged with the Architecture Department, and does not constitute a separate administrative entity.

5 These are "Ancient and Byzantine History" course (2nd semester) covering mainly Ancient (Greek and Roman) architecture, an introduction to Byzantine architecture and especially the historical topography of Istanbul, "Turkish Architecture History" course (3rd semester) concentrating mainly on Anatolian Seljuq and Ottoman architecture; "European Architecture" course (4th semester) covering outlines of European architecture starting from the architecture of the medieval era until 19th century, with an emphasis on the effects of Western styles on Ottoman architecture and "Contemporary Architecture" course (5th semester) introducing the varying architectural styles within 20th century. Ibid., 676-677.

6 The curriculum is enriched by a variety of elective courses on architecture history that reflect significant changes in accordance with the research areas of the faculty members.

involves the basic timeline of its history and the basics of the structural system that carries the great dome.[7] The audience of this course, the first year students, are still within the learning process of the language of architectural drawings, and thus the course has to concentrate more on the demonstrations of how to read and articulate plans, rather than actual experiences of what it means to be in that space, or rather in that building.

With this picture at hand, it is quite safe to assume that the background knowledge of the students taking this architecture studio course is very limited, both in general terms as well as about Hagia Sophia in particular. Although this was not their first encounter with the building, their education had so far not provided comprehensive means to experience it. With this point clarified, we can now return to the results of the preliminary project. With the requirements of the assignment in mind, students examined the concept of "lightness" in the building through various viewpoints. Some groups concentrated on the quality of material, others took "light" in relation with the illumination of the building, and some merged the two in their observations. In general, the structural systems and the load bearing elements were among the main concerns. This was supposed to be the visualization of a perhaps intuitive response, prepared in little time, after a short encounter with the building. Frankly, once invited to the jury, I did not know what to expect, but I certainly did not expect more than a set of descriptive sketches and spatial analyses. Once the presentations began, it was hard to believe what they were saying! The results were astounding. Not one or two individuals, but a majority of the students were repeating a description, a perception of Hagia Sophia I knew so well from the texts of Byzantine writers. How was it possible for this group of young architects to make these descriptions, sometimes using even the exact same definitions with the Byzantine spectators that I knew for sure they had not read? The building must have provided them with the same perceptions and feelings, regardless of the changed requirements and tastes over the course of time. Then, how could this perception be acquired? A search for the answer to this question leads one to an exploration of the aesthetic qualities of the building.

This study will start by comparing some of these observations with the descriptions of Hagia Sophia by Byzantine writers,[8] and will try to explore the aesthetic qualities of Byzantine architecture that succeed to evoke the same perception on the viewers from different periods of time, regardless of the technological advances, as well as changes and requirements of modern architectural spaces. Part of this text may come out as a repetition of some basics that are found in the major handbooks of Byzantine architecture history. This is intentional, in order to portray that both "the less-informed" and "the learned" eye of the contemporary viewer can acquire the same perceptive results. The examples used in this research will not be new to the scholar of Byzantine studies. Neither does this work claim to make a thorough portrayal of intended perceptions of the patrons and the builders in Byzantine architecture, for such a thing is too broad and beyond the scope of this article. Instead, this study will focus on some ideas, derived from this continuity of a similar perception and the role of aesthetic qualities in its formation, using selected examples of buildings and decorative forms from early and later Byzantine religious architecture, and will try to present the results of this exploratory journey.

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7 Whenever possible, an excursion to Hagia Sophia Museum is also included in the program of the semester, but since that usually takes place during class hours it is again not more than a short introduction. In the 3rd semester "Turkish Architecture History" course, Hagia Sophia is mentioned again. However, in this semester it is only handled partially, in terms of its influence on Ottoman architecture. Ahunbays' publication gives a good overview of this content: Metin Ahunbay and Zeynep Ahunbay, "Structural Influence of Hagia Sophia on Ottoman Mosque Architecture," in *Hagia Sophia from the Age of Justinian to the Present,* ed. Robert Mark, Ahmet S. Çakmak. (New York: Cambridge University Press, 1992), 179-194.

8 Cyril Mango presents an overview of the available material from Byzantine writers on the fabric of Hagia Sophia, including a critical calendar on Byzantine sources, which could be useful for the reader to get a grasp of the texts mentioned in this study: Cyril Mango, "Byzantine Writers on the Fabric of Hagia Sophia," in *Hagia Sophia from the Age of Justinian to the Present,* ed. Robert Mark, Ahmet S. Çakmak. (New York: Cambridge University Press, 1992), 41-56.



