

**Guarini's Grand Goal**  
*The Awe-Inspiring Optics and Exploration in the Dome of San Lorenzo*

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## Guarini's Grand Goal

### *The Awe-Inspiring Optics and Exploration in the Dome of San Lorenzo*

A visitor walking into the church of San Lorenzo in Turin and hoping to sit in a quiet, relaxing space is in for a surprise. While many Baroque structures, such as the Il Gesù in Rome (Fig. 1) or the Baldacchino in St. Peter's Basilica (Fig. 2), are well-known for their visual fluidity or florid style and their tendency to blend various classical elements with new architectural trends, the dome and interior of San Lorenzo take the concept of a combination of styles to the extreme. The interior holds classical columns, and the dome shows Islamic and Gothic influences and plays around with the idea of optics. Designed in 1666 by the Italian Theatine priest and architect Guarino Guarini (1624-1683), the physical construction of San Lorenzo took place in the 17<sup>th</sup> century in Turin, but the building's visual aesthetic is anything but fixed to a specific period and place. The interior shape of the building is a mixture of concavities and convexities, and the church's sinuous and highly decorated lower interior walls build up visual pressure until the eyes at last reach the higher regions of the dome where eight grand windows allow bright, unfiltered daylight inside (Fig. 3). This dome is the perfect example of Guarini's borrowings from Islamic, Gothic and Classical forms, as well as his engagement with experimental geometric and optic themes. The combination of all these in a single structure makes the San Lorenzo dome a far more architecturally significant work than just a stunning skylight atop a "generic" Baroque church. The structure displays Guarini's willingness, even eagerness, to blend structural and philosophical ideas from vastly different architectural traditions in order to explore the idea of the infinite and test the boundaries of originality. Guarini's design for the San Lorenzo dome and many of his other works, such as the Ste. Anne-la-Royale in Paris, incurred significant criticism from many of his

contemporaries and successors—criticism which he could not shake until centuries after his death. At one point, Quatremère, a late eighteenth century architectural historian, even accused Guarini's designs of being part of the plague that gripped the architectural world for more than a century. Quatremère wrote that “the greatest source of immorality in architecture [was] ‘bizarrerie’ and its related term, ‘Baroque’...[which had] become ‘*une espèce d’épédemie*’.

The causes for the ‘epidemic’ lie in...an immoderate desire for change or novelty...which produced the antipathy between morals and art”.<sup>1</sup> Part of the criticism of Guarini's work rested on the fact that in many of his designs, especially in his highly geometrically focused domes and ceilings like those at San Lorenzo, Guarini broke away from the repetitive emulations of his Italian peers. Many saw the eclectic results as grotesque or absurd adulterations of the beautiful classical and Baroque forms more commonly employed by his contemporaries, but in these highly eclectic and thereby unique designs, Guarini sought to satisfy the desires of his religious order, the Theatines, and to impress and awe their audience at San Lorenzo, while at the same time using his domes as architectural sites to explore the emerging humanist trends of optical and geometrical investigation.

### **The Church of San Lorenzo**

When the Theatines sent their priest Guarini to Turin to finish the construction of San Lorenzo, he arrived to find that he had inherited already dug foundations for a Latin cross layout. He was unhappy with the Latin cross, so he adapted the aboveground plan of the church to be more like a Greek cross layout, though the resulting arms are not quite equilateral. In the end, the “geometrical basis of the plan has been established...as being generated by a Greek cross layout with very short arms, which undergoes a series of elastic

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<sup>1</sup> Evonne Levy, *Propaganda and the Jesuit Baroque* (Berkeley: University of California Press, 2004), 25.

deformations”.<sup>2</sup> His geometrical focus while planning is evident, and will be discussed later (Fig. 4). Another image shows how Guarini extended the major circles of the inner walls outside the building, creating undulating wave lengths throughout the entire church.<sup>3</sup> (Fig. 5 & 6). The extreme undulating movement of the interior and the floridly decorated arches of the main congregational area create a pressure on the eye, and “the only direction in which the pressure can escape is upwards”,<sup>4</sup> where the dome comes into play. H.A. Meek describes the dome’s support thusly:

The pendentives rise, and at their topmost level support the ring of a cornice, which in turn appears to hold up the ribbed drum/dome and lantern. To perform this function, it might be thought that an unbroken annular shape would provide the soundest structural answer, but Guarini interrupts his cornice ring with no fewer than eight horizontal oval openings. If this creates unease, it is as nothing compared with what we feel when we bring our eyes down again to the ground level, when we see to our consternation that each of the four pendentives appears to be transferring its mighty burden...onto the slender columns and responds of a serliana—in other words a hollowed-out pier. Nor is this all. At the crown of each great arch embraced by the pendentives, where a keystone might seem imperative [for structural soundness], Guarini has placed an oval opening<sup>5</sup> [Fig. 7].

