

Andrew Smyth

Prof. Bonde

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Sacred Soundscapes: Music, Liturgy, and Architecture in Renaissance Venice

“How I wept during your hymns and songs! I was deeply moved by the music and sweet chants of your Church. The sounds flowed into my ears and the truth was distilled into my heart. This caused my feelings of devotion to overflow.”

St. Augustine, Confessions<sup>1</sup>

The Basilica di San Marco of the Venetian Renaissance was the locus of organization for an elaborate liturgy that was intimately engaged with a longstanding tradition in the production and performance of sacred music. We see at San Marco not only musicians responding to the acoustic demands of architectural features, but also the active involvement of architects in the configuration of space to accommodate musical concerns. This growing awareness of the role that architecture plays in shaping the listening experience can be observed both in Renaissance scholarly discourse and in the fascinating interaction between choirmaster Adrian Willaert and sculptor-architect Jacopo Sansovino during a series of sixteenth-century renovations to the choir.<sup>2</sup> By considering architectural history, archival evidence, and recent applications of acoustic technology, an attempt will be made at reconstructing both the spatial and aural dimensions of worship and ritual in San Marco.

Legally speaking, until 1807 San Marco was not the cathedral of Venice, but the private chapel of the doge. During the period of interest for this paper, the episcopal seat

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<sup>1</sup> James Joseph O'Donnell, *Augustine Confessions* (Oxford: Oxford UP, 2012) 96.

<sup>2</sup> Deborah Howard and Laura Moretti, *Sound and Space in Renaissance Venice: Architecture, Music, Acoustics* (New Haven: Yale University Press, 2009), 31.

lay at San Pietro di Castello, whose remoteness ensured that the ducal chapel became the hub of activity for lay devotion and state ceremony.<sup>3</sup> As such, the Basilica was both an ecclesiastic and a civic institution, supported and maintained by an elaborate bureaucracy that was closely connected to the political elite of the Republic. Central to this unique urban ecclesiology was the legendary, almost folkloric, role that Mark the Evangelist played in the public imagination. As illustrated by the elaborate mosaic program in the church interior, Venetians mythologized in particular the *translatio* of St. Mark's body from Alexandria and, through his relics, his being the patron saint and protector of the city.<sup>4</sup> Both theologically and politically, Venice had more allegiance to the doge, as the true representative of St. Mark on earth, than to the Pope and the legacy of St. Peter.

Venetians were also fiercely independent when it came to the preservation of their local liturgical tradition, an idiosyncratic calendar of readings and ceremonies loosely based on the Byzantine east called the *rito patriarchino*.<sup>5</sup> Francesco Sansovino's 1581 guidebook to Venice makes mention of this local rite: "The liturgy in use in this sacred place follows the practice of the church of Constantinople; and although it is not very different from that of the Roman church, it could not be more assiduously followed."<sup>6</sup> Indeed, when Pope Pius V sought to impose the Roman rite as universal liturgy with two papal bulls in 1568 and 1570, the Venetians flatly refused and eventually were granted a special papal dispensation.<sup>7</sup> This synthesis of civic pride and liturgical ritual was evoked deliberately for the Easter Mass, during which the "Quem queritis" antiphon was

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<sup>3</sup> Ettore Vio, *St. Mark's: The Art and Architecture of Church and State in Venice* (New York: Riverside Books, 2003) 58.

<sup>4</sup> Vio 26.

<sup>5</sup> Vio 60.

<sup>6</sup> Howard and Moretti 21.

<sup>7</sup> Howard and Moretti 22.

performed according to local practice just as the doge processed into a polygonal Easter Sepulchre, a special set piece built for the occasion.<sup>8</sup> This element of sacred theatre positioned the political and spiritual leader of Venice directly into the sacred landscape of Jerusalem and as the principal witness to the Resurrection.

