

# **CASSIANO DAL POZZO'S PAPER MUSEUM**

## **Volume II**

Jennifer Montagu  
Henrietta McBurney  
Joseph Connors  
David Freedberg  
Francesco Solinas  
J. R. Hale  
Timothy J. Standring  
Elizabeth Cropper  
Nicholas Turner  
Arnold Nesselrath

**olivetti**

## VIRTUOSO ARCHITECTURE IN CASSIANO'S ROME

Joseph Connors

According to Jacob Spon, curiosity was a contagious disease, though not a fatal one.<sup>1</sup> The way it spread among the circle around Francesco Barberini and Cassiano dal Pozzo is well known. What remains to be traced is its epidemiology at the fringes of the papal court, among the lesser nobility and the clerical bureaucracy, and among the professional classes. It was caught by noblemen who lacked Cassiano's scientific intensity but who were addicted to travel and encyclopedic collecting, such as Antonio degli Effetti, Paolo Falconieri, Virginio Orsini, Leone Strozzi, Pietro Della Valle, and Hippolito Vitelleschi.<sup>2</sup> Further down the social scale there was a Dutch pharmacist named Corvino whose *bottega* at Monte Giordano was a gathering place for Federico Cesi and his friends; and in the next generation we hear of a Cavaliere Corvino on the Lungara who specialized in insects, plants, urns, and lacrymatories.<sup>3</sup> Eustachio de Divinis, the most famous telescope maker of mid-century Rome, had a fabulous collection of scientific instruments as well as shells.<sup>4</sup> The painters Filippo Napoletano and Agostino Scilla both had well-stocked collections of natural curiosities, and the Dutch engineer Cornelius Meijer had a collection of unusual shells.<sup>5</sup> Even the captain of the bombardiers at Castel S. Angelo, one Braccioforte, had a museum of ancient arms, fragments of inscriptions, lamps, medals, cameos, and turned ivories which he bequeathed to the sculptor who made his tomb in the Maddalena, "e anche il detto scultore si delecta di curiosità".<sup>6</sup>

<sup>1</sup> [Jacob Spon], *Recherche des antiquités et curiosités de la ville de Lyon, Avec un Mémoire des Principaux Antiquaires & Curieux de l'Europe*, Lyon, 1673, p. 206. See also Jacob Spon, *Voyage d'Italie, de Dalmatie, de Grece, et du Levant, fait és années 1675, et 1676...*, 3 vols., Lyon, 1678, I, pp. 338-405: "Liste des cabinets et palais de Rome, Et des pieces les plus curieuses qu'on y remarque..."

<sup>2</sup> Degli Effetti: Bellori, pp. 22-23; Haskell, p. 156 f. Falconieri: Jacob Spon, *Voyage d'Italie*, p. 394. Orsini: Filippo Buonanni, *Ricreatione dell'occhio e della mente nell'osservatione delle chioccioline*, Rome, 1681, p. 130. Strozzi: F. Buonanni, *Observationes circa viventia, quae in rebus non viventibus reperiuntur. Cum micrographia curiosa*, Rome, 1691, dedicated to Leone Strozzi; and *Descrizione di Roma moderna*, Rome, 1697, p. 673. Della Valle: Buonanni, *Ricreatione*, p. 14; G. Lombroso, "Descrittori Italiani dell'Egitto e di Alessandria", *Memorie della R. Accademia dei Lincei, Classe di Scienze morali, storiche e filologiche*, 3rd ser., III, 1878-79, p. 468 f.; Roberto Almagià, "Per una conoscenza più completa della figura e dell'epoca di Pietro della Valle", *Rendiconti dell'Accademia Nazionale*

*dei Lincei, Classe di Scienze morali, storiche e filologiche*, ser. VIII, vol. VI, fasc. 7-10, July-Oct. 1951, p. 378. Vitelleschi: F. Angeloni, *La Historia Augusta*, Rome, 1641, p. 309; J. Evelyn, *The Diary*, ed. E.S. de Beer, Oxford, 1955, II, pp. 283 and 365.

<sup>3</sup> Bellori, p. 21; Gabrieli (1938), p. 23; Spon, *Voyage d'Italie*, pp. 391-92.