Numerous other hollowed-out spaces and the hidden supports of the lantern trick the viewer into thinking that the building is ready to collapse, or in a more religious vein, perhaps held up from above by God.

The culmination of all his work on the lower walls is realized in the “ellipsoid of revolution”<sup>6</sup> that is the dome (Fig. 8 & 9). In this dome, he creates an optically deceptive interior that seems to achieve a height much greater than the dome’s actual dimensions. This heightened perspective is accomplished by manipulating form and light, and the exquisite combination of a number of elements in the upper regions of his design make the dome the most stunning aspect of the building. The lower part of the dome holds eight windows, and

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<sup>2</sup> H.A. Meek, *Guarino Guarini and his Architecture* (New Haven: Yale University Press, 1988), 45.

<sup>3</sup> *Ibid.*

<sup>4</sup> *Ibid.*, 48.

<sup>5</sup> *Ibid.*

<sup>6</sup> Elwin C. Robinson, “Optics and Mathematics in the Domed Churches of Guarino Guarini,” *Journal of the Society of Architectural Historians* 50, no. 4 (1991): 392, <http://www.jstor.org>.

between each of these windows are two piers (Fig. 3). Each pier crosses the dome, running parallel to another pier and ultimately creating an eight-pointed star. At the center of the star is a regular octagon. As Meek points out, if the viewer looks at one pier and “follows the trajectory of an arch until it comes down again on the other [pier], and then sets out again along the twin arch and continues on in this way, he will find himself progressively relaunched from one [pier] to the other, without ever coming to the end of his course”.<sup>7</sup> All the visual pressure is eventually relieved in the lantern by the six windows through which daylight streams. The pressure from below forces one’s eye upwards, and thus the dome is not only the literal apex of the whole building, but the conceptual apex as well (Fig. 10). It is for this reason that our discussion of Guarini’s influences and purpose will focus mainly on the geometry and optical effects of the dome.

### **Guarini’s Influences—Italian Baroque Architecture**

As creative as Guarini was, many aspects of San Lorenzo betray the architect’s architectural influences. To investigate these, we turn to Guarini’s youth and training. N.

Carboneri asserts that while a student and novice, Guarini:

...probably dedicated the greater part of his youthful studies to philosophy, theology, astronomy and mathematics, getting to architecture through the latter, an abstract procedure, not supported, at least at first, by the daily practice of a craft, nor ever sustained by professional activity in the proper sense of the term.<sup>8</sup>

Of his early training and education, we know very little, though “talent in architecture and science seems to have run in the family”.<sup>9</sup> Once he made his vows, Guarini began to move quickly through the Theatine ranks. Eight years after completing his novitiate in Rome, he

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<sup>7</sup> Meek, *Guarino Guarini and his Architecture*, 48.

<sup>8</sup> N. Carboneri quoted in Meek, *Guarino Guarini and his Architecture*, 6.

<sup>9</sup> Susan E. Klaiiber, “Guarino Guarini’s Theatine Architecture” (PhD diss., Columbia University, 1993), 16. The 16<sup>th</sup> century mathematician Antonio Guarini served as a consultant on Modena’s fortifications and urban planning. He also designed his own house and published a translation of Aristotle’s *Mechanica*.

was elected Padre Preposito<sup>10</sup> in Modena, though the appointment provoked the anger of Duke Alfonso d'Este, who forced Guarini into exile.<sup>11</sup> Nevertheless, the foundation for his future as an architect was set—his time in Rome had exposed him to the work of Bernini and Borromini, which, as Meek asserts, “[T]here indeed was a school for any Baroque architect”.<sup>12</sup>