Music making figured prominently in the *rito patriarchino*, as illustrated by an eighteenth-century drawing by Canaletto that includes a group of clergy and choirboys singing from an oversized book of psalms (Figure 1). As Venice developed into an important center of trade, the doge became richer, the Basilica more embellished, and its rituals more elaborate.<sup>9</sup> This accretion of decoration and ceremony, by no means an exclusively Venetian phenomenon, corresponded to the acquisition of more and more salaried musicians. By 1562, the *cappella marciana* included six sopranos, nine contraltos, six tenors, three basses, and five boy choristers – quite large an ensemble for its time – conducted and managed by an appointed *maestro di cappella*, then Adrian Willaert, and accompanied by two organists, each with his own instrument.<sup>10</sup> In 1565, the Procurators, the highest office of the Republic second only to the doge himself, remarked that “the singing and performing by a great number of persons can only be fitting, since this is a grand edifice with many vaults.”<sup>11</sup> Here, musical practices are linked specifically to architectural features and, we may gather, to their associated acoustic characteristics.

Just how much was understood about the science of acoustics in the sixteenth century is a matter of speculation, but certainly musicians and composers were aware that extramusical factors in the performance space affect the delivery of the musical material.

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<sup>8</sup> Iain Fenlon, *Music and Culture in Late Renaissance Italy* (Oxford: Oxford UP, 2002) 2.

<sup>9</sup> Howard and Moretti 17.

<sup>10</sup> Vio 84.

<sup>11</sup> Vio 84.

In the context of ongoing dialogues about musical composition during the Counter Reformation, the architectural setting for musical performance was chiefly related to its effect on the articulation of the liturgy. Weary of a growing canon of polyphonic composition with musical interests that were independent of the devotional content of the text, reformers demanded more precise declamation from sacred music and better acoustic technology, if not in so many words, from sacred spaces. The Council of Trent did not rule explicitly on architecture, but powerful theologians began to involve themselves with architects and patrons in the design of church buildings.<sup>12</sup> In 1577, Cardinal Carlo Borromeo published his widely disseminated *Instructiones Fabricae et Supellectilis Ecclesiasticae*, which proposed a series of construction guidelines for church architects and decorators to accommodate liturgical reforms including the audibility of the psalms and other musical elements of the mass.<sup>13</sup>

These recommendations had little impact on the Basilica di San Marco, the bulk of which was constructed between 1063 and 1094, but they demonstrate the ways in which theological motivations for clarity and precision in musical performance impacted sixteenth-century conceptualizations of architectural space. The revival of ancient texts, related to a more general Renaissance desire to incorporate all of creation into a comprehensive system of mathematical harmonies, such as Cesare Cesariano's translation of Vitruvius in 1521, brought to light important ideas about the behavior of sound in performance spaces, in Vitruvius's case the a series of concentric waves in the Greco-Roman theater.<sup>14</sup> In 1555 Nicola Vicentino, the Italian theorist and composer, published a treatise on performance standards of sacred music, *L'antica musica ridotta*

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<sup>12</sup> James S. Ackerman, *Palladio* (Harmondsworth: Penguin, 1991) 128-129.

<sup>13</sup> Ackerman.130.

<sup>14</sup> Howard and Moretti 6.

*alla moderna prattica*, which included his thoughts on acoustics: “The singer should know too that in church and in public chapels he should sing with full voice ... while in private chambers he should use a subdued and sweet voice and avoid clamor.”<sup>15</sup> Writings like this provide evidence that decisions about composition and performance were being made with a specific sense of spatial and acoustic awareness.

This dialogue about sound and space was experienced palpably during the second quarter of the sixteenth century at San Marco, when the appointment of internationally acclaimed Flemish composer Adrian Willaert as *maestro di cappella* (1527-1562) inaugurated a new era of musical experimentation in the Basilica.<sup>16</sup> Willaert is credited with the introduction into the ducal chapel of music to be performed in double-choir or *coro spezzato* formation (literally, split chorus). A manuscript of his work, first published as *salmi spezzati* in 1550 by a Venetian printer, is the first surviving record of this polychoral arrangement that we have in Western music.<sup>17</sup> Gioseffo Zarlino, his successor as *maestro*, describes the technique in a treatise on musical theory he published in 1558:

They are arranged and divided into two choirs, or even three, each in four parts; the choirs sing one after another, in turn, and sometimes (depending the purpose) all together, especially at the end, which works very well ... such choirs are placed rather far apart.<sup>18</sup>

Zarlino not only discusses musical conventions – distinguishing between homophony (singing “all together”) and polyphony (singing “one after another, in turn”) – but also spatial concerns; that the singers must stand “rather far apart” from one another.