<sup>4</sup> Silvio Bedini, "Seventeenth Century Italian Compound Microscopes", *Physis*, V, 1963, pp. 383-422; and Idem, "Eustachio Divini", in *Dictionary of Scientific Biography*, IV, New York, 1971, p. 128; Buonanni, *Ricreatione*, p. 130.

<sup>5</sup> J. Fletcher, "Filippo Napoletano's Museum", *Burlington Magazine*, CXXI, 1979, pp. 649-50. On Scilla see Buonanni, *Ricreatione*, p. 130; L. Pascoli, *Vite de' pittori, scultori ed architetti moderni*, 2 vols., 1730-36, II, pp. 50-56; A. Bertolotti, *Alcuni artisti siciliani a Roma nei secoli XVI e XVII*, Palermo, 1879, p. 26; and especially Paolo Rossi, *The Dark Abyss of Time*, Chicago, 1984, pp. 19-24. On Meijer, see Buonanni, *Ricreatione*, p. 314.

<sup>6</sup> Carlo Cartari, *Encyclopedia*, in ASR, Cartari-Febei, vol. 185, fol. 270r, 1663 October 12.

Architects too drank in the culture of curiosity.<sup>7</sup> They formed collections of *naturalia* and *artificialia*, ground lenses and made scientific instruments, engaged in excavations and expanded the knowledge of antiquity. Curiosity came to leave its mark on their work. There is a strain of baroque architecture that can be best understood as virtuoso architecture, as a reflection of a world seen through the lens of the curiosity cabinet.

Architects formed some impressive collections. The most sensational example was the museum of Francesco Picchiatti in Naples. This prolific builder, who designed among other things the staircase in the Palazzo Reale and the chapel in the Monte della Misericordia that now houses Caravaggio's *Seven Works of Mercy*, assembled one of the most famous museums in Italy. It included 20,000 coins and medals, 6,000 engraved gems, 130 gold rings, stones with images in their grain, 300 bronze statuettes, lamps, sacrificial vessels, busts, "diverse cose naturali stravaganti" such as exotic teeth, unicorn's and rhinoceros's horns, "pietre ceraunie", and petrified fruits. The paintings included 200 small portraits on copper and the library contained 1,200 volumes covering most of the fields represented by the collection.<sup>8</sup>

Even if no Roman architect could boast anything quite on this scale, at least three of them formed respectable museums. Giambattista Soria, Scipione Borghese's house architect, assembled an important painting collection that Peiresc tried to buy from his widow in 1656. Cassiano helped by sending him the inventory. But Soria also collected drawings, cameos, coins and statuettes. Furthermore he was an amateur lens grinder who made his own telescopes and assembled an unsurpassed collection of mathematical and scientific instruments.<sup>9</sup> Martino Longhi the Younger wrote a will binding his heirs to outfit "un stanzione o galleria nobile" to hold his collection of architectural books, exotic arms, mathematical and astronomical instruments, old master paintings, busts, and a famous antique vase with reliefs of Bacchus and Silenus. He kept his objects in *Kunstschränke* painted by the Carracci, Guido and Prospero delle Grottesche. He bound his heirs to maintain the museum and to keep it open to all comers, Roman and foreign. Like most heirs, they did no such thing, and the collection was dissipated shortly after his death.<sup>10</sup>

Finally there is Borromini's collection, inventoried in his Tiberside house after his suicide in 1667.<sup>11</sup> He had 142 paintings and over 900 books, chests stuffed with drawings and drafting instruments, and about 37 models of his own buildings in wood, plaster and wax. So far this is just the paraphernalia of a successful architect. But there were also 132 ancient coins and medals (Martinelli published a print of one),<sup>12</sup> mosaics and Roman inscriptions, lamps, pails and other antique cult objects, bronze spearheads, a herm, ancient *idoletti* and serpents' heads, frogs and ostriches. Among the natural

<sup>7</sup> The phrase is that of Krzysztof Pomian, "La culture de la curiosité", in *Collectionneurs, amateurs et curieux. Paris, Venise: XVIIe-XVIIIe siècle*, Paris, 1987, pp. 61-80.