Fig. 2: Hagia Sophia, interior view of the dome

On Hagia Sophia and Sixth Century Examples

The Dome

The structural system, and not surprisingly, especially the dome was one of the main focuses of the presentations of students. More than once, the dome was described by these contemporary viewers as if it was floating in the air, as if nothing was carrying it, and since this was not a study to praise the building, it could include negative feelings too; as if it could fall on their heads. (Fig. 2)

The description of such a perception can also be found in the evaluations of contemporary architecture historians, not only reserved for Hagia Sophia, but as a fashion of intended aesthetics for the domed architecture of Constantinople. In the sixth century architecture of the capital, the domed form was used more extensively in prestigious monuments.[9] Cyril Mango describes how in Constantinople, the curvature of the dome began at the base of its windows. Focusing on the dome of the Sts. Sergius and Bacchus church, he mentions that "the visitor is overwhelmed by the huge, almost perilous, overhang of the dome," and declares that this must have been a deliberate decision of the architects of Justinian (r. 527-565), finding its most explicit example in the original dome of Hagia Sophia. The result of this, in his words, is a dome threatening to come crashing down.[10]

9 Cyril Mango, *Byzantine Architecture* (New York: Rizzoli International Publications, 1985), 58.

10 Ibid., 79. Slobodan Ćurčić and Robert Ousterhout also refer to these design decisions of Justinian's architects as "intentional" and "deliberate" respectively: Ćurčić, *Architecture in the Balkans,* 197; Robert

The intended perception here seems to be acquired by this arrangement in the curve, and especially by the large number of windows on the drum. The initial dome of Hagia Sophia designed by the *mechanikoi* Anthemios and Isidorus collapsed in 558, after being affected by a series of earthquakes. It was shallower, thus structurally less stable than the present dome, and was possibly following the curve of the pendentives, providing a more inclusive feeling to the viewer.[11] The description of this initial state is recorded by Procopius in his book on Justinian's buildings, *De aedificiis.*[12] Although this dome was replaced by a slightly steeper one, the new dome carried some similar features, including the extensive light taken in from the windows of the drum. The strong daylight coming in through these repetitious windows forms a barrier, a separation made of pure light, between the dome and the structure that supports it, resulting in a perception that nothing really carries the dome. Slobodan Ćurčić refers to this as the virtual crescendo of an effect of "dematerialization," which he defines as an aesthetic goal with spiritualizing effects dominating the overall design of the building.[13] The mosaic decoration around these forty windows reflects the natural light, contributing to a further dematerialization of the surfaces, which accentuates the effect of the dome to be hovering without support. This is well described by Procopius, after a literal definition of the pillars and arches that the dome rises on: "Above the arches the construction rises in a circle: it is through this that the first light of day always smiles. Indeed, I believe it towers above the whole earth, and the structure has gaps at short intervals [windows of the dome], being intentionally interrupted so that the openings corresponding to the divisions in the masonry are channels of constant illumination."[14] Then, he makes his well-known remark that the dome seemed not to be founded on solid masonry, but to be suspended from heaven by a golden chain,[15] and thus, cover the space; also mentioning that these covering elements marvelously fitted together in mid-air.[16] He fortifies the expression of the miraculous quality of this perception by saying it is beyond his comprehension, and that whoever sees the church, they immediately understand that "this work has been fashioned not by human power or skill, but by the influence of God."[17]

Agathias, who describes the rebuilding, indicates that the new steeper dome[18] provided a "more even and well-curved" dome, "conforming altogether to the [corrected geometrical] figure." He states that, since it was narrower and steeper, it did not strike observers with as much amazement as before, but it was more secure.[19] In the following decades other accounts describe the church with its new dome. A late sixth century attester, Evagrius,[20] expresses his amazement

Ousterhout. *Eastern Medieval Architecture – The Building Traditions of Byzantium and Neighboring Lands* (New York: Oxford University Press, 2019), 210.

11 For discussions on this initial dome see: 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, 1 (1996): 66-78; Rowland J. Mainstone, "Justinian's Church of St. Sophia, Istanbul: Recent Studies of Its Construction and First Partial Reconstruction," *Architectural History* 12 (1969): 39-49, 102-107.

12 Procopius, *De Aedificiis,* I. i. 20-65.

13 Ćurčić, *Architecture in the Balkans*, 196-197.

14 Cyril Mango, *The Art of the Byzantine Empire 312-1453. Sources and Documents.* (Englewood Cliffs: Prentice Hall, 1972), 75. Here translated from Procopius, *De Aedificiis,* I, i, 23.

15 The golden chain supporting a dome from heaven is an image that goes back to Homer and is considered a *topos* in classical literature. For further analysis of this connection see: Anthony Kaldellis, "The Making of Hagia Sophia and the Last Pagans of New Rome," *Journal of Late Antiquity* 6, 2 (2013): 365.

16 Mango, *Sources and Documents*, 75.

17 Ibid., 76.

18 The existing 6th century parts of the dome, on north and south belong to this rebuilding stage. It was partially rebuilt on the western side in 10th century, and again a partial rebuilding took place in the 14th century. For a structural overview on the dome see: William Emerson and Robert L. van Nice, "Hagia Sophia, Istanbul: Preliminary Report of a Recent Examination of the Structure," *American Journal of Archaeology* 47, 4 (1943): 423-436.

19 Mango, *Sources and Documents,* 78. And for text see: Agathias, *Histories,* ed. Rudolf Keydell, *Corpus fondium historiae byzantinae,* (Berlin: Association internationale des études byzantines, II, 1967), 174-175.