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<sup>15</sup> K. Schiltz, "Church and Chamber: The Influence of Acoustics on Musical Composition and Performance," (*Early Music* 31.1: 2003) 64-80.

<sup>16</sup> Howard and Moretti 26.

<sup>17</sup> Bryant, David. "The 'Cori Spezzati' of St. Mark's: Myth and Reality," (*Early Music History* :1981) 167.

<sup>18</sup> Howard and Moretti 28.

Willaert's music, which this author has studied, is far removed from the repertoire of monophonic chant commonly performed during the late medieval period, whose simple melodic structure translates comfortably across wide naves and crossings. The weaving of vocal lines and harmonic dialogue deployed by *coro spezzato* compositions require a focused directionality of sound with minimal reverberation. Although the doge's chapel is commonly referred to as a Basilica, its plan is more typical of the Byzantine east than of the early Christian basilica (Figure 2).<sup>19</sup> With its complicated system of interlocking volumes, San Marco is a precarious performance space for such intricate polyphonic textures. According to an 1770 visitor to the Basilica, English music critic Charles Burney, "The church is not very happily formed for music, as it has five domes or cupolas, by which the sound is too much broken and reverberated before it reaches the ear."<sup>20</sup> The domes, high ceilings, and fluid transitions between the nave, the presbytery, and the ambulatory chapels can easily allow sound to travel in too many directions in order to accommodate the delicate stereophonic sensation demanded by Willaert's music.

Given the behavior of sound in San Marco's interior, the question of how this emergent style of polychoral music was performed – and specifically the arrangement of singers in the space – has been a subject of debate among musicologists for decades, with the changing organization of liturgical furniture and ceremonial procedures somewhat complicating our understanding. An anonymous painting in the Museo Correr shows the choir draped in tapestries and installed with the choir stalls for a papal visit in the late seventeenth century, an example of the flexibility of the space in different ceremonial

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<sup>19</sup> Howard and Moretti 18.

<sup>20</sup> Braxton Boren, *Music, Architecture, and Acoustics in Renaissance Venice: Recreating Lost Soundscapes*. (University of Cambridge: 2010) 72.

contexts (Figure 3). Much attention has been paid to the *pulpitum novum lectionum*, a domed, two-story structure on the north end of the iconostasis, and the *bigonzo*, a large hexagonal pulpit directly across to the south (Figure 4).<sup>21</sup> Other scholars have contended that singers were spaced across from one another aloft in the north and south transept galleries above the organs, as suggested in the Museo Correr painting.<sup>22</sup>

An alternative theory proposed by Laura Moretti considers more thoughtfully the architectural and political context of *coro spezzati* in San Marco. Willaert's tenure as choirmaster coincided with the appointment of Jacobo Sansovino, a Florentine sculptor and architect, as *proto* in 1529, with responsibilities ranging from structural restorations to the outer walls and domes to, later, a series of decorative renovations to the choir.<sup>23</sup> The recruitment of these two foreign personalities represents an organized investment in the musical and architectural life of the Basilica. In fact, they were part of a broader campaign for urban revitalization sponsored by the Procurators following the War of the League of Cambrai.<sup>24</sup> These renovations to the choir in particular, however, were incited by the election of a third personality, Doge Andrea Gritti in 1523, whose physical handicap – he may have been morbidly obese – prohibited him from climbing up to the *bigonzo*, where the doge traditionally sat for feast days and other important liturgical and state ceremonies.<sup>25</sup>

The installation of a new throne for Gritti within the choir had consequences for liturgical procedures, as the *Cermoniale* of 1564 explains: “Whenever Our Most Serene

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<sup>21</sup> Boren 175.