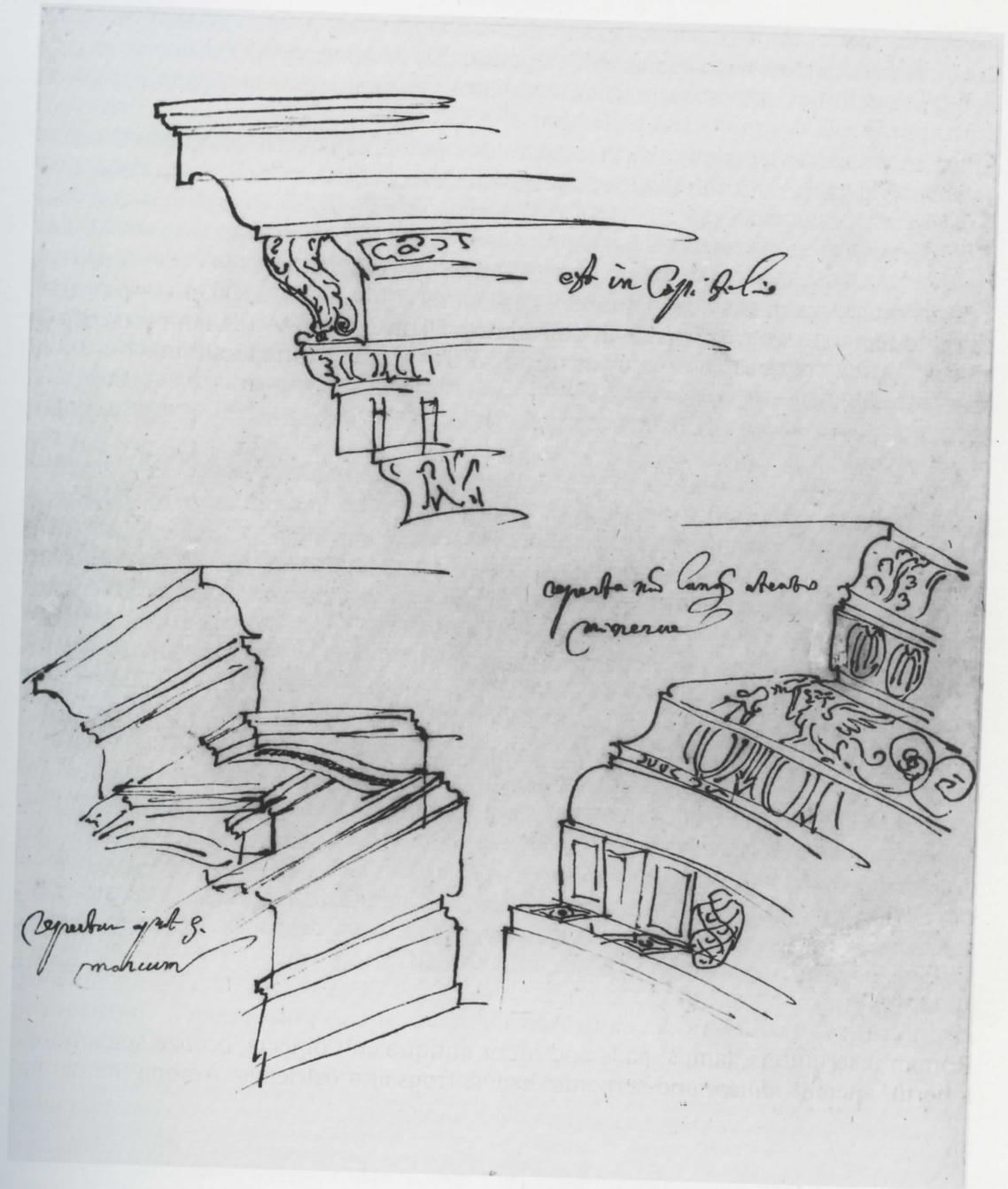
<sup>8</sup> The main source is Carlo Celano, *Delle notizie del bello, dell'antico, e del curioso della città di Napoli*, Naples, 1758-59, giornata quinta, pp. 74-79; there is valuable additional information in F. Strazzullo, *Architetti e ingegneri napoletani dal '500 al '700*, Naples, n.d., pp. 267-301. The architecture is discussed in A. Blunt, *Neapolitan Baroque and Rococo Architecture*, London, 1975, pp. 94-98.

<sup>9</sup> Pascoli, *Vite*, II, p. 531 f. The inventory in Cod. 267 of the Library of the Faculty of Medicine in Montpellier (BIM) is cited in Lumbroso, p. 162.

<sup>10</sup> Vincenzo Golzio, "Il testamento di Martino Longhi Juniore", *Archivi d'Italia*, ser. II, V, 1938, pp. 140 f. and 207 f.