Certain aspects of San Lorenzo and one of Guarini’s early works, Ste. Anne-la-Royale, the Theatine church built in Paris from 1662-1666, show the initial influence that Borromini and other Italian architects had on Guarini. The plans of the church can be difficult to read, and the church was destroyed between 1821 and 1823.<sup>13</sup> Thus, we have no photographs of the church and have to work from plans in Guarini’s posthumously published architectural treatise, *Architettura Civile*.<sup>14</sup> In this work, he discusses the architectural philosophies of the ancients and how his contemporaries have interpreted them, sometimes for the better and sometimes for the worse. The remaining plans for Ste. Anne-la-Royale show that the building’s façade and ceiling echoed Borromini’s work, among others. The façade features a clearly undulating theme (Fig. 11), as does Borromini’s San Carlo alle Quattro Fontane in Rome (Fig. 12 & 13). Moreover, the interlacing of the ribs forms a basketlike effect, very similar to Borromini’s Propaganda Fide in Rome (Fig. 14 & 15). Guarini “shared Borromini’s dislike of rectangular corners and was fascinated by the possibility of replacing straight walls with curved”.<sup>15</sup> Indeed, San Lorenzo’s concave-convex-concave walls betray no flat surfaces or 90° angles (Fig. 16). For San Lorenzo, he created a centralized plan with incredible

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<sup>10</sup> The head of a Theatine chapter.

<sup>11</sup> Robinson, “Optics and Mathematics,” 384.

<sup>12</sup> Meek, *Guarino Guarini and his Architecture*, 7.

<sup>13</sup> *Ibid.*, 36.

<sup>14</sup> The treatise was recently republished: Guarino Guarini, “Civil Architecture,” in *Italy and the Baroque*, ed. and trans. Brendan Dooley (New York: Garland Publishing, Inc., 1995), 436-457.

<sup>15</sup> Andrew Morrogh, “Guarini and the Pursuit of Originality: The Church for Lisbon and Related Projects,” *Journal of the Society of Architectural Historians* 57, no. 1 (1998): 7, <http://www.jstor.org>.

geometrical strictness, even more so than his early Ste. Anne-la-Royale<sup>16</sup>. Andrew Morrogh credits Guarini with carrying “Borromini’s desire for originality to an extreme, developing a completely new type of large longitudinal church”.<sup>17</sup>

### **Guarini’s Influences—Borrominian and Islamic Geometry**

However much Borromini impressed the young architect, Morrogh maintains that Guarini soon surpassed Borromini in his use of geometry.<sup>18</sup> Meek, too, notes that “just as in geometry we start off from simple relationships to arrive at more complex theories, so in Guarini’s architecture combinations of simple geometric figures develop into forms of extreme complexity”.<sup>19</sup> Guarini soon figured out that by simple manipulations of a design’s geometrical figures, he could produce numerous church plans, each one markedly different, though based on the same original plan.<sup>20</sup> His works are firmly based on geometrical themes, and he himself wrote that architecture employs geometry in all its aspects.<sup>21</sup> David Coffin suggests that Guarini’s:

Dominating interest in the mathematical problems which...are systematized as descriptive geometry causes Guarini to preserve as independent forms those geometric shapes with which he composes [and] at the same time, in the full Baroque tradition of Borromini...Guarini is concerned with the intimate relationships between these forms.<sup>22</sup>

While he and Borromini both investigated the limits of geometric design, Guarini was less loyal to certain classical aesthetic rules that sought to unify every component of a building.<sup>23</sup> One gets the sense that, despite the remark in his treatise about being cautious when diverging

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<sup>16</sup> Meek, *Guarino Guarini and his Architecture*, 45.

<sup>17</sup> Morrogh, “Guarini and the Pursuit of Originality,” 7.

<sup>18</sup> *Ibid.*

<sup>19</sup> Meek, *Guarino Guarini and his Architecture*, 40.

<sup>20</sup> Morrogh, “Guarini and the Pursuit of Originality,” 7.

<sup>21</sup> Meek, *Guarino Guarini and his Architecture*, 40.

<sup>22</sup> David R. Coffin, “Padre Guarino Guarini in Paris,” *Journal of the Society of Architectural Historians* 15, no. 2 (1956): 10, <http://www.jstor.org>.

<sup>23</sup> Robinson, “Optics and Mathematics,” 384.