<sup>22</sup> Braxton 71.

<sup>23</sup> Bruce Boucher, "Jacopo Sansovino and the Choir of St Mark's: The Evangelists, the Sacristy Door and the Altar of the Sacrament," (*The Burlington Magazine*: 1979) 155-69.

<sup>24</sup> Moretti 175.

<sup>25</sup> Boren 70

Lord the Doge sits in the choir ... the chorus is not in the middle of the church, for Our Lord the Doge does not mount the pulpit as formerly.”<sup>26</sup> The doge’s retreat behind the iconostasis placed him in an area previously reserved for clergy, again endowing the political leader of the republic with spiritual authority and blurring the line between the secular and the ecclesiastic.. This adjustment in seating arrangement in the choir seems to have contributed to a reevaluation and enhancement of ritual pathways in that space, both visually and musically, with Sansovino and Willaert contributing in their own media to the richness of ducal ceremonial and liturgy. Unlike the many rood screens across Western Europe that were torn down following the Counter Reformation, the Venice iconostasis is still standing today, another testament to the city’s theological independence.

Sansovino’s renovations to the choir included embellishments to the sculptural program and, more musically relevant, the addition of two twin *pergoli*, small marble singing galleries with bronze engravings, opposite each other on the north and south of the choir. The first, installed between 1536 and 1537 to the south, seems to have been designed to replace a previous *pergolo* from the late medieval period (Figure 5).<sup>27</sup> The second *pergolo* (Figure 6), however, was constructed between 1541 and 1544 and was not indicated in the original account books as being a commission of the Procurators.<sup>28</sup> An eighteenth-century engraving by Antonio Visentini illustrates the *pergoli* in context (Figure 7). That this north *pergolo* was added later, and perhaps as an afterthought, is supported by the iconographic program: while the first *pergolo* depicts fairly standard scenes from the life of St. Mark, the second includes tangential, lesser known miracles

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<sup>26</sup> Bryant 172.

<sup>27</sup> Moretti 168

<sup>28</sup> Moretti 168



not illustrated anywhere else in the Basilica.<sup>29</sup> Moretti speculates that the second *pergolo* was installed on Sansovino's own initiative specifically to accommodate Willaert's experiments with *coro spezzati*.<sup>30</sup>

To investigate this very phenomenon, Howard and Moretti lead a team of architectural historians, acousticians, and musicologists from the University of Cambridge's Centre for Acoustic and Musical Experiments in Renaissance Architecture (CAMERA) to complete a series of choral experiments that deployed modern recording technology to measure the quality of sound produced from various spatial arrangements on site at San Marco.<sup>31</sup> Using digital processing and audience surveys, the team conducted a comparative analysis of three performances by St. John's College choir of Willaert's double-choir "Laudate pueri dominum"—once each with singers positioned in the two organ lofts, in the *bigonzo* and *pulpum novum lectionum*, and in the *pergoli*.<sup>32</sup> Their results indicate that the first two arrangements yielded unfocused, reverberant sounds while "the clarity of sound for the listener in the chancel [choir] delivered acoustic qualities close to those expected in a modern concert hall."<sup>33</sup> We have here an exciting example of architecture being manipulated to adjust for acoustic demands and, perhaps, the cross-disciplinary collaboration between two leaders in their fields – Willaert and Sansovino – to engineer a specific liturgical effect.

Another body of evidence supporting this hypothesis involves the emergent use of "acoustic archaeology," a digital method of recreating lost soundscapes from the past.<sup>34</sup>

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<sup>29</sup> Howard and Moretti 37.

<sup>30</sup> Howard and Moretti 38.

<sup>31</sup> Howard and Moretti 1-16.

<sup>32</sup> Howard and Moretti 39.

<sup>33</sup> Howard and Moretti

<sup>34</sup> Boren 3.