<sup>11</sup> Marcello Del Piazzo, *Ragguagli borrominiani*, Rome, 1968, pp. 162-76.

<sup>12</sup> F. Martinelli, *Roma ricercata nel suo sito*, Rome, 1658<sup>3</sup>, p. 201.



1. Francesco Borromini, Copy after the Codex Coner (Berlin, Kunstbibliothek, Inv. n. 3826).

curiosities were pieces of alabaster and precious minerals, three "claws of the great beast" and three shells, including one mounted on a pedestal in the form of an eagle's claw. Though not enormously large, and not frequented by the grand tourists, Borromini's was definitely the collection of a virtuoso.

When an architect visited one of the great encyclopedic collections he would often find architectural curiosities among the objects on display or filed in the library. The collection of coins and medals assembled by Manfredo Settala in Milan was meant to be a school in which architects could study the orders and appreciate the magnanimity of ancient theatres, amphitheatres, hippodromes, circuses, bridges and columns. Along with the collection went an extensive numismatic library. Among the modern medals many bore portraits of architects: Michelangelo, Domenico Fontana, Juan de Herrera, and Bramante "cum architectura sedente".<sup>13</sup> When Nicodemus Tessin visited the library of Carlo Antonio dal Pozzo in 1687-88, alongside 20 volumes of drawings after the antique he observed "viele Bücher, ja auch mit Zeichnungen aufgefüllt, von der Architecture handeln".<sup>14</sup>

Cassiano possessed the drawings of Montano and the Codex Coner, and allowed the young Borromini to study them (Fig. 1). They left a profound impression on his work.<sup>15</sup> And he was apparently moved by Cassiano's example to begin a small paper museum of his own, at least in the realm of ancient architectural fragments. He created a sketchbook, which has since been lost but was described in a note of Pier Leone Ghezzi:

"This was not the way of the great Bernini and particularly of Borromini, whose book, in folio of *carta papale*, I have seen, full of architectural fragments by his hand, with annotations where every piece had been found, and so many beautiful mouldings that one would believe they were his inventions."<sup>16</sup>

And while the young Borromini was in the house, he would have had at least one other topic of conversation with Cassiano, namely, the bronze beams of the Pantheon porch. Borromini was in charge of their removal in 1625, and Cassiano was fascinated by these unique relics. He sent Peiresc a treatise written in Rome on how to vault the porch once the beams were taken down. One imagines such men using all their influence to lay their hands on one of the huge bronze rivets that were drawn by Borromini before being sent off to collections at home and abroad.<sup>17</sup>

<sup>13</sup> Paolo Maria Terzago, *Musaeum Septalianum*, Tortona, 1664, translated and revised by Pietro Francesco Scarabelli, *Museo ò galeria Adunata dal sapere, e dallo studio del Sig. Canonico Manfredo Settala*, Tortona, 1666, p. 362 f.

<sup>14</sup> Sirén, p. 87.

<sup>15</sup> On the Codex Coner: Ashby (1904) and (1913), pp. 184-210; H. Thelen, *Francesco Borromini: Die Handzeichnungen*, I, Graz, 1967, C 1-4 and pp. 11-13. My thanks to Arnold Nesselrath for pointing out the problems of dating the copies to me. On Montano: A. Blunt, *Borromini*, London, 1979, pp. 41-45; and J. Connors, *Borromini and the Roman Oratory*, New York and Cambridge, Mass., 1980, figs. 128-29.

<sup>16</sup> "Non così fecero il gran Bernini e particolarmente il Borromini del quale io ho veduto un libro in foglio di carta papale tutto ripieno di antichi frantumi di cose

appartenenti all'architettura di mano sua disegnati con la notitia ad ogni pezzo in che loco fosse ritrovato e tante belle modinature che si crede essere state da lui inventate". Lucia Guerrini, *Marmi antichi nei disegni di Pier Leone Ghezzi* (Biblioteca Apostolica Vaticana: Documenti e riproduzioni, 1), Città del Vaticano, 1971, p. 111 f., from BAV, MS. Ottob. lat. 3107, fol. 155.

