

The Dome in Christian and Islamic Sacred Architecture

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Abstract

This paper will focus on the dome in Christian and Islamic sacred architecture in the pre-modern world, including examples ranging from the Church of the Holy Sepulcher and Dome of the Rock in Jerusalem to the Ottoman mosques in Istanbul and Baroque Chapel of the Holy Shroud in Turin. An examination of the structural designs and decorative schemes of the various domes points to a common cultural heritage and cultural exchange in both directions. Such examination additionally highlights both Christians' and Muslims' historic interest in geometry on a sacred as well as scientific level, particularly through use of the circle as a symbol of heaven, the square as a symbol of earth, and the octagon as a link between the two. Their decorative schemes reinforce that the domes were visual metaphors for the spiritual journey and communion between human and divine realms that the architectural spaces were themselves intended to encourage. The domes therefore testify not only to Christians' and Muslims' shared cultural history, but to their common spiritual goal.

Introduction

The current political climate between the Western and Middle Eastern worlds tends to make us forget what both sides have in common: that we are part of a humanity struggling with the same issues of the human condition. We have the same fears and ask the same questions: Why are we here, where are we headed, what will happen to us after we die?

Comparing the domes of Pre-modern Christian and Islamic sacred architecture can act as a reminder not only of our common humanity, but more specifically, of our shared beliefs as followers of Abrahamic religions, and of our shared cultural inheritance from the Greco-Roman, Byzantine, and Persian traditions. Such comparison pointing to historical cultural dialogue offers promise for greater dialogue in our own times.

Christian and Islamic Domes: The Architecture and Decorative Programs

The architects of Christian and Islamic domes drew from a common historical well of inspiration, as well as drawing inspiration more directly from each other. The extent to which they did so is demonstrated in the architecture itself, by the domes' building designs, building techniques, and use of geometry, as well as in the domes' interior decorative programs.

Building Design

The cultural interchange between Christian and Islamic design, and the indebtedness of both to earlier traditions, can be demonstrated with two examples. The first is the Islamic Dome of the Rock (c. 688-692 C.E.), located on Temple Mount in Jerusalem.¹ The Dome of the Rock is a centrally planned building enclosing a rock which, according to Judeo-Christian tradition, is the site where Abraham was about to sacrifice his son Isaac. According to Islamic tradition, this is additionally the site of the Night Journey of the Prophet Mohammed, during which Mohammed, led by the Archangel Gabriel, ascended through the heavens to God.²

The Dome of the Rock is on axis with the Church of the Holy Sepulcher (c. 350 C.E.),³ also known as the Church of the Resurrection, located at Golgotha on the Hill of Cavalry. The Church of the Holy Sepulcher consists of two sections, one laid out on a longitudinal or basilica plan and marking the site of Jesus' crucifixion, the other laid out on a central plan and crowned by a dome, marking the site of Jesus' burial and resurrection.⁴

The Dome of the Rock shares the same architectural design and nearly the same dimensions as the centrally planned section of the Church of the Holy Sepulcher.⁵ These facts, coupled with the fact that the Islamic Dome was aligned with the Church, might well indicate

¹ On the Dome of the Rock: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 8-13; Creswell, K. A. *A Short Account of Early Muslim Architecture*. Revised and Supplemented by Allan, J. W. 1989. Aldershot, England. Scolar Press. 19-42; Grabar, O. *The Dome of the Rock*. 2006. Cambridge, Mass. Belknap Press of Harvard University Press; Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. 52-116; Grabar, O. The Umayyad Dome of the Rock in Jerusalem, *Ars Orientalis*. 1959. Vol. 3, pp. 33-62; Rosen-Ayalon, M. The Dome of the Rock – Qubbat Al-Sakhra – A Landmark in the History of Architecture. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 183-190.

² On the significance of the site of the Dome of the Rock: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 8; Grabar, O. *The Dome of the Rock*. 2006. Cambridge, Mass. Belknap Press of Harvard University Press. Ch. 2; Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. 110-116.

³ On the Church of the Holy Sepulcher: Baldwin Smith, E. *The Dome: A Study in the History of Ideas*. 1971. Princeton. Princeton University Press. 16-29; Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 244; Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press; Snyder, J. *Medieval Art: Painting-Sculpture-Architecture 4th-14th Century*. 1989. Upper Saddle River, N. J. Prentice Hall, Inc. 72-73.

⁴ Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 244.