In 2010, music technologist Braxton Boren and physicist Malcolm Longair studied San Marco with Odeon modeling, a software solution for simulating acoustic conditions in reconstructed architectural vessels.<sup>35</sup> The virtual choir was even modified to reflect the irregular wall surface of mosaic tesserae, the absorbent materials (tapestries, banners, etc.) typically draped from the iconostasis, and the crowds of clergy and visiting dignitaries that would have flooded the choir for important festivals and feast days (Figure 8).<sup>36</sup> Their results support Howard and Moretti's conclusion that ideal acoustic conditions for Willaert's *coro spezzato* were achieved when the choirs were positioned across from one another in the *pergoli*: "The Odeon reconstruction of the church shows that if a *coro spezzato* arrangement were to be performed in the *pergoli* ... the choir would obtain the favorable acoustics found in the CAMERA measurements."<sup>37</sup>

A fascinating element of both experiments is that the ideal sound was clearly reserved for people seated in the choir, while the acoustics in the nave were muffled and reverberant. Both the iconostasis and the ceremonial fabrics typically draped over it insulate the space (Figure 8) such that the sound would have reached the vast expanses of the nave only tangentially.<sup>38</sup> Boren and Longair's model suggests that if the split choir was situated in the *pergoli*, the reverberation time at the doge's seat would be between 1.5 and 2 seconds, close to that of a modern concert hall.<sup>39</sup> In musical terms, the authentic stereophonic effects sought by Willaert's polychoral style probably could only be appreciated by the few privileged persons seated in the choir and, especially, the doge

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<sup>35</sup> Boren 70.

<sup>36</sup> Boren 84.

<sup>37</sup> Boren 88.

<sup>38</sup> Boren 84.

<sup>39</sup> Boren 88.

himself.<sup>40</sup> Thus, the reevaluation of the decorative program in the choir at San Marco deploys architectural, musical, and acoustic conditions not only to enhance the liturgical experience of the mass, but also to participate in the delineation of a spiritual hierarchy around the political leaders of the Republic.

These experiments with musical performance and configuration of space during the sixteenth century demonstrate that architecture was considered an active agent in the experience of listening by Renaissance thinkers. By contextualizing the aural sensations inspired by the sacred music of the Venetian liturgy in the complex spatial arrangement of the Basilica di San Marco, we come closer to understanding the true nature of religious devotion and state ritual during this period. Andrea Willaert's repertoire of *coro spezzati* music was clearly conceived to be performed in a specific liturgical and architectural context. Both live recordings of his psalms and motets around the Basilica and the use of digital acoustic modeling seem to indicate that the singing galleries installed by Jacopo Sansovino in the 1530s and 1540s may have been specifically designed to enhance the sound quality for Willaert's compositions. These elaborate manipulations of sound and space created a panoramic environment of religious experience, a multi-sensory sanctuary in which to pray and reflect.

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<sup>40</sup> Vio 86.

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Images



*Io Luane Antonio da Canal, Ho fatto il presente disegno delli Musici che Cantano nella Chiesa Ducal' di S. Marco in Venezia. m'etta de  
Anni 68. Conza Occhiali. L'anno 1766.*

Figure 1. Canaletto, "Ceremony of the Easter Mass in San Marco," 1766 (ARTstor)