<sup>17</sup> Lumbroso, p. 175 (on a rivet sent as a present to the Duke of Alcalá); Borromini's drawings of the beams and rivets are published in Thelen, *Borromini*, C 25-27 and p. 32 f. The treatise is now in BIM, MS. 257, fols. 53r-57v, and was given the following title in pencil by Cassiano: "Discorso fatto per occasione di travi di metallo che erano nel portico della Ritonda che furono levati per servizio delle colonne di metallo che si fecero all'altare di S. Pietro della maniera così

Some architects formed encyclopedic collections, and many of the great virtuosi included architecture among their interests. But in addition there are a number of personalities in early seventeenth-century Italy who drew these two worlds even closer together.

In the early days of the Lincei there was a proposal to give the noble science of architecture an honoured place in the Lyncean curriculum. It came from Naples, cradle of curiosity, in a letter written in 1612 by the newly elected Lyncean Nicolò Antonio Stelliola (1547-1623) to Cesi and Galileo.<sup>18</sup> Stelliola was an architect and engineer who had worked on the harbor and fortifications of Naples, and who had also mapped the kingdom and taught architecture to the Neapolitan nobility. But he went on from "architettura fabrile" to "architettura celeste", and wrote a book on the telescope and the fabric of the heavens. He was of the old school which believed that all knowledge descended from one supreme science, called by some *sophia* and others *magia* or *sapienza*, but best named the Encyclopedia. This wisdom had been entrusted to a few select men in the ancient world but then lost, though modern science was once again on its track. There is something very moving about this vision, entertained by an engineer in a Spanish-dominated land, of an encyclopedic wisdom that can set men free, as it did when Pythagoras moved from Samos to the south of Italy. There the Greek sage taught men knowledge of the Encyclopedia, which liberated cities from the yoke of oppression and gave them excellent governments. And in Stelliola's complex chart of knowledge, which includes mathematical, metaphysical and applied sciences, there is a place for architecture. It is not an art that achieves its best effects through monstrous expenses, but one that operates simply and naturally, following the example of Nature our Mother, who exploits the individual *virtù* of everything and produces all her children with facility. In his letter he urges Cesi to open the Academy's doors to the virtues of architecture, and goes on to say how much architecture itself has to gain from the "virtù degli ochij Lyncei, iscrutatori dell'intimo delle cose".<sup>19</sup>

In the next generation in Rome a bridge was built between architecture and science by Gaspare Berti, a mathematician formed in the school of Galileo who also had an interest in antique and modern building.<sup>20</sup> Berti makes his first appearance in 1633 in a letter

che si dovrebbe suplire al detto portico... di quelli". The manuscript is by an amateur and not a professional architect; Francesco Solinas, who kindly discussed the problem with me, thinks the author is Cassiano himself.

<sup>18</sup> G. Galilei, *Opere*, Edizione Nazionale, ed. A. Favaro, Florence, 1890-1909, I, pp. 196-200, and 263f.; Nicolò Antonio Stelliola, *Encyclopedia Pythagorea*, Naples, 1616; Idem, *Il telescopio, over ispecillo celeste*, Naples, 1627 (posthumous edition with a biographical preface by his son Giovanni Domenico Stelliola); G. Gabrieli, "Il carteggio scientifico ed accademico fra i primi lincei (1603-1630)", *Memorie della R. Accademia Nazionale dei Lincei, Classe di Scienze morali, storiche e filologiche*, ser. VI, vol. I, fasc. ii, 1925, p. 181; Idem, "Intorno a Nicola Antonio Stelliola filosofo e linceo napoletano" (1929), in *Contributi alla storia della Accademia dei Lincei*, Rome, 1989, I, pp. 889-905; Luigi De Franco, "Nicola Antonio Stelliola, Gerolamo Mercuriale e Theodor Zwinger", *Bibliothèque d'Humanisme et Renaissance*, XXXV.1, 1973, pp. 131-36.

<sup>19</sup> Galileo, *Opere*, I, p. 198.