On the relationship between the Dome of the Rock and the Church of the Holy Sepulcher: Creswell, K. A. *A Short Account of Early Muslim Architecture*. Revised and Supplemented by Allan, J. W. 1989. Aldershot, England. Scolar Press. 36-37; Grabar, O. *The Dome of the Rock*. 2006. Cambridge, Mass. Belknap Press of Harvard University Press. esp. 24-26; Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press.

⁵ The diameters and heights of the domed portions of the Dome of the Rock and Church of the Holy Sepulcher respectively are c. 20 x 20 m. and c. 21 x 21 m. For comparisons of the design of the Dome of the Rock with this as well as other early churches, see esp. Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. 104-109.

that the newly founded Islamic religion was trying to visually appropriate and dominate the Christian site.⁶ At the same time, the architectural and topographical relationships between the two sacred edifices create a visual dialogue between Islam and Christianity. Islam reveres Jesus as one of its highest prophets, and while it does not recognize Jesus as divine, the site on which the church as well as the Dome of the Rock rested was sacred to Muslims as much as to Christians. In the Islamic as much as in the Christian structure, the central plan crowned by a dome was adopted as a visual articulation of a spiritual journey.

The domed, centrally-planned design adopted to mark the site of Jesus' death and resurrection was adopted as well for Christian martyria and baptisteries. However, both the architectural form and the symbolical associations of these Christian buildings were themselves indebted to earlier, non-Christian traditions. The ultimate paradigm for all monumental domes was the Roman Pantheon (117-125 CE)⁷ which, with its centrally placed 'oculus' or eye of heaven, was the largest dome until the Italian Renaissance and Brunelleschi's dome for the Cathedral of Florence.⁸ The Pantheon was itself the culmination of still earlier traditions. The dome, along with its more transient precursor the tent-canopy, was associated with the heavens in both the Hellenistic-Roman and Ancient Persian worlds.⁹

A second example of cultural interchange with respect to building design is demonstrated with the sixteenth- and early-seventeenth-century C.E. Ottoman mosques, particularly those built by the Ottoman court architect Sinan in Istanbul and Edirne, Turkey.¹⁰ Sinan could not have helped but be influenced by the single work of architecture dominating the Istanbul skyline up to

⁶ See Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. esp. 104; Grabar, O. The Umayyad Dome of the Rock in Jerusalem, *Ars Orientalis*. 1959. Vol. 3, pp. 33-62; also Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 280.

⁷ On the Roman Pantheon: Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 206-209. Lugli, G. *The Pantheon and Adjacent Monuments*. Translated by Tickner, J. 1971. Rome. Bardi Publishers; Mark, R. and Westagard, A. The First Dome of the Hagia Sophia: Myth vs. Technology. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 166-169.

⁸ See, for example, Mark, R. and Westagard, A. The First Dome of the Hagia Sophia: Myth vs. Technology. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 166.

⁹ See Baldwin Smith, E. *The Dome: A Study in the History of Ideas*. 1971. Princeton. Princeton University Press. 81-85 (also including the Hebrew tradition); Dickie, J. Allah and Eternity: Mosques, Madrasas and Tombs. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 34; Grabar, O. The Umayyad Dome of the Rock in Jerusalem, *Ars Orientalis*. 1959. Vol. 3, pp. 191-198; Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 162-163, 166. Lehmann, K. The Dome of Heaven. *The Art Bulletin*. Mar. 1945. Vol. 27. No. 1, pp. 1-27. Grabar (1959: 192) argues for monumental Persian domes independent of, if not preceding, those of Imperial Rome.

¹⁰ On Sinan and his works: See especially Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 160-176; Rogers, J. M. *Sinan*. 2006. London. I. B. Tauris and Oxford University Press.

the Ottoman period, and one of the greatest churches in all of Christendom: the Church of Hagia Sophia (Church of the Holy Wisdom),¹¹ built by Emperor Justinian in 532-527 in what was then Constantinople, and converted to a mosque by Sultan Mehmed II in 1452-1453 C.E. Sinan adopted the same plan as Hagia Sophia for the Mosque of Suleyman the Great (1550-1558 C.E.) in Istanbul. Rogers, among others, notes the political inference in ‘directly challenging the great mass of Hagia Sophia.’¹² But as with the Dome of the Rock and Church of the Holy Sepulcher at Jerusalem, the similar architectural designs encourage a visual dialogue between Islam and Christianity, inviting the viewer to contemplate similarities that extend beyond the visual. Moreover, the design would not have been adopted in the first place if the message it reflected were not as equally meaningful to Islam as to Christianity. The Church of Hagia Sophia was dedicated to Christ as Logos, or the Word.¹³ Islam, as much as Christianity, reveres the Word as the manifestation of the divine in the human realm.¹⁴