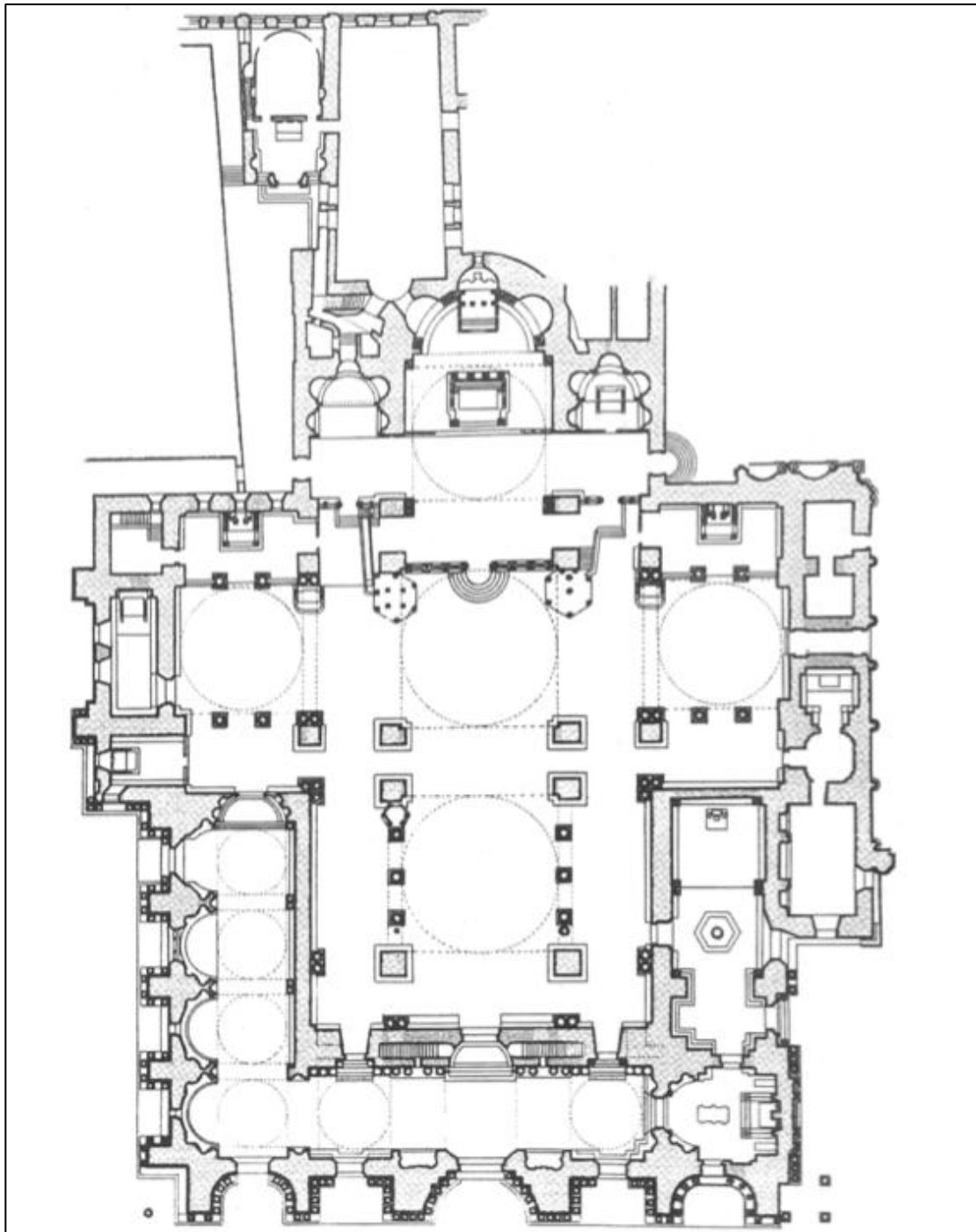


Figure 2. Ground plan of San Marco (Moretti 159)