“from the secure path embodying the long experience of many centuries”,<sup>24</sup> Guarini enjoyed the sojourn into new architectural territory. Bending classical aesthetic conventions was acceptable because, as he said, “all of these rules must be understood to be valid only so long as the nature of the place and the site do not necessitate some alteration”.<sup>25</sup> According to Elwin Robinson, Guarini’s adventurous outlook meant that he was able to “infuse...architecture with new vigor and introduce...themes that were to be developed by northern architects well into the eighteenth century”.<sup>26</sup>

As is very evident in San Lorenzo, some of these infusions came from Islamic architecture, which Guarini encountered during his time in Spain, Lisbon and numerous other Theatine areas in need of his architectural skills. Guarini’s visit to Messina in the late 1650s<sup>27</sup> allowed him access to buildings left from when Naples and Sicily belonged to the Kingdom of Castile. These buildings certainly would have allowed him to study Islamic monuments,<sup>28</sup> and this architecture affected Guarini in a number of ways. Primarily, his fascination with mathematics, and more specifically geometry, would have encouraged him to look at Islamic art for inspiration. Paolo Verzone notes, “in reality Islamic art has had a catalytic effect on Guarini’s fervent and gifted mind, since it was also permeated with geometrical stylizations”.<sup>29</sup> He openly used geometry to stimulate the imagination,<sup>30</sup> and he was able to surpass Borromini’s initial principles of geometrical manipulation by, as Meek says, making it “a standard part of his practice [to avoid] orthogonal transitions [and preferring] transitions in

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<sup>24</sup> Guarini, “Civil Architecture,” 449.

<sup>25</sup> *Ibid.*, 450.

<sup>26</sup> Robinson, “Optics and Mathematics,” 384.

<sup>27</sup> Klaiber, “Guarino Guarini’s Theatine Architecture,” 76.

<sup>28</sup> Meek, *Guarino Guarini and his Architecture*, 52.

<sup>29</sup> *Ibid.*, 52-53.

<sup>30</sup> *Ibid.*, 40.

which the supports were set at an angle to the axis”.<sup>31</sup> The incredible movement of the lower walls and the outside view of the dome of San Lorenzo show his obsession with curvaceous surfaces (Fig. 17), and the circles mentioned earlier that create wave-like façade of Ste. Anne-la-Royale even show how he literally expanded his geometrical manipulations beyond the walls of a given building.

### Guarini’s Influences—Optics

Unlike conventional Baroque inner domes that commonly featured a painted *trompe-l’œil* apotheosis,<sup>32</sup> the naturally lit dome acts as a skylight. Careful control of light and reflection increase the dome’s apparent height, and Meek says that the resulting dome acts as an “analogue for celestial illumination [where] the vertical dimension has disappeared, to evoke an illusion of infinity”.<sup>33</sup> The desire to express infinity was common among all areas of thought for many 17<sup>th</sup> century intellectuals. Baruch Spinoza’s investigation created “a pantheism with God pervading all beings and all things” and Isaac Newton “discovered the infinite for mathematics in [his] conception of the calculus”.<sup>34</sup> However, the inspiration behind Guarini’s dome is more varied than many of his Italian peers. Meek points out that it is “far more abstract in its technique than the more sensational means employed by architects such as Bernini...to achieve the realization of an all-embracing oneness and a presence of the infinite”.<sup>35</sup> This study of infinity, which had religious associations with the divine during the Counter-Reformation, was a sibling of the study of optics. While in Paris, Guarini had become immersed in the growing intellectual discussion on the subject. At this point, Guarini had also had six years to reflect upon and incorporate into his works the observations he made

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<sup>31</sup> Morrogh, “Guarini and the Pursuit of Originality,” 7.

<sup>32</sup> Meek, *Guarino Guarini and his Architecture*, 50.

<sup>33</sup> *Ibid.*

<sup>34</sup> *Ibid.*

<sup>35</sup> *Ibid.*

in Spain and Portugal. Freshly returned from Parisian circles immersed in the study of optics, Guarini designed a new chapel that incorporated both Parisian optics and Islamic geometrics: the dome of Santissima Sindone in Turin (Fig. 18).