But further, the design of Hagia Sophia was itself based on earlier, Eastern traditions. Whereas the dome of the Pantheon rested directly on a circular drum, that of Hagia Sophia rested on a square base.¹⁵ This particular design—circular dome over square base—is rooted in Persian mausoleums and ‘fire temples.’¹⁶ The pendentive—the triangular form providing the architectural transition between the circular and square shapes—may also have originated in

¹¹ On the Church of Hagia Sophia: Kleinbauer, W. E. *Saint Sophia at Constantinople: Singulariter in Mundo*. 1999. Dublin, New Hampshire. William L. Bauhan, Publisher; Mainstone, R. J. *Hagia Sophia: Architecture, Structure and Liturgy of Justinian’s Great Church*. 1988. New York. Thames and Hudson; Snyder, J. *Medieval Art: Painting-Sculpture-Architecture 4th-14th Century*. 1989. Upper Saddle River, N. J. Prentice Hall, Inc.

On the impact of the Church of Hagia Sophia on Sinan and his followers: Atac, I. Byzantine Contribution to the Turkish Sacred Buildings. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 703-713; Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 160-161; Mainstone, R. J. *Hagia Sophia: Architecture, Structure and Liturgy of Justinian’s Great Church*. 1988. New York. Thames and Hudson. 248-259; Rogers, J. M. *Sinan*. 2006. London. I. B. Tauris and Oxford University Press. esp. 41-47, 50, 57, 59, 96.

¹² Rogers, J. M. *Sinan*. 2006. London. I. B. Tauris and Oxford University Press. 42-43.

¹³ See, for example, Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 158.

¹⁴ Thus the importance of calligraphy as an Islamic art form, and of calligraphic inscriptions decorating architecture: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 52-61; Mozzati, L. *Islamic Art: Architecture, Painting, Calligraphy, Ceramics, Glass, Carpets*. 2010. New York. Prestel. 52-59.

¹⁵ On the influence of the Pantheon on the Church of Hagia Sophia: Mark, R. and Westagard, A. The First Dome of the Hagia Sophia: Myth vs. Technology. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 166-172.

¹⁶ See especially Edwards, C. Islamic Domes. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 27-41; Grabar, O. The Islamic Dome. Some Considerations. *Journal of the Society of Architectural Historians*. Dec. 1963. Vol. 22. No. 4, pp. 191-198; Lehmann, K. The Dome of Heaven. *The Art Bulletin*. Mar. 1945. Vol. 27. No. 1, pp. 1-27.

Persia (Iran or Armenia).¹⁷ The geometric symbolism of the circle and square will be explored below.

Building Techniques

With respect to construction, both Christians and Muslims shared a common heritage of building materials, techniques, and tools passed on from the Greco-Roman, Persian, and even the earlier Etruscan worlds.¹⁸ They also shared workers, builders, and craftsmen. Byzantine mosaicists, for example, were frequently employed to decorate Islamic mosques, such as the Dome of the Rock, the Umayyad Mosque of Damascus, Syria (706-714), and the Great Mosque of Cordoba, Spain (begun c. 785).¹⁹ The impact of the Christian world on Islamic building construction particularly its earlier years is summarized by Grabar:

It is probable if not certain that, in addition to the great mosques whose construction is comparatively well documented, the vast majority of early Islamic monuments, at least in Syria and Palestine, were built, made, and decorated by workers and artists either Christian or trained in the tradition of pre-Islamic Christianity. Their presence lasted probably much longer than the presence of financial and administrative officials. Although we are less precisely informed on what happened in Iraq and Iran, it is likely that the same continuity took place in workmanship.²⁰

The very great impact that the Islamic world, in its turn, had on Western construction is perhaps best demonstrated by the Italian Renaissance architect Filippo Brunelleschi's dome for the Church of Santa Maria del Fiore, the Cathedral of Florence.²¹ Although work began as early

¹⁷ Edwards, C. Islamic Domes. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 31-32; Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 165; Lewcock, R. Materials and Techniques. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 141-143.

¹⁸ See especially Grabar, O. *The Formation of Islamic Art*. 1973. New Haven. Yale University Press. 88-91; Lewcock, R. Materials and Techniques. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 129-143.