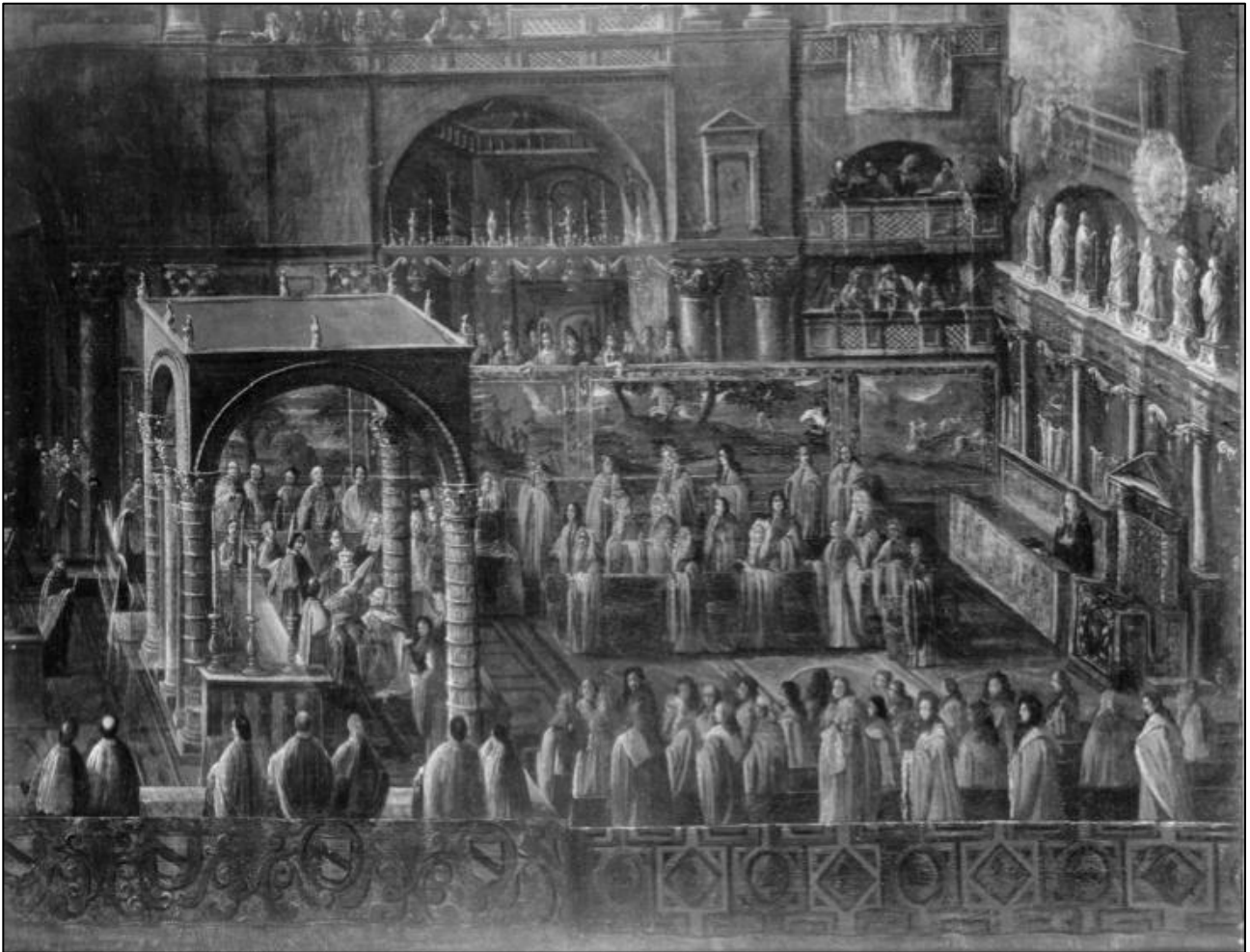


Figure 3. Anonymous, *Consignment of the Sword to Doge Francesco Morosini by Pope Alexander VIII in St. Mark's in 1690*. Museo Correr, Venice (Boren 84).