<sup>20</sup> The key work on Berti as a scientist is C. de Waard, *L'expérience barométrique: ses antécédents et ses explications*, Thouars, 1936. Other useful secondary sources are W.E. Knowles Middleton, *The History of the Barometer*, Baltimore, 1964, pp. 10-18; P.J.S. Whitmore, *The Order of Minims in Seventeenth-Century France*, Paris, 1967, pp. 165 and 171-75; Stillman Drake, art. "Gasparo Berti", *Dictionary of Scientific Biography*, II, New York, 1970, pp. 83 f. Among the older works used by these scholars are Athanasius Kircher, *Musurgia universalis*, Rome, 1650, pp. 11-13; P. Gaspare Schott, S.J., *Mechanica Hydraulic-Pneumatica*, Herbispoli, 1657 (1658). For Berti's archeological side, generally unnoticed by historians of science, see G. B. De Rossi, *La Roma sotterranea cristiana*, 3 vols., Rome, 1864-77, I, p. 40; Philippe Tamizey de Larroque, *Lettres de Peiresc*, 7 vols., Paris, 1888-98, vol. V, p. 378. Holstenius also mentions the museum of a certain Berti, without giving the first name, in *ibid.*, IV, p. 582; V, p. 443 f., n. 4 and p. 444, n. 1; V, p. 378, n. 2.

to Cassiano informing him that some beautiful columns had been found at Hadrian's Villa. At the time he wrote it he was busy drafting a plan of the catacombs of S. Sebastiano for Francesco Barberini. In 1635 Cardinal Barberini sent Peiresc several sets of observations of the recent lunar eclipse; the best by far was Berti's. He was not only an expert celestial observer but a skilled instrument maker. Toward the end of his short life he devised a famous experiment proving the existence of the vacuum in nature, which was later refined by Torricelli and which led to the invention of the barometer. Thanks to Berti the old Aristotelian conception of the *horror vacui* was replaced by a new mechanics in which air had pressure and weight. He was nominated for the chair of mathematics at the Sapienza in the very years when Borromini was designing S. Ivo. The two men knew each other well. In 1642 Borromini turned to Berti to construct a large model of his Casa dei Filippini.<sup>21</sup> And after Berti's premature death one of the manuscripts from his library – a commentary by Celso Cittadini on Pirro Ligorio – made its way into Borromini's collection.<sup>22</sup>

It is Berti's friend Holstenius who comes up with the best word for a personality like this, *mechanikos*, the term used by Procopius to describe Anthemios and Isidoros, the applied mathematicians who built Hagia Sophia.<sup>23</sup> One supposes that it was a common interest in antiquity that brought Berti and Borromini together, one a *mechanikos* who could make precision instruments as well as architectural models, the other an *architekton* who avidly studied Hadrian's Villa and who moved among patrons close to the world of the Lincei.

Another personality who offers a link between architecture and virtuosity is Virgilio Spada, the Oratorian priest who discovered Borromini and guided him through thirteen stormy years in the service of the Filippini. It was this lover of clocks and watches who had Borromini build one of Rome's great clocktowers, the Torre dell'Orologio, over his suite of rooms facing the Piazza di Monte Giordano. In 1637, the year he commissioned Borromini's Oratory facade, Spada turns up in the correspondence of Cassiano's agent Giovanni Sommai, who had been scouring the markets of the Romagna for Roman coins but could not find any, since Spada had bought them all up.<sup>24</sup> Spada eventually bequeathed his cabinet of curiosities to the Vallicella Library, where it survived until the arrival of the Italian Republic. Although it was unfortunately dissipated among a number of public museums in 1886-87, there is at least an inventory.<sup>25</sup> This "rerum mirabilium speculator"<sup>26</sup> owned 211 small antiquities such as lamps, lacrymatories, statuettes, seal rings, amphorae and terracotta antefixes. His 31 crystals included

<sup>21</sup> O. Pollak, *Die Kunsttätigkeit unter Urban VIII.*, Vienna, I, 1928, p. 441, reg. 1790.

<sup>22</sup> Fioravante Martinelli, *Roma ex ethnica sacra*, Rome, 1653, p. 424: "Aliqua in opusculo de Circis, & in Paradoxis notavit Celsus Cittadinus, quae MSS. vidimus apud D. Gasparem Bertum, quae nunc exstant in manibus clarissimi viri Eq. Borromini, hic exscribenda. *Annotationi sopra il libro delle antichità, & Paradoxi di Pirro Ligorio, Di Celso Cittadini*". See G. Formichetti, "Celso Cittadini", *DBI*, 26, 1982, pp. 71-75.

<sup>23</sup> J.F. Boissonade, *Lucae Holstenii Epistolae ad Diversos*, Paris, 1817, p. 496; Holstenius writes the word in Greek characters. In Byzantine terminology *mechanikos* refers to someone of the highest theoretical com-

petence in physics and mechanics; contrary to what one might expect, it reflects a higher calling than *architekton*. See G. Downey, "Byzantine Architects: Their Training and Methods", *Byzantion*, XVIII, 1948, pp. 99-118.