¹⁹ On the sharing of workers and craftsmen: Grabar, O. *The Formation of Islamic Art*. 1973. New Haven. Yale University Press. 88, and discussions of the buildings throughout. On the Great Mosque of Damascus: Creswell, K. A. *A Short Account of Early Muslim Architecture*. Revised and Supplemented by Allan, J. W. 1989. Aldershot, England. Scolar Press. 46-73; Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 18-27. On the Great Mosque of Cordoba: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 132-138; Creswell, K. A. *A Short Account of Early Muslim Architecture*. Revised and Supplemented by Allan, J. W. 1989. Aldershot, England. Scolar Press. 291-303; Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 169-170.

²⁰ Grabar, O. *The Formation of Islamic Art*. 1973. New Haven. Yale University Press. 88.

²¹ On Brunelleschi and the dome for the Cathedral of Florence: Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 507; Hammond, V. The Dome in European Architecture. In

as 1296, the cathedral went unfinished until 1420 essentially because the West lacked the technology to construct the dome that had been planned for it. This dome was to be the largest the world had ever seen, larger even than that of the Pantheon. The major structural issues at hand included how to get a dome so large to stay up without caving in under its own weight, and how to support a dome so tall so that it does not collapse before being finished.

Having won the competition for the dome, Brunelleschi went to Rome and studied its ancient buildings, the Pantheon no doubt being among these. But it has also been proposed that he traveled to the East,²² since a number of the techniques he chose to employ were Islamic.

To begin with: the double-shell or double-dome. For the dome of the Pantheon,²³ the Romans had used concrete, which was readily available, cheap, durable, malleable, but also heavy. To lighten the load, the Romans hollowed out wherever they could: by coffering the visible surface, and by incorporating unseen vases and jugs to create pockets of air. The Islamic world had instead developed the technique of the double-shell: that is, a lighter shell for the building's interior and a more durable shell for its exterior, with the entire space in between being hollow.²⁴ This technique not only lightened the load, but allowed for each shell to proportionally correspond to the building's interior or exterior proportions. Once Brunelleschi adopted this technique for the Florence Cathedral, it became standard for monumental domes in Europe,²⁵ being adopted by Michelangelo for the dome of St. Peter's Basilica in Rome,²⁶ for

Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 175; King, R. *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*. 2000. New York. Penguin Putnam Inc. 21-31. Additionally on Brunelleschi generally: Heydenreich, L. H. *Architecture in Italy 1400-1500*. Revised by Davies, P. 1996. New Haven. Yale University Press. 13-24.

²² King, R. *Brunelleschi's Dome. How a Renaissance Genius Reinvented Architecture*. 2000. New York. Penguin Putnam Inc. 99.

²³ On the Roman Pantheon: Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 206-209. Lugli, G. *The Pantheon and Adjacent Monuments*. Translated by Tickner, J. 1971. Rome. Bardi Publishers; Mark, R. and Westgard, A. The First Dome of the Hagia Sophia: Myth vs. Technology. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 166-169.

²⁴ On the double dome in Islamic architecture: Cuneo, P. About Double-Domes in Timurid Architecture. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 191-196; Edwards, C. Islamic Domes. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 34; Lewcock, R. Materials and Techniques. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 143.

²⁵ King, R. *Brunelleschi's Dome. How a Renaissance Genius Reinvented Architecture*. 2000. New York. Penguin Putnam Inc. 170, n. 5.

²⁶ On Michelangelo's dome for St. Peter's: Lotz, W. *Architecture in Italy 1500-1600*. Revised by Howard, D. 1995. New Haven. Yale University Press. esp. 100-101; Robison, E. C. St. Peter's Dome: The Michelangelo and Della Porta Designs. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 253-260.

example, as well as for St. Paul's Cathedral in London, where Sir Christopher Wren in fact added a third, intervening shell.²⁷

For the dome in Florence, Brunelleschi adopted additional Islamic techniques, such as the herringbone brickwork. In an age before modern materials such as iron or steel, and when scaffolds were made of wood, at issue was how to build a dome taller than the trees at hand, and how to provide support while it was still unfinished. The herringbone technique solved the problem because the bricks in effect locked into place and supported themselves.²⁸