20 Evagrius, *Ecclesiastical History,* ed. Joseph Bidez, Léon Parmentier (London: Methuen, 1898), IV, 31.

about its scale, saying that it rises to so great a height that the beholder loses comprehension of how it could be completed.[21] Another well-known description from the sixth century, belonging to the phase after the rebuilding, is that of Paul the Silentiary. In his description of the dome, he too mentions the feature of light, and that the dome looked like it had no supports, in these words: "Rising above this into the immeasurable air is a helmet rounded on all sides like a sphere and, radiant as the heavens, it bestrides the roof of the church … It does not, however, form a sharp pinnacle, but is like the firmament which rests on air …" Apparently, as understood from the later descriptions, the new dome still was quite impressive and elicited a similar feeling of being hung in mid-air with no supports.

In her work focusing on the significance of light as an object of aesthetics Nadine Schibille puts forth that the aesthetic experience of the Byzantine church interiors was greatly based on the perception and sensation of light for the Byzantine observer in both physical and spiritual terms, as she draws attention that the sixth century literary descriptions of Hagia Sophia are constantly drawing attention to the phenomena of light. In the early Byzantine period, light was connected to the notion of wisdom, and its use in architecture was an effective visual method to signify divine immanence and transcendence. Schibille argues that it was natural for the church dedicated to "Holy Wisdom" being praised for its extraordinary luminosity, and claims "light, beauty and wisdom" can be used for the understanding of the design decisions on architectural structure and decoration of Hagia Sophia, as interwoven programmatic elements.[22] Although a common interpretation of the spiritual connotations and meanings cannot be expected from the contemporary viewer since they are no longer part of the same cultural context, it is striking to see that these design decisions seem to evoke a similar awe and appreciation of the monument to them.

Aesthetic Distortions in the Structural System

There are irregularities in the structural system that do not seem to be the products of an analytical, or a sound structural thinking, such as the incompatible number of columns on the ground floor and gallery level, causing a disruption in the continuity of the vertical load bearing elements. Mango calls attention on what he considers a sort of "disregard for classical norms" in this attitude.[23] Ćurčić approaches this detachment as the embodiment of an artistic synthesis that had been in the making for nearly three centuries. He too refers to the architecture of this period as "the final break with pagan aesthetics." To him, these irregularities are about creating the intended mysteries. He says that columns of the ground and gallery level have been set thus so as to "deliberately avoid any sense of vertical alignment." And this, in his words, is a "direct rejection of fundamental principles of structural logic inherent in classical architecture."[24] These irregularities did not escape the attention of these

21 From the translation of the above: Mango, *Sources and Documents,* 79.

22 Nadine Schibille, *Hagia Sophia and the Byzantine Aesthetic Experience* (Farnham: Ashgate, 2014), 4. There is a rising scholarly interest that focuses on trying to understand the perception of works of art and architecture of ancient and medieval times from the viewpoint of their contemporary users, through textual evidence and reconstruction of sensory experience. For illumination of Hagia Sophia and Byzantine perception see also: Nicoletta Isar, "'Xopós of Light': Vision of the Sacred in Paulus the Silentiary's Poem Descriptio S. Sophiae," *Byzantinische Forschungen* 28 (2004): 215-242. Bissera Pentcheva introduces the sonic dimension of Hagia Sophia and studies it as a phenomenon linked to other senses in: Bissera V. Pentcheva, *Hagia Sophia: Sound, Space, and Spirit in Byzantium* (University Park: The Pennsylvania State University Press, 2017). Amy Papalexandrou suggests that the management of sound might have been determinative in shaping the architectural features and the introduction of dome into early Byzantine church architecture in: Amy Papalexandrou, "Perceptions of Sound and Sonic Environments Across the Byzantine Acoustic Horizon," in *Knowing Bodies, Passionate Souls, Sense Perceptions in Byzantium,* ed. S. Ashbrook Harvey and M. Mullet (Washington DC: Dumbarton Oaks Research Library and Collection, 2017), 67-85.

23 Mango, *Byzantine Architecture*, 63.

24 In this regard Ćurčić puts Hagia Sophia at a focal point in the context of the shaping the new Christian aesthetics as such: "Rooted in the classical tradition, but imbued with Neoplatonist philosophical teachings, Christian aesthetics, committed to the notion of expressing mysteries of the invisible and non-



Fig. 3: Hagia Sophia, columnar screens in the north west exedra (a) and south of the nave (b)

students of architecture. The appearance of unsound structural decisions contributed to the restless, threatening feeling that the upper structure is standing as a miracle. On two sides of the nave there are rows of four columns supporting the gallery level. On the gallery level, six columns are aligned on the same axes. The same is true for the exedras, which attract attention with their two porphyry columns each on the ground floor, compared to six columns on the gallery level. These major load bearing elements do not correspond to each other vertically. The sense of stability, and perhaps security is distorted with this, apparently non-structural, but aesthetic decision. (Fig. 3)