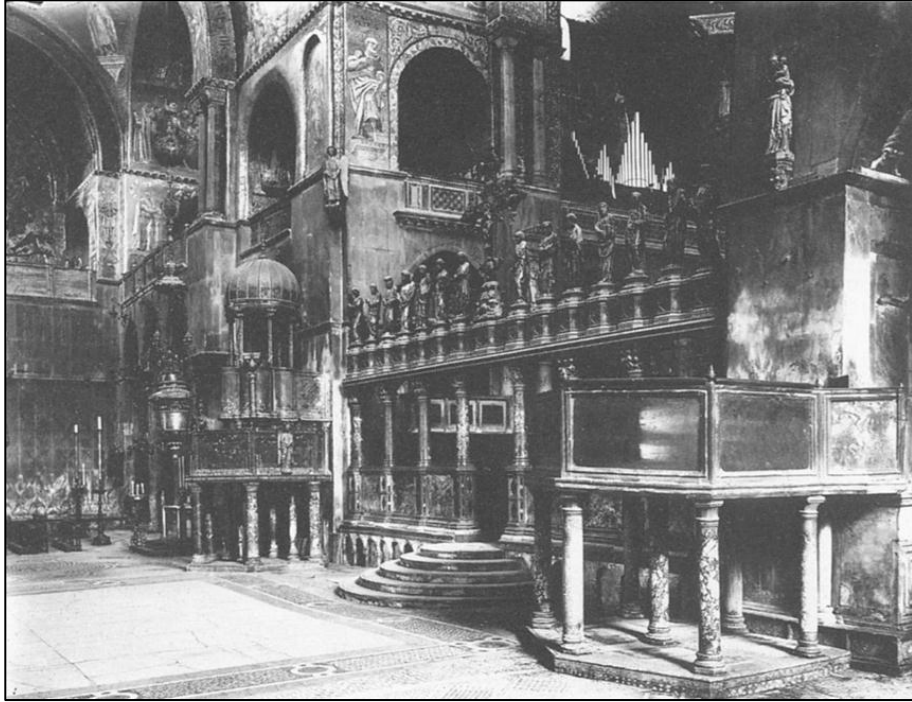


Figure 4. *Pulpitum novum lectionum*, left, and *bigonzo*, right (Bryant 174)



Figure 5. South *pergolo*, installed 1537 (Howard and Moretti 36)





Figure 6. North *pergolo*, installed 1541-4 (Howard and Moretti 36).

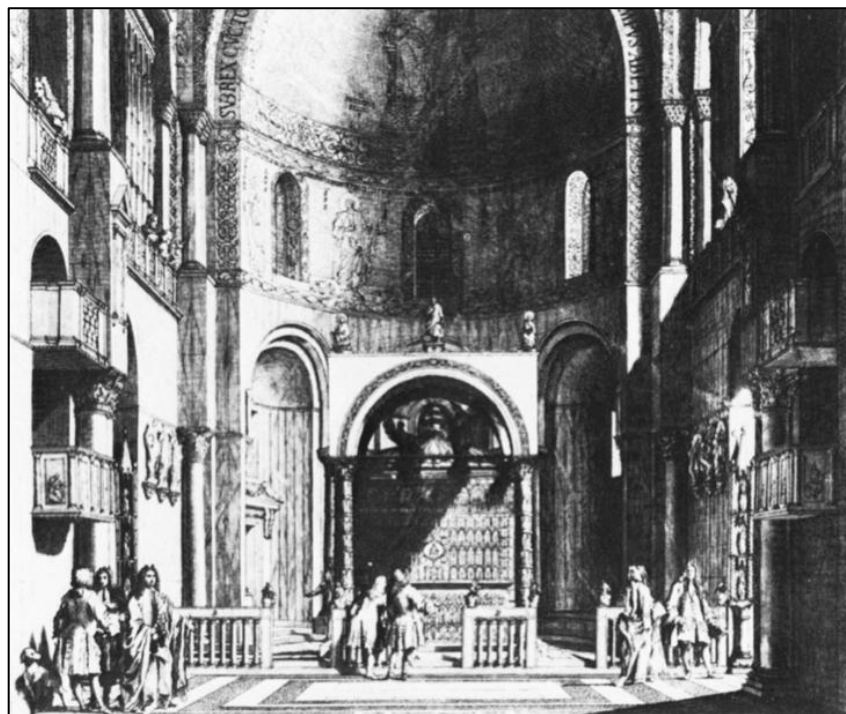


Figure 7. "La Basilica di San Marco," Antonio Viscentini, 1726 (Boucher 157)



Figure 8. "Presentation of the new Doge to the people," Gabriel Bella (ArtStor)