The high dome of the Santissima Sindone is formed out of six hexagonal levels of elliptically arched ribs, each one slightly smaller than the last so that the whole area seems to extend upwards into what Meek describes as a seemingly “endless distance, an infinite shimmering recession where architecture is suspended in space”<sup>36</sup>. The extraordinary design for this *coup de théâtre*<sup>37</sup> rests on a number of factors. As he did at San Lorenzo, Guarini seemingly wanted to break free from the mere re-creation of popular architectural styles by taking components of Gothic, Islamic and contemporary Baroque trends and combining them with his profound mathematical knowledge and growing interest in optics. Guarini also discussed his philosophy in his architectural treatise, the *Architettura Civile*. One of the most notable things that Guarini writes in his treatise, and one of the things most easily noticed in his architecture, is that:

Because architecture aims to please the sense, and if the sense is deceived, as frequently happens, into judging a straight object to be crooked, a horizontal one to be inclined, and a large one to be small, additions and compensations must be made in order to satisfy and oblige it and supply what it mistakenly sees lacking.<sup>38</sup>

During Guarini’s time in Paris, he was in close contact with the movement studying optical theories, which he references in both San Lorenzo’s heavenly-lit heights and the Sindone’s telescopic illusion of infinity. In the same section of his treatise, he even quotes Vitruvius to prove that the ancients were aware of optical illusions, which supports the argument that he is clearly making about the validity and importance of the renewed studies in optics.

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<sup>36</sup> *Ibid.*, 75.

<sup>37</sup> *Ibid.*

<sup>38</sup> Guarini, “Civil Architecture,” 439.

### Guarini's Influences—“Weightless” Islamic and Gothic Structures

To the dismay of many of his contemporaries, Guarini was very aware and appreciative of not only Islamic architecture, but Gothic architecture as well. These two traditions were often characterized by their weightless and seemingly gravity-defying arches and domes. The Great Mosque at Cordoba features the same “cat’s cradle of hyperbolic arches” that San Lorenzo does (Fig. 19).<sup>39</sup> The Mosque of Al-Hakim in Cordoba has the same set of piers as San Lorenzo. The windows are in the same places, nestled between the piers and letting in bright daylight. This shared plan was meant to not only be beautiful, but structurally sound as well. The crossing piers allowed the arches maintain their width by being divided up into shorter segments.<sup>40</sup> Guarini obviously admired the way the Spanish domes eliminated the threat of buckling arches but kept the dome looking light and uplifted.

When it came to Gothic architecture, Guarini was again impressed by the strong buildings with seemingly thin walls and supports. He greatly admired Gothic architecture, unlike most of his contemporaries, one of whom called the Gothic style as “altogether barbarous in its fashioning...just putting one thing on top of another, without any rule, order or measure”.<sup>41</sup> His admiration was twofold: the Gothic style was both structurally sound and graceful in appearance. In his treatise, Guarini quotes Vitruvius’ assertion that “account will be taken when strength within the foundations is carried down to the solid ground and when from each material there is a choice of supplies without parsimony”.<sup>42</sup> Guarini then elaborates on Vitruvius, saying that:

One must note Vitruvius does not place the solidity of the building in the thickness of the walls, which only have to be fairly thick, so much as the depth of the foundations and the good choice of materials. Those who make durability depend exclusively on the thickness of the walls only succeed in emptying

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<sup>39</sup> Meek, *Guarino Guarini and his Architecture*, 51-52.

<sup>40</sup> *Ibid.*, 53.

<sup>41</sup> Baldinucci quoted in Meek, *Guarino Guarini and his Architecture*, 56.

<sup>42</sup> Guarini, “Civil Architecture,” 438.

purses, increasing expense, and by excessive weight, weakening the building rather than making it more solid.<sup>43</sup>

The structural soundness of Gothic buildings paired with the graceful aesthetics was irresistible for Guarini. One can see Guarini's admiration of the style alluded to when he declares that the main aims of architecture are beauty and proportional parts.<sup>44</sup> As he says, "no weak or graceless object can ever be dear or convenient to the person enjoying it.

Convenience, therefore, to be perfect, must also be agreeable and attractive".<sup>45</sup> His quest in San Lorenzo for architectural forms that were visually gravity-defying certainly references his admiration of the deceptively insubstantial-looking Gothic style. The perceived lack of support in the cornice below the dome of San Lorenzo is a clear callback to the weightless Gothic architecture that Guarini would have seen in Paris and throughout Europe. Moreover, the dome's arched ribs forming a brightly-lit octagonal space is also reminiscent of the Gothic style Guarini so admired, such as that seen in the cathedral priory at Durham (Fig. 20).