These features caught the attention of the Byzantine beholder as well. Procopius finds this aesthetic quality "terrifying," yet in his work praising the building, this adds up to the power and beauty of the building. While describing the roofing system, focusing on the structural system that carries the semidome in the East, he says: "… [the eastern semidome] is lifted up by the adjoining parts of the building, wonderful in its beauty yet altogether terrifying by the apparent precariousness of its composition. For it seems somehow not to be raised in a firm manner, but to soar aloft to the peril of those who are there; and yet, it is supported with quite extraordinary firmness and security."[25] Paul the Silentiary has also noticed this irregularity and he makes a quite vivid description of it in the exedras: "Upon the porphyry columns stand others from Thessaly, splendid flowers of verdant stone. Here are the fair galleries for women, and they have the same form that may be seen below except that they are adorned not with two columns, but with six Thessalian ones. One may wonder at the resolve of the man who upon two columns has bravely set thrice two and has not hesitated to fix their bases over empty air."[26] In this passage he clearly

circumscribable God, gradually defined ways in which art could communicate such notions through available material means." Ćurčić, *Architecture in the Balkans,* 196-197. Ćurčić puts forth that even the huge main piers are compatible with these aesthetic ideals as they are "pushed" into the side spaces and their surfaces are covered with colorful marble panels, masking their key role as providers of physical support. Ibid., 198.

25 Mango, *Sources and Documents,* 74.

26 Ibid., 81.

states the awkward feeling aroused by not having a correspondence to the bases of the upper row of load bearing columns of Thessalian verd-antique, and presents this as a curiosity.

There are also similar irregularities in the spatial arrangement as well, such as the doors of the narthex, five on the outer side, not corresponding to the nine doors opening to the interior space. Mango also mentioning the transverse arches springing from the outer wall not relating to the articulation of the inner one, says there is endless variation and improvisation in the design of the building.[27] It seems that a similar approach is valid throughout the design including both the structural system and the spatial arrangement, which is not necessarily rational. On the contrary, it seems to derive from a continuous curiosity.

Another feature fortifying a perception of "lightness" in such a monumental masonry building must have been the usage of vaulting systems throughout the design. In this way a point support system is favored, freeing the masonry walls from their load bearing obligations, resulting in walls that only carry themselves, and that do not contribute to carry the upper structure. This liberation brings the opportunity for more window openings, thus more light into the building. The superior illumination properties of the interior space have been noticed and praised by the Byzantine writers as mentioned. In fact, Procopius' description of the church starts with an emphasis on this feature saying, "You might say that the [interior] space is not illuminated by the sun from outside, but that the radiance is generated within, so great an abundance of light bathes this shrine all round."[28]

Paul the Silentiary also reserves quite long descriptive passages to the subject of light.[29] However, since the Byzantine observers had the chance to experience the church functioning with its original setting, most of the descriptions about "light" in these texts concentrated on the artificial lighting during the ceremonial rituals at darker hours of the day, and the effects of this light combined with the original interior decorative program of the church, majorly composed of gilded tesserae of the mosaics. For Paul the Silentiary "no words are sufficient to describe the illumination in the evening: you might say that some nocturnal sun filled the majestic temple with light," and the gilded stone cornices, capitals, brass chains of lighting equipment, silver furniture, all contribute by reflecting the light.[30] Nicoletta Isar's study on Paul the Silentiary's description of lighting of Hagia Sophia is particularly noteworthy. The liturgical moment of the lighting of the lamps is not clear from the poem since he makes no specific reference to it, and the lighting in the Byzantine church could only have a liturgical function. Isar points out that time in the poem has a paradoxical course, in her words, "stressed by such oxymoronic imagery like 'the dawn of evening' or the 'nocturnal sun'."[31] After studying the architectural features described in the poem, Ruth Macrides and Paul Magdalino conclude that the text is both "topical" and "timeless," "its timelessness being a function of its topicality."[32] In fact, the similarities between the students' descriptions and the architectural descriptions mentioned in the poem attest to its "timelessness." Although they agree that this genre of *ekphraseis* reflected the church as a "model of heaven on earth," Macrides and Magdalino's interpretation is closer to the contemporary analytic relations mentioned here. Isar, on the other hand, suggests that the poem's timelessness relates to mystic experience, which becomes clearer in the description of light.[33]

The visual and spatial experiences were meant to be further augmented in the context of ritual performances, so in its original setting the space offered an overwhelming impression on the senses. In fact, Bissera Pentcheva defines the term "experience" as the sensorial regimes available

27 Mango, *Byzantine Architecture,* 63.

28 Mango, *Sources and Documents,* 74.

29 Ibid., 89-91.

30 Ibid., 89.

31 Isar, "Xopós of Light," 223.

32 Ruth Macrides and Paul Magdalino. "The Architecture of Ekphrasis: Construction and Context of Paul the Silentiary's Poem on Hagia Sophia," *Byzantine and Modern Greek Studies* 12 (1988): 82.