Yet another influential Islamic technique employed in Brunelleschi's dome is the ribbing, which not only provided structural support, but also emphasized the building's geometry.²⁹ In terms of structural support, ribbing would become essential to the development of Gothic architecture.³⁰ In terms of using the ribs to emphasize geometry, particularly in domes, such usage in the Great Mosque of Cordoba influenced the Church of the Holy Sepulcher at Torres del Rio (12th-13th c. C.E.) and other churches of Spain, and ultimately paved the way for Guarini's intricately geometric Baroque domes for the Chapel of the Holy Shroud (1668-1694 C.E.) and Cathedral of San Lorenzo (1668-1687 C.E.) in Turin, Italy.³¹

The Use of Geometry

As noted above, the architectural design of circular dome over square base was used in both churches (i.e. Hagia Sophia) and mosques (i.e. that of Suleyman the Great) and was rooted in

²⁷ On Wren's dome for St. Paul's: Geraghty, A. Sir Christopher Wren and the Dome of St. Paul's. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 75-81.

²⁸ On the herringbone brickwork in Brunelleschi: Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 175; King, R. *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*. 2000. New York. Penguin Putnam Inc. 98-99. In Islamic architecture, see: Lewcock, R. Materials and Techniques. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 137, 141.

²⁹ According to Van Beek, the evidence points to ribbed vaulting's having been invented in western Iran in the first millennium B.C.E.: Van Beek, G. W. Pre-Classical Developments in Domical Construction. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 119.

³⁰ On the impact of Islamic ribbing on the development of Gothic architecture: Stalley, R. The Exploitation of the Dome in Romanesque Architecture. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 23-24. Also Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 174.

³¹ Stalley, R. The Exploitation of the Dome in Romanesque Architecture. In *Domes. Papers Read at the Annual Symposium of the Society of Architectural Historians of Great Britain 2000*. 2000. Pixham Mill, Surrey. The Society of Architectural Historians of Great Britain. 23-24. Also Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 173, 180.

even earlier architectural traditions such as pre-Islamic Persian tombs and fire temples. The symbolism of these geometric forms is itself rooted in mystical thought dating back to Plato and Pythagoras. The circle, having no beginning and no end, reflected perfection, the eternal, and also the heavens. The square, having four sides like the four points of a compass, reflected the earth. The architectural form of circular dome over square base thus physically articulated the relationship between the human and divine realms.³²

Geometrically speaking, the octagon articulates the transition between a circle and a square.³³ In the Early Christian period, the octagon³⁴ became a symbol for the resurrection of Jesus Christ,³⁵ who for Christians was both God and man, and who ‘came down from heaven and died for our sins.’ More specifically, as the sin of Adam and Eve caused humanity to be expelled from Paradise, Jesus’ own death made it possible for humans to return to Paradise after they died. As the circle symbolized heaven and the square symbolized earth, the octagon symbolizing the resurrection reflected the transition and communion between these two realms. The octagon thus became adopted most especially for the ground plans of Christian martyria such as Justinian’s Church of San Vitale in Ravenna (526-547 C.E.)³⁶ and of baptisteries (in which Christians were ‘reborn’ through the sacrament of baptism),³⁷ but also more generally in

³² On the symbolism of the circle and the square, see, among others: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 68, 73-80; Dickie, J. Allah and Eternity: Mosques, Madrasas and Tombs. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 47; Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 163; Lehmann, K. The Dome of Heaven. *The Art Bulletin*. Mar. 1945. Vol. 27. No. 1, pp. 1-27; Wittkower, R. *Architectural Principles in the Age of Humanism*. 1971. New York. Norton Library. 28-29 and n. 1 citing R. Krautheimer, Introduction to an Iconography of Mediaeval Architecture. *Journal of the Warburg and Courtauld Institutes*. 1942. Vol. 5, p. 9.

On geometry in Islamic art and architecture, see also: Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. 2005. Albany. State University of New York. esp. 149-209; Critchlow, K. *Islamic Patterns: An Analytical and Cosmological Approach*. 1999. Rochester. Inner Traditions International; El-Said, I. and Parman, A. *Geometric Concepts in Islamic Art*. 1976. London. World of Islam Festival Publishing Company, Ltd.; Mozzati, L. *Islamic Art: Architecture, Painting, Calligraphy, Ceramics, Glass, Carpets*. 2010. New York. Prestel. 24-25. On geometry in Christian architecture: see esp. Wittkower, R. *Architectural Principles in the Age of Humanism*. 1971. New York. Norton Library.