Guarini was clearly fascinated with Gothic architecture and credits "the most charming characteristic of the men of that time [which] was their slim and trim appearance, as the ancient portraits show, [as the inspiration for] their churches, which they made very high in relation to width".<sup>46</sup> They even carried this theme over into other architectural components by making "columns extremely thin, and when excessive weight called for more thickness...endeavor[ing] to preserve the thin appearance by joining many together and making a sort of complex, each of which formed one of the four imposts of a groined vault".<sup>47</sup>

More praises of the Gothic style follow:

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<sup>43</sup> *Ibid.*, 438-439.

<sup>44</sup> *Ibid.*, 439.

<sup>45</sup> *Ibid.*

<sup>46</sup> *Ibid.*, 450.

<sup>47</sup> *Ibid.*

Besides this attempt to achieve a thin appearance they also apparently affected other purposes totally opposed to Roman architecture. Whereas the principal intent of the latter was strength, and the solid construction of its buildings was always greatly in evidence, the principal intent of the Gothic was to give very strong buildings an appearance of weakness, so that they should seem to stand up only by miracle.<sup>48</sup>

As we saw in his own work on the dome of San Lorenzo, Guarini praises the Gothic architects' ability to create "a very great steeple of a bell-tower [that] will be seen poised firmly over very narrow columns [and] arches [that] will be seen sitting on imposts that stand in mid-air and are not held up by any supporting column".<sup>49</sup> The great round dome of San Lorenzo rests on carved-out supports, giving the sense that the dome, like a Gothic steeple, has no downward support and is instead held up divinely from above.

### **Guarini, San Lorenzo and the Theatine Order**

The construction of San Lorenzo, the Theatines' main church in Turin, took place during the order's religious rivalry with the Jesuits. The Theatines, founded in 1524 by Gaetano Thiene and the future Pope Paul IV, were the first of the various Roman Catholic religious orders that sprang up in Counter-Reformation Europe to help combat the spread of Protestantism.<sup>50</sup> The Theatines were avid church builders,<sup>51</sup> and Carlo Maderno completed the Theatines' first church in Rome, the S. Andrea della Valle, in 1623. Though Maderno's designs were emulated in provincial Theatine churches that lacked vast funds and complex architectural ambitions, the order's requirements for Counter-Reformation churches could be achieved through a variety of designs, and thus, there was not one singular "Theatine" style.<sup>52</sup> The order was on mostly good terms with other religious orders, but relations with the Jesuits were rife with competition and controversy.<sup>53</sup> This competition extended into the realm of

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<sup>48</sup> *Ibid.*

<sup>49</sup> *Ibid.*

<sup>50</sup> Klaiber, "Guarino Guarini's Theatine Architecture," 9.

<sup>51</sup> *Ibid.*, 9.

<sup>52</sup> *Ibid.*, 14-15.

<sup>53</sup> *Ibid.*, 10.

architectural design, and according to Susan Klaiber, the Theatines considered Maderno's design for the church of S. Andrea an "improvement on the Gesù, betraying [the Theatines'] constant competition with the Jesuits".<sup>54</sup> Besides their architectural challenge to the Il Gesù, the Theatines occasionally contended with the Jesuits more directly. When, in 1680, the Lisbon Theatines took a strong dislike to the aging Antonio Ardizzone, the founder of their house, they wrote to Rome that they had seen Ardizzone riding around the city with a velvet cape that "trailed to the ground [with] such worldliness [that it] was more suitable for a Jesuit than a Theatine".<sup>55</sup> Despite their competition with the Jesuits, the two orders had much in common. In Meek's words, the Theatines were "keen exploiters of all those strange theatrical devices which they, and most notoriously the Jesuits, used 'to catch men's affections and to ravish their understanding'".<sup>56</sup> By inspiring awe, the orders could effect loyalty to and interest in their cause, namely to prevent the spread of Protestantism. Though they employed Maderno for the church in Rome, the Theatines commonly employed members of their own Order who had training as architects, as did the Jesuits.<sup>57</sup> In fact, the more adept Theatine architects were sent around Europe to whichever chapter needed their services.<sup>58</sup> This system led Guarini to San Lorenzo. The resulting church is a marker of Guarini's search for evermore-original designs whose purpose seems to have been to compete with churches like Il Gesù that the Jesuits constructed as they sought to awe and inspire the faithful.