33 Isar, "Xopós of Light," 239.

to a Byzantine audience participating in the cathedral rite,[34] to be able to fully reconstruct how the building's distinct features and liturgy worked together and enhanced one another. This allowed an understanding of the building's influence on the observer in the context of more ephemeral phenomena. The contemporary viewer is deprived of this "experience" since the liturgical setting, related artificial lighting and vast surfaces with mosaic decoration are no longer present. However, the students still mentioned the luminous atmosphere of the interior as a curiosity, most probably because of the contradiction between the idea of the bulky body of a massive masonry building with the amount of light experienced inside Hagia Sophia. The outer facades of the early Byzantine churches are rather dull, compared to the decorated interiors. Charles Diehl puts this aspect finely in his chapter on Byzantine Art: "The impression given by the exterior is, it is true, by no means striking; a sixth century Byzantine building, with its bare walls of brick, always presents a somewhat poor and monotonous aspect from without."[35] The outer appearance promises a different, a lesser visual environment, which presents the contrast in the interior as an element of surprise, or rather, a curiosity.

Architectural Decoration and Natural Stones

The sixth century marked a significant period in the formation of a unique Byzantine architectural style, differentiated from the ongoing Roman traditions. It holds products of a matured synthesis of the heritage of classical ideals with the new encounters that the new geographic location of the capital, closer to the eastern side of the ancient civilized world provided. Steven Runciman summarizes the ingredients of this recipe very well in his foreword to Martin Harrison's monograph on the church of St. Polyeuktos in Istanbul. First, there is "the Roman taste for splendor and competent craftsmanship" as prevailing natural heritage, secondly "the Greek sense of balance and proportion and enjoyment of mathematical experiment" is included, being located in the lands of the empire dominated by Hellenic culture, and as a third ingredient, which probably added the spice for a startling change of style in decorative forms, he mentions "the oriental love of varied ornament and even fantasy," provided and fortified by the direct contact with the now much closer neighboring civilization: the Sasanians. Lastly the requirements of an understanding that would suit "the rites of Christian Empire and the Christian Church" should be mentioned.[36] Christianity, then much more deeply rooted in the sixth century and with stronger influence than in previous centuries, began to shape a more abstract, mystical artistic attitude, detached from the repeated classical forms of earlier styles. Harrison defines fifth century architectural sculpture in Constantinople as a repetition of traditional pattern such as "composite capitals and modillion cornices, moldings (roundel, ovolo, cyma reversa), and motifs known as bead-and-reel, egg-and-dart, leaf-and-tongue, acanthus scroll, and erect acanthus," and in his words "the repertory is standard, and the carving for the most part perfunctory."[37]

In the sixth century, architectural sculpture presents much varied examples with new forms, drastically diverted from this traditional picture. The transcendental qualities introduced to architectural aesthetics, "dematerialization" as an aesthetic goal with its spiritual effects are reflected in the design of interiors and change of architectural decoration as well. Ćurčić says that these surface decorations contribute toward the same aesthetic message, aimed at creating the illusion of "weightless" heavenly architecture in which angels (the bodiless ones) abide.[38] His choice of words is particularly noteworthy within this discussion of "lightness and weight." Here, on the architectural sculpture, the carved marble decorations evoke a similar response

34 Pentcheva, *Hagia Sohia*, 8.

35 Charles Diehl, "Byzantine Art", in *Byzantium – An Introduction to East Roman Civilization*, ed. Norman H. Baynes, H. St. L. B. Moss. (Oxford: Clarendon Press, 1969), 167.

36 Martin Harrison, *A Temple for Byzantium- The Discovery and Excavation of Anicia Juliana's Palace Church in Istanbul*. (Austin: University of Texas Press, 1989), 7-8.

37 Ibid., 20.

38 Ćurčić, *Architecture in the Balkans,* 197.



Fig. 4: Decorated block from Polyeuktos church (a), column capitals and cornice friezes of Sts. Sergius and Bacchus church (Küçük Ayasofya mosque) (b), column capital from Hagia Sophia (c)

for the viewer, with the intended curiosities, and irregularities already mentioned about the structural system and spatial arrangement. This strong effect acquired by the architectural decoration did alarm the students as well. Elements such as the cornices and column capitals seemed as if they had no load bearing roles because of the style of their heavily undercut surfaces, and thus they contributed to the miracles, or curiosities about how the upper levels were supported, for the scenery provided no rational explanation.

Such manner of treating the surfaces of marble decoration is a characteristic of sixth century architecture of the capital. The decorative patterns on the surfaces were undercut by drilling the surface holding the chisel at about a 45-degree angle, resulting in a lace like surface seemingly detached from the actual block. The result was an illusion of shadow and light, which provided semitransparent faces for the block that looked empty inside. Earlier examples were found in the rich architectural sculptural remains of the church of St. Polyeuktos, despite the church itself being preserved only up to the basement level. The church building was heavily looted during the Latin occupation (1204-1261) and its decorated building blocks were transported elsewhere for their afterlife as spolia. Many pieces have been traced though, after being matched with the decorative features of the blocks that were damaged and left on site. Harrison mentions the surfaces under drilled with the chisel causing the exuberant vegetation patterns to seem to be detached from the background, especially evident in the delicately chiseled vine-leaves among the sculpture of the church of St. Polyeuktos.[39] (Fig. 4a)