³³ For further explanation and illustrations, see, for example, Critchlow, K. *Islamic Patterns: An Analytical and Cosmological Approach*. 1999. Rochester. Inner Traditions International. 141.

³⁴ Baldwin Smith notes that the form was taken over by Christians “from the sepulchral and memorial architecture of the Romans” [Baldwin Smith, E. *The Dome: A Study in the History of Ideas*. 1971. Princeton. Princeton University Press. 100; see also 138].

³⁵ As attested by an Early Christian prayer hall (c. 230 C.E.) found at Megiddo, Israel, for which see Hunt, M. Early Christian Prayer Hall Found in Megiddo Prison. *Biblical Archaeology Review*. Mar.-Apr. 2007. pp 38-49.

³⁶ On the Church of San Vitale in Ravenna: Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson’s History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 253-256; Snyder, J. *Medieval Art: Painting-Sculpture-Architecture 4th-14th Century*. 1989. Upper Saddle River, N. J. Prentice Hall, Inc. 118-123; Von Simson, O. G. *Sacred Fortress: Byzantine Art and Statecraft in Ravenna*. 1948. Chicago. University of Chicago Press. Ch.2.

³⁷ On the symbolism of the number eight, particularly in Christian martyria: Von Simson, O. G. *Sacred Fortress: Byzantine Art and Statecraft in Ravenna*. 1948. Chicago. University of Chicago Press. esp. 49-50. On baptism: Von Simson, O. G. *Sacred Fortress: Byzantine Art and Statecraft in Ravenna*. 1948. Chicago. University of Chicago Press. esp. 77, 105.

churches such as for Justinian's Church of Saints Sergius and Bacchus in Istanbul (c. 527 C.E.).³⁸ It was also sometimes used instead of the circle for the domes themselves, such as in Brunelleschi's dome of the Florence Cathedral, or the dome of the Cathedral of Parma, Italy decorated with Correggio's *Assumption of the Virgin* (c. 1522-1530 C.E.).³⁹

The octagon was also widely adopted for Islamic sacred edifices, such as the Dome of the Rock,⁴⁰ the Great Mosque of Damascus, and Sinan's Rüstem Pasha Mosque (1561-1563 C.E.) at Istanbul and Sultan Selim II Mosque (c. 1568-1575 C.E.) at Edirne, Turkey.⁴¹ Sinan also used the octagon for imperial funerary architecture.⁴² His adoption of this shape was perhaps influenced by the plan of the Church of Saints Sergius and Bacchus in Istanbul itself,⁴³ or perhaps by octagonal Iranian tomb structures dating from the ninth and tenth centuries C.E., which were themselves influenced by Christian martyria and baptistries.⁴⁴ The octagonal plan was appropriate in the Islamic as much as in the Christian context since in Islamic mystical thought, the concept of Paradise is expressed as eight gardens with eight doors.⁴⁵

³⁸ For additional early Christian octagonal ground plans: Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. 107-108. On the Church of Saints Sergius and Bacchus in Istanbul: Kleinbauer, W. E. *Saint Sophia at Constantinople: Singulariter in Mundo*. 1999. Dublin, New Hampshire. William L. Bauhan, Publisher. 50-53; Özer, B., Sinan: The Architect of Domed Mosques as a Master of Pluralism. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 2, 7, 14.

³⁹ For Correggio's *Assumption of the Virgin* in the dome of the Parma Cathedral: Davies, P. J. E.; Simon, D. L.; Denny, W. B.; Roberts, A. M.; Hofrichter, F. F.; and Jacobs, J. *Janson's History of Art: The Western Tradition*. Seventh Ed. 2007. Upper Saddle River, N. J. Pearson Education, Inc. 606-607 and fig. 17.25; Hammond, V. The Dome in European Architecture. In Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press. 178, with photo by Stephenson on p. 60. For further examples and images of octagonal domes, see Stephenson, D., Hammond, V., and Davis, K. F. *Visions of Heaven: The Dome in European Architecture*. 2005. New York. Princeton Architectural Press.

⁴⁰ For discussion: Grabar, O. *The Shape of the Holy: Early Islamic Jerusalem*. 1996. Princeton. Princeton University Press. 107-108.

⁴¹ On Sinan's mosques with octagonal plan: Özer, B., Sinan: The Architect of Domed Mosques as a Master of Pluralism. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 7, 14.

⁴² For examples, see Rogers, J. M. *Sinan*. 2006. London. I. B. Tauris and Oxford University Press. figs. 17 and 24.