Guarini's experiments with optics and geometry at San Lorenzo satisfy both his inquisitive mind and the Theatines' driving purpose to battle the inroads of the Reformation.

During his career, Europe:

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<sup>54</sup> *Ibid.*, 15.

<sup>55</sup> *Ibid.*, 10-11.

<sup>56</sup> Meek, *Guarino Guarini and his Architecture*, 6.

<sup>57</sup> *Ibid.*

<sup>58</sup> *Ibid.*, 7.

Was experiencing the full effects of a century's religious campaigning by the spiritual shock troops of the embattled Church of Rome....New orders and Sodalities were founded with the object of consolidating the faith of those who still remained true to the traditional doctrines, while endeavoring to recover the ground that had been lost to Protestantism.<sup>59</sup>

When the Theatines entered Modena, they certainly succeeded with their aim to “consolidate the faith” of the remaining Catholics, such as the Guarini family, who lived in a house right next to the Modena chapter of the Theatines. Guarini and his five brothers very likely received their schooling from the Theatines, and five of them, as well as one of their cousins, applied to join the Order. Guarini was accepted in 1639, when he was only fifteen.<sup>60</sup> He went on to join the Theatine competition with the Jesuits for shock-and-awe structures, and his design for San Lorenzo is a clear contender for admiration of the orders' audience.

Guarini's treatise, the *Architettura Civile*, explains much of his dedication to the rhetorical practices shown at San Lorenzo and his other works that were a success with the Theatines. For most of his treatise, Guarini quotes *De Architectura* by Vitruvius, a 1<sup>st</sup> century BC Roman architect, and then elaborates on the ideas, showing how they should be interpreted for a 17<sup>th</sup> century audience. According to *Architettura Civile*, one of the most important things the architect should focus on is creating a building that is specific to the patrons. As Guarini explains, a simple example is that “making [ceilings] too high would be uncomfortable in cold countries”.<sup>61</sup> Part of making the building for the specific patron includes a design specific to the building's physical space as well. For instance, “if the place is imperfectly square, irregular and unable to contain a square except with great loss of space, and an oval shape would be more appropriate, an oval shape rather than a square should be built there”.<sup>62</sup> Additionally, “if the site is surrounded by houses and cannot receive light except

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<sup>59</sup> *Ibid.*, 5.

<sup>60</sup> *Ibid.*

<sup>61</sup> Guarini, “Civil Architecture,” 438.

<sup>62</sup> *Ibid.*, 440.

from above, the architect must choose a type of form of building that receives light from above".<sup>63</sup> At San Lorenzo, Guarini tailored the impressive attributes of the building to the Theatines, adapted the Latin cross to a more symmetrical plan and constructed towering windows to let in the daylight. These considerations were necessary because, as Guarini himself wrote, "accommodating oneself to the necessities of the place is in perfect agreement with the sentiment of Vitruvius".<sup>64</sup> On many occasions, Guarini was heir to a less-than-ideal space for his buildings. At San Lorenzo, the foundations were already laid, and he had to work with the Latin cross foundations when designing the Greek cross layout of the aboveground structure. The result was a stunning dome that rose above the surrounding buildings to bring in the heavenly light.

Guarini's combination of Classical, Gothic and Islamic in a single dome truly does show his "open-mindedness...towards architecture and the rules that govern it".<sup>65</sup> This combination is made even more noticeable when one sees the final execution of the façade of San Lorenzo. Ascanio Vitozzi had the final creation of the façade, and thus the markedly differing style allows the dome to soar over the "bland town-house type of elevation"<sup>66</sup> that hides the lower portions of the church up to the cornice ring (Fig. 21 & 22). Though not of his own devising, the façade of San Lorenzo is in keeping with his tendency to bend the rules of aesthetics. As with Guarini's church in Messina, "the usual Roman Baroque tendency is hence absent [in San Lorenzo] that sees the façade as an outward expression of the spatial movement and direction within".<sup>67</sup>

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<sup>63</sup> *Ibid.*

<sup>64</sup> *Ibid.*

<sup>65</sup> Meek, *Guarino Guarini and his Architecture*, 56.

<sup>66</sup> *Ibid.*, 60.

<sup>67</sup> *Ibid.*, 25.