<sup>24</sup> Lumbroso, p. 238.

<sup>25</sup> It is preserved in the Vallicella Library and was kindly shown to me by Dott.ssa Sellaris Jessurum. Older references to Spada's museum include: G. Incisa della Rocchetta, "Un dialogo del p. Virgilio Spada sulla fabbrica dei Filippini", *Archivio della Società Romana di Storia Patria*, XC, 1967, p. 193; F. Borromini, *Opus Architectonicum*, Rome, 1725, ch. XXVIII; Connors, *Oratory*, p. 152; Bellori, p. 32.

<sup>26</sup> Martinelli, *Roma ex ethnica sacra*, p. 250.

specimens of petrified wood. There were several ostrich eggs, giant lobster claws, two rhinoceros horns, twelve fossils, and 47 mollusc shells including the triton and the nautilus. His 40 instruments included various lenses, concave and cylindrical mirrors, an armillary sphere with allegorical figures, solar watches and astrolabes, nautical quadrants, celestial spheres, a brass pantograph and a telescope. The hundreds of architectural drawings assembled during his career as an administrator were bound into large volumes in his library, some of which survive as the Spada papers in the Vatican.<sup>27</sup> Thus many links existed on a personal level tying together architects and virtuosi in Cassiano's Rome. But on another level it can also be shown that virtuosity and encyclopedic collecting left a stamp on the actual buildings. In the generation of Federico Cesi virtuoso architecture centered around the use of precious and exotic stones in the tradition of the *pietre dure* workshops of grandducal Florence.<sup>28</sup> The Chapel of S. Filippo Neri in S. Maria in Vallicella<sup>29</sup> and the Borghese Chapel in S. Maria Maggiore are two early examples of this Florentine fashion taking root in Rome. In them the spectator could admire the *scherzi* produced by an exuberant Lucretian Nature. This was architecture that Cesi and Cassiano could readily appreciate, not to mention John Evelyn, and chapels and entire churches will continue to be conceived as *metallothechae* down to the time of Bernini and his followers.

But there is another, quite different strain of baroque architecture that can also be considered a product of virtuosity. This is an architecture that is numismatic, optical, natural and intricate. It takes wing in the second quarter of the Seicento and is best exemplified in the work of Borromini and Martino Longhi the Younger. It is the perfect mirror of the culture of curiosity.

First, a numismatic architecture is one in which the antique was studied in coins and *Kleinkunst* as well as on the site. Manfredo Settala's catalogue says that the magnanimity of ancient architecture could best be studied in coins, which could also show how Gothic and Lombard architects overtook architecture *all'antica* but were then themselves overtaken by the revival of antiquity.<sup>30</sup> Coins taught a new kind of audacity in the reconstruction of ancient monuments, as well as in modern design. For example, Martino Longhi the Younger's facade for Mazarin's church of SS. Vincenzo ed Anastasio at the Trevi Fountain used so many clustered columns that even contemporaries thought it was a little overloaded. But in fact Longhi seems to be reaching back to antiquity, as filtered through coins, where a common convention is to show the columns of a temple front clustered on the sides in order to reveal the cult image within (Fig. 2). Longhi's columns frame the cardinal's arms and seem to proclaim, in tones of deep Roman gravity, the presence of *Mazarin tonans*. Cassiano could have gone to see the new facade in person, or he could have studied it at home in the rare print of 1648 which shows all the sculptural decoration intended by Mazarin but never carried out, a copy of which has just turned up in the Cassiano print volumes in the British Library (Fig. 3).<sup>31</sup>

<sup>27</sup> Francesco Ehrle, "Dalle carte e dai disegni di Virgilio Spada (d. 1662) (Codd. Vaticani lat. 11257 e 11258)", *Atti della Pontificia Accademia Romana di Archeologia*, Ser. III, Memorie, II, 1928, pp. 1-98.

<sup>28</sup> Annamaria Giusti, ed., *Splendori di pietre dure: l'arte di corte nella Firenze dei Granduchi* (exh. cat.), Florence, 1988; and Napoleone (1989).

<sup>29</sup> G. Incisa della Rocchetta, "