⁴³ On Sinan and the Church of Saints Sergius and Bacchus: Özer, B., Sinan: The Architect of Domed Mosques as a Master of Pluralism. In International Association for Shell and Spatial Structures. *Domes from Antiquity to the Present. Proceedings of the IASS-MSU International Symposium Istanbul, Turkey, May 30-June 3, 1988*. 1988. Istanbul. Mimar Sinan University. 2, 7, 14; Rogers, J. M. *Sinan*. 2006. London. I. B. Tauris and Oxford University Press. 43.

⁴⁴ Daneshvari, A. *Medieval Tomb Towers of Iran: An Iconographical Study*. 1986. Lexington. Mazdâ Publishing. 27-28.

⁴⁵ Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. 2005. Albany. State University of New York. esp. 131; Daneshvari, A. *Medieval Tomb Towers of Iran: An Iconographical Study*. 1986. Lexington. Mazdâ Publishing. 28.. See also Dickie, J. Allah and Eternity: Mosques, Madrasas and Tombs. In Michell, G. Ed. *Architecture of the Islamic World: Its History and Social Meaning*. 2000. New York. Thames and Hudson. 47.

The geometric references of both Christian and Islamic sacred buildings were not simply rooted in mystical thought with no scientific basis. Rather, such mystical thought was intimately bound with pre-modern cosmology.⁴⁶ Prior to Columbus's discovery of America (1492 C.E.), when the world was still perceived as flat, it made sense to visually articulate the earth as a horizontal plane delimited on four sides. Prior to Copernicus's heliocentric theory (c. 1543 C.E.), both Christian and Islamic cosmology understood the universe as consisting of a series of heavenly spheres encircling the earth, which was, in one sense, at the center, but in another sense, at the bottom of a hierarchy in which the divine was at the top.⁴⁷ In the pre-modern world, the basic geometric shapes of circle and square could thus be understood to quite literally reflect and correspond to the arrangement of the universe and the spatial relationship between the earth below and the heavens above.⁴⁸

But even when the pre-modern cosmology was disputed, geometry could still be understood to reflect underlying, universal truths governing the cosmos.⁴⁹ Geometry entails harmonious proportions among parts, and between the parts and the whole. Geometric laws create order in the temporal and changing universe, but at the same time transcend the temporal. Moreover, as, in geometry, the 'point is the generator' of the line,⁵⁰ so God is the Creator of all that exists. As the point is simultaneously contained within the line, so God is present in all of His creation. In both Christian and Islamic thought, geometry was thus understood as a manifestation of the divine within the human realm. Domed architecture visually articulated such manifestation.

Not only does the architecture of both Christian and Islamic domed sacred edifices point to cultural dialogue and serve as a reminder of a shared heritage and common spiritual goal, but so do these edifices' decorative programs. To point to just two examples: Firstly, both Christian and Islamic decorative traditions incorporate floral and vine motifs (taken over from earlier

⁴⁶ On pre-modern Islamic cosmology: Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. 2005. Albany. State University of New York. On pre-modern Western cosmology: Lovejoy, A. O. *The Great Chain of Being: A Study in the History of an Idea*. New introduction by Stanlis, P. J. 2009. New Brunswick, N.J. Transaction Publishers.

⁴⁷ Again see Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. 2005. Albany. State University of New York, for example on 25-26. Also Lovejoy, A. O. *The Great Chain of Being: A Study in the History of an Idea*. New introduction by Stanlis, P. J. 2009. New Brunswick, N.J. Transaction Publishers.

⁴⁸ As a familiar example of this: the circles of heaven and hell in Dante's *Divine Comedy*. Kahera has found that Dante appropriated the ideas of the Islamic Sufi mystic from Moorish Spain Ibn Al-Arabi (d. 1240); on this, see Kahera, A. I. Gardens of the Righteous: Sacred Space in Judaism, Christianity, and Islam. *Cross Currents*. Fall 2002. Vol. 52. No. 3, n. 18. Also extensively on Ibn Al-Arabi: Akkach, S. *Cosmology and Architecture in Premodern Islam: An Architectural Reading of Mystical Ideas*. 2005. Albany. State University of New York.

⁴⁹ See Wittkower, R. *Architectural Principles in the Age of Humanism*. 1971. New York. Norton Library.