## Conclusions

As Coffin points out, “critics, from the late seventeenth century until the late nineteenth-century...have repeatedly condemned Sainte Anne-la-Royale and Guarini’s other buildings as “bizarre”.<sup>68</sup> Quatremère described Guarini’s designs as part of *une espèce d’épédemie* (‘a kind of epedemic’).<sup>69</sup> Guarini faced much criticism in his own time as well, and in his third treatise of the *Architettura Civile*, he defends his unique designs:

If our arrangements had to gratify the various visual senses of all people, no designer would ever dare to show his inventions, which might be applauded and approved by all except for a few, so puffed up by their own self-esteem that they cannot see the inventions of others except to despise them....[Some people’s] ignorance and inability prevent them from judging perfection in a work. Some are surprised and overwhelmed by an unusual though beautiful appearance....For example, a grave man may find excessive ornamentation displeasing, whereas someone who delights in delicate things may dislike simple and massive ornaments....Thus, I believe that buildings should be planned to please the eyes not of everyone, but only those who, free of every passion and knowledgeable in the art, may be competent judges.<sup>70</sup>

Guarini himself admits that for the layperson, his creations were meant to inspire with optic tricks. For the knowledgeable observer, however, the buildings were supposed to produce admiration for the blend of styles that the intellectual would recognize from his own studies in Spain, France and Italy.

The concept of designing for people “in the know” is reflected in his smaller-scale activities as well. Guarini invented a new order of column, called the Supreme Corinthian Order. Meek points out that the order, “with its undulating shafts, architraves and friezes...[and] his subsequent Islamic borrowings may well be deemed persuasive evidence that the winged sandals that bore the Mercury of our Age to Sicily in 1660 had indeed passed over the Iberian peninsula”,<sup>71</sup> where Guarini recognized the style and began to incorporate it into his own works.

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<sup>68</sup> Coffin, “Padre Guarino Guarini in Paris,” 3.

<sup>69</sup> As noted about “Baroque” architecture by Levy, *Propaganda and the Jesuit Baroque*, 25.

<sup>70</sup> Guarini, “Civil Architecture,” 443.

<sup>71</sup> Meek, *Guarino Guarini and his Architecture*, 17.

Guarini hoped to turn architecture from the pursuit of imitation and perfection of his predecessors' works into a quest guided by beauty, functionality and geometric innovation. Though Guarini quotes Vitruvius and other ancients throughout his written and constructed work, he does not believe their rules to be irrefutable laws. For instance, "the ancients, including Vitruvius, gave certain specific rules, to which some architects adhere so closely that they would not depart from them *by a hair's breadth*".<sup>72</sup> In true emulative fashion, Guarini says, "I, on the other hand, in my own discreet judgment...believe that some ancient rules can and must be corrected and new ones added".<sup>73</sup> Not only does he say that the rules of the ancients should be looked to and improved upon, but he implies that he is the one of the only ones of his time to consciously come to this conclusion. The reason for this emulation and adaptation is, in his words, that "as the customs of men change, so also must the architecture ordered for their utility change, accommodating the habitation to the new customs".<sup>74</sup> The "elastic deformations" of the plan of San Lorenzo mentioned earlier unmistakably illustrate this point. His adaptation of a more common Latin cross plan to a quasi-Greek cross indicates his willingness to adjust earlier architectural forms to the particular building space and patron in order to please the eye and serve the spirit. Guarini held onto the soaring, weightless arches of the Gothic architectural style, experimented with the Islamic geometric structures and competed with his classical Baroque contemporaries. The criticisms of the French Academy about Ste. Anne-la-Royale and other fervent attacks against the more bizarre outcomes of his mission did not prevent the continuation of his style. As Guarini made clear in his *Architettura Civile*, he did not believe that the architectural rules of the ancients should be adhered to at the expense of beauty and functionality, and by extension, he did not believe the same of his

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<sup>72</sup> Guarini, "Civil Architecture," 439.

<sup>73</sup> *Ibid.*

<sup>74</sup> *Ibid.*

contemporaries' rules either. By applying foreign decorative and structural elements and his own geometrical alterations to the more "conventional" designs of the Italian Baroque, Guarini created a new style for experienced humanist audiences. The style pleased his Theatine superiors with its dazzling optics and eye-catching decorations, and at the same time, sated his thirst for optical and geometrical exploration. This fusion of Islamic, Gothic and Baroque resulted in the stunning dome of San Lorenzo and many of his other unique designs.