The sixth century basket capital was a product of this style, used extensively in the monumental buildings of the era. For our contemporary observers, the students, these capitals were the center of attention in terms of their visually questionable relationship with the structural system. Examples of capitals decorated in the highest order with this style are also found in the church of Sts. Sergius and Bacchus. (Figure 4b-c) The effect is of course not limited to the capitals, but also dominates the continuous structural leveling courses of cornices. The nave cornices of Hagia Sophia are firm, strictly structural elements that extend 2 meters deep and one block can reach up to 4 meters in length on the straight sections extending on north and south sides of the center of the nave.[40] These parts are invisible to an observer. The visible parts

39 Harrison, *A Temple for Byzantium,* 80.

40 For a detailed analysis on the structural and decorative features of Hagia Sophia's nave cornices, see: Lawrence Butler, "Hagia Sophia's Nave Cornices as Elements of Its Design and Structure," in *Hagia Sophia from the Age of Justinian to the Present,* ed. Robert Mark, Ahmet S. Çakmak. (New York: Cambridge University Press, 1992), 57-77.





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are narrow strips of protrusions, decorated underneath with acanthus leaves produced with the techniques mentioned above. These leaf decorations are not identical and show the handwork of different craftsmen. Getting closer in scale, it is interesting to see that even the smallest detail is produced with an understanding compatible with the ideals mentioned previously. Harrison examines these for the church of St. Polyeuktos and mentions the "small irregularities" in the outcome, examining for example the lattice-bars, "which are not rectilinear but deftly carved by eye," which allow minor interventions to the program by individual craftsmen.[41]

One aesthetic aspect of Hagia Sophia singled out by a majority of the Byzantine writers is the multicolored marble used in its decoration. The amount and origins of the natural stones are mentioned innumerable times, bearing witness to their impressive power over the Byzantine spectator. In the evaluation of students within this preliminary project, there was no mention of them. The starting point of the project was the concept of "lightness", and natural stone veneer plates did not relate to the study. However, it will still be useful to mention the contribution of natural stone decoration to the aesthetic perception of the building, since they have often been one of the major ingredients for a cosmic description of the interior. While sixth century writers such as Procopius also focus on this material, a twelfth century description of Hagia Sophia found in the *ekphraseis* written by a certain Michael from Thessalonica[42] stands out with its interpretation of them. The text provides both archaeological information and a symbolic interpretation of the building. Cyril Mango and John Parker divide the symbolism of the Byzantine church into three kinds: "scriptural-topographical" which is related to the form and furnishings of the church "as a miniature Holy Land," "theological" which connects with the concepts such as the holy trinity or the two natures of Christ, and "cosmic" which regards the church as a small scale model of the universe.[43] The cosmic explanation is noted as being less found in Byzantine texts, the *ekphraseis* of Michael being an example of this approach. The natural stones constitute an important part of this interpretation. Although her study concerns more the significance of light as illumination, in Paul the Silentiary's description, Isar approaches these relations as a whole including the illumination, undulating columnar screens, curves of vaulting, and circular movements in the plan which must have had relations with the original liturgy. She notices a systematically ascribed "whirling" movement mentioned in the

41 Harrison, *A Temple for Byzantium,* 81.

42 Cyril Mango and John Parker. "A Twelfth-Century Description of St. Sophia," *Dumbarton Oaks Papers* 14 (1960): 233-245.

43 Ibid., 241.

texts of Procopius, Paul the Silentiary, Chorikios and Photios. She detects a similar pattern of "dancing columns" in Michael's *ekphraseis*.[44] Apparently, not only the decorative features, but also the placement of architectural sculpture contribute to this intended perception.

Michael's remarks about the pavement are particularly noteworthy. He compares the pavement, covered by Proconnesian marble plates, divided by strips of verd-antique to the sea and these strips to blue waves.[45] These dark strips are usually interpreted as symbolizing the four rivers of Paradise, as presented in the work of George Majeska centered on the green marble bands of Hagia Sophia.[46] The Proconnesian marble plates are arranged in book-matched panels. With their bluish gray veins, they are said to resemble rippling water. Such simile can be found in the descriptive texts, and the effect was also noticed by contemporary scholars. Fabio Barry handles this type of floor decorations with their cosmic connotations and says that the feeling they provide to the visitor is as if the visitors are walking on water.[47] Pentcheva examines the effect of the shifting intensity of sunlight over the marble revetments, and notices that this causes the stone to appear "incandescent" at certain moments of the day. Similar to Barry, she claims that this effect, which she calls "material flux", confuses the perception of what is solid and what is liquid.[48] All this perception seems very much compatible with the Byzantine texts that describe the building in very active terms, as if its solid features come to life and further animate the structure.

Some Remarks for Later Byzantine Architecture

There is a dramatic contrast between the exterior appearance and the interior space of the Byzantine church architecture as mentioned previously for the examples from the early Byzantine period. Such contrast persists in the Byzantine church architecture of the later eras as well. In fact, Byzantine church architecture can be defined as introverted. In the Middle Byzantine centuries, the outer façades of the church buildings of the capital city are plain, without decoration and with the building materials exposed. However, there is a more transparent articulation of the structural system suggested by the pilasters on the façades corresponding to the vertical load bearing elements of the interior space. Robert Ousterhout defines this structural clarity and the skilful use of natural light as characteristics of Constantinopolitan architecture for this era.[49] The roofing is based on vaulting systems, mainly using domes and cross vaults, leading to a skeletal structure that liberates the masonry walls from loads, allowing possibilities for multiple openings. There is a reduction of scale, but the drums of the domes are higher, and they include a large number of windows, thus more light for the interior. Ousterhout exemplifies the lightness of the structural system and this openness taking Myrelaion church into focus and specifies that the development of these characteristics rely all the way back on the innovative structural system seen in Hagia Sophia.[50] (Fig. 5)

Despite this more rational articulation of the structural system, from time to time some details in the architectural decorative program might appear as presenting curiosities. One interesting example is the knotted column, which is seen in the eleventh and twelfth centuries.

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44 Isar, "Xopós of Light," 223.

45 Ibid., 239.

46 George P. Majeska, "Notes on the Archaeology of St. Sophia at Constantinople: The Green Marble Bands on the Floor," *Dumbarton Oaks Papers* 32 (1978): 299-308.

47 Fabio Barry, "Walking on Water: Cosmic Floors in Antiquity and the Middle Ages," *The Art Bulletin* 89, 4 (2007): 627-656. For an interpretation of such floor patterns in Late Antique period including some sixth century examples from Syria see also: Henry Maguire, "Magic and Geometry in Early Christian Floor Mosaics and Textiles," in *Rhetoric, Nature and Magic in Byzantine Art* (Aldershot; Brookfield: Ashgate Publishing, 1998), 265-274.

48 Pentcheva, *Hagia Sohia*, 121.

49 Ousterhout, *Eastern Medieval Architecture*, 354.

50 Ibid., 354.



Fig. 5: Myrelaion church (Bodrum mosque), exterior view

Used mainly in book illuminations framing cannon tables and evangelist pages,[51] and later on architectural sculpture as reliefs on marble slabs, it also found its appearance in architecture as an actual load-bearing element. However, its plastic appearance, which looks like a rope (or two) is startling, a completely non-rigid element, with a knot at its center. Jelena Bogdanović draws attention to the architectural and sacred meanings on the usage of this element, as the knots are associated with Solomon's knots and they are often crowned with pseudo-Corinthian capitals. This creates an aura of sacredness and a continuity of classical architectural norms at the same time, by combining memorable architectural elements from the Temple with the representation of the Classical Greek orders.[52] Ioli Kalavrezou states that in the Middle Byzantine period, this kind of knot cannot be observed in the representation of materials that are actually used for tying, such as ropes or cloths, but only on the columns.[53] Structurally, this vision provides no sense of security, except that it is a miracle that the upper structure is still standing, trying to rest on this pliable looking material. Although usually found in smaller scale decorative elements, flanking templons and in small baldachins such as two canopies from the church of Hagia Sophia in Ohrid and from Pantokrator monastery churches (now Zeyrek mosque) in Istanbul both reused as *minbars*,[54] there are also larger scale versions, as seen in the spolia columns of the thirteenth century Anatolian Seljuq mosque of Alaaddin in Konya, which were obviously produced to bear heavier loads. (Fig. 6)

In contrast with the structural clarity and plainness of the outer façades, the interiors of the Byzantine churches are far more complicated and richly decorated. In fact, rather than just architectural detours, Byzantine church functions together with its decoration.[55] Despite the reduction of scale, the interiors are compartmentalized and provide multiple differentiated spatial experiences. For example, in the Pantokrator monastery churches, Ousterhout claims that complexity rather than monumentality would have been the dominant visual expression. (Fig. 7) The richness of the architectural experience, the amount of time spent to fully grasp all the features of the space, if ever possible, is in a miraculous contrast with the time one would spend to make a tour around the building and perceive the outer façades. Thus, for any student of Byzantine architecture, the Byzantine church cannot possibly be fully understood simply by looking at plan and section drawings, but may only be perceived by direct contact with the buildings. This multi-dimensional compartmentalized character of the inner space provides various viewpoints, but never a clear perception of the whole interior. Especially with the original setting of the churches in Byzantine era, the rules of liturgy describing where each group stand defined their limited visual access, adding more mystery to their perception. Such inscrutability is very clearly visible in Byzantine texts. This is true for earlier Byzantine period as well. In his description of Hagia Sophia, Procopius gives a vivid description of this experience. After defining the elements that compose the roofing system he says: "… and yet (these elements) do not allow the spectators to rest their gaze upon any one of them for a length of time, but each detail readily draws and attracts the eye to itself. Thus, the vision constantly shifts around, and the beholders are quite unable to select any particular element which they might admire more than all the others. No matter how much they concentrate their attention on this side and that, and examine everything with contracted eyebrows, they are

51 Ioli Kalavrezou, "The Byzantine Knotted Column" in *Byzantina kai Metabyzantina*, ed. Speros Vryonis, jr., (Malibu: Undena Publications, 1985), 95.

52 Jelena Bogdanović, *The Framing of Sacred Space. The Canopy and the Byzantine Church* (New York: Oxford University Press, 2017), 219.

53 Kalavrezou, "Byzantine Knotted Column," 95.

54 The canopy in the Hagia Sophia in Ohrid is associated with an episcopal throne, and the double knotted columns in Pantokrator monastery churches is usually associated with *proskynetaria* icons. Jelena Bogdanović suggests that the Zeyrek *minbar* was reassembled from a Christian canopy that once stood in the Pantokrator monastery and it most was a tomb or altar canopy in accordance with the formulaic inscription on it that calls for the salvation of a donor or the deceased: Bogdanović, *Framing of Sacred Space*, 126-127.

55 Ousterhout, *Eastern Medieval Architecture,* 309.



Fig. 6: Knotted columns and marble parapet slabs reused as spolia in the minbar of Zeyrek Mosque (Pantokrator church) (a), knotted columns reused as spolia in Alaaddin Mosque, Konya (b)

Fig. 7: Pantokrator monastery church (Zeyrek mosque)



unable to understand the craftsmanship and always depart from there amazed by the perplexing spectacle."[56] In fact, the contemporary Byzantine user of the church perhaps hardly had the opportunity to experience the central space covered by the dome. It was, as in Procopius' description, visible only with numerous partial views of it, for the visitor to try to complete like a puzzle. Despite the scale and differences in plan and liturgical arrangement, the Middle Byzantine church provides a similar richness in experience. The artistic decorative program of frescos, mosaics, and natural stones cover all the space. Various stories are told, not only at the eye level, but also on the ground and walls as well as in the ceilings of the vaults and domes. And, compared to the promises of the modest surfaces of the exterior, such richness of experience should perhaps be taken as an artistic and architectural marvel.

56 Mango, *Sources and Documents,* 75.

Conclusion

The word miracle and its synonyms must have appeared innumerable times in the descriptive texts about Byzantine architecture. These may sometimes be related to symbolic connotations, and sometimes with the curious aesthetic features intentionally provided by the Byzantine architects and master builders, which can be experienced and perceived even by the contemporary viewer, just the same as the Byzantine spectator. These intended perceptions acquired by the aesthetic qualities proved to be persistent to changes in time, even in this small unintentional experiment with the architecture students of today, which gave rise to these series of ideas. The chosen buildings in this study seem to evoke similar feelings for the contemporary spectator and the Byzantine writers alike. And with this study, as indicated in the introduction, only a short encounter of architecture students with Hagia Sophia at an early stage of their education is taken into consideration, with the addition of some evaluations of the contemporary scholars.

The keyword, "lightness," given to the students by their course instructor, was crucial in shaping their experience. This specific keyword provided them with a viewpoint to help decipher and see more clearly several features of the structural system, decorative program and the specialties of the intended aesthetic perceptions.

The dome is described as emphasizing the similar features of it by the architecture students, the contemporary scholars of Byzantine architecture history, and the Byzantine spectator. All underline its floating appearance, whether as being hung by a chain from heavens, or hanging in mid-air, or as if it is going to crash down on our heads because nothing seems to support it. These descriptions, although using different words, account for the same perception. Again, all have noticed the bracelet of light, the windows on the drum, and how this contributed to the total effect. Mango, Ćurčić, Ousterhout and others, all agreed that this perception was intentionally created by the sixth century architects.

The irregularities in the structural system such as the non-compatible vertical load bearing elements of ground floor and gallery level columns were also noted and described by the students, with a striking similarity to the Byzantine spectators. The architectural sculpture, decorative features of the interior surfaces, and even the unique features of the craftsmanship were compatible with this design approach. Students, who are mainly familiar with contemporary high tech, luminous architecture, glass façades and transparent buildings, managed to find the interior of Hagia Sophia luminous, without prior research, or with a learned ability to think through the lenses of sixth century. They were looking through their contemporary lenses and the building could evoke a similar perception as once was described by its Byzantine visitor.

Notes for other chosen examples and later Byzantine era had to rely on personal architectural experience of spaces and the texts of contemporary scholars. The spatial characteristics of the later Byzantine churches described in this paper seem to be very much related to the aesthetic ideals of earlier centuries.

This paper has presented the ideas triggered by an unintentional experiment, made possible by a short preliminary assignment on Hagia Sophia, executed at an architecture studio course, and the kind invitation I received from its instructor to be the jury of its results. It was a short project, realized in a very limited time, yet the results provided useful questions about contemporary perception of Byzantine architecture, and how this was acquired from its aesthetic features. Notes on later Byzantine examples present them as perfect candidates for such studies on perception. A broader analysis, with different subject groups and approaching the buildings with different keywords, would provide various interesting results and would help achieve a comprehensive understanding of the intended perceptions of these spaces.

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