⁵⁰ On this: see Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 57; Critchlow, K. *Islamic Patterns: An Analytical and Cosmological Approach*. 1999. Rochester. Inner Traditions International. 9.

traditions) to reference Paradise.⁵¹ This Paradise is both that which we lost through the sin of Adam and Eve and that which it is our life's journey to return to. In Christian art, the vine scroll in particular additionally refers to Jesus, who in the act of transubstantiation changed bread into his body and wine into his blood.⁵² The additional reference does not negate the commonality between the two traditions, since Jesus' purpose in coming was to help us to return to Paradise.

A second similarity between Christian and Islamic sacred domes concerns the compositional arrangement of the interior decorative programs. In essence, this arrangement consists of a circle within a square. The significance of the geometric shapes with respect to the architecture has been discussed above. The decorative arrangement is clearly reinforcing this significance. Lehmann's exhaustive study has traced this arrangement as far back as to an Etruscan tomb painting (The Tomb of the Monkeys), and has offered widespread examples from across the Hellenistic, Roman, and Persian worlds, all pointing to the circle in particular as a symbol of heaven or the heavens. Lehmann's examples of tent-canopies in this context suggest not only that the dome originated from more modest architectural or transient forms, but also that the dome's 'reason for being' was to monumentalize the symbol of the circle as heaven.

The additional decorative feature that Lehmann notes concerns that which fills the space of the four corners between the circle and the square. In the Etruscan tomb painting, the corners are filled by sirens—intermediaries between the human and divine realms. In the Christian domes, the corners are filled by the four evangelists, who are likewise intermediaries between the two realms, since they recorded the Word of God.⁵³ In Islamic domes, such as in the Mosque of Suleyman the Great and in other of Sinan's mosques, the corners of the main dome are instead filled with Koranic inscriptions.⁵⁴ This difference in treatment of the corners points to the major difference between Christian and Islamic sacred art, which itself is linked to a major religious difference. Whereas Christian art depicts human figures, Islamic art is aniconic.⁵⁵ In Christianity, "The Word became flesh" (John 1.14) in the person of Jesus Christ. The fact that

⁵¹ See, among others, Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 57, 62-73; Snyder, J. *Medieval Art: Painting-Sculpture-Architecture 4th-14th Century*. 1989. Upper Saddle River, N. J. Prentice Hall, Inc. 60.

⁵² See, for example, the vine scroll in the apse of the Church of San Clemente in Rome (c. 1125 C.E.), which incorporates the Cross as the Tree of Life. Note that the church's vine scroll is virtually identical to that on the interior of the Dome of the Rock. On the Church of San Clemente: Snyder, J. *Medieval Art: Painting-Sculpture-Architecture 4th-14th Century*. 1989. Upper Saddle River, N. J. Prentice Hall, Inc. 317-319 for discussion, and fig. 396 and colorplate 51 for images of the apse.

⁵³ Lehmann, K. The Dome of Heaven. *The Art Bulletin*. Mar. 1945. Vol. 27. No. 1, p. 2.

⁵⁴ For images of the domes in these mosques, see Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 162-168.

⁵⁵ On aniconism in Islamic art, see among others: Burckhardt, T. *Art of Islam: Language and Meaning*. 2009. Bloomington. World Wisdom, Inc. 29-32; Grabar, O. *The Formation of Islamic Art*. 1973. New Haven. Yale University Press. 98-100; Mozzati, L. *Islamic Art: Architecture, Painting, Calligraphy, Ceramics, Glass, Carpets*. 2010. New York. Prestel. 22-24.

God Himself became human validates depicting humans in art meant to reflect the divine. In Islam, ‘There is no God but God.’⁵⁶

In spite of this difference in decorative treatment of the interior domes’ corners, the meaning in both traditions is the same: to bring us closer to the Word. The decorative programs, like the architecture of the domes themselves, remind us that Christians and Muslims believe in the same God—the Abrahamic God of the Book, who became manifest to humans through the Word. He is the Creator, the divine source from whom humans and all living things emerged, and with whom it is our life’s journey to reconnect. Christian and Islamic domes remind us that we do not have to wait until after we die to do so. If the political realm too often shows humans’ destructive capacity, then the domes, and architecture and culture generally, remind us of our capacity to create, to build and to rebuild. It is in this creative over destructive capacity that we connect with the divine and allow God, and His Word, to become manifest in our world.

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⁵⁶ On this Islamic profession of faith, see Mozzati, L. *Islamic Art: Architecture, Painting, Calligraphy, Ceramics, Glass, Carpets*. 2010. New York. Prestel. 13-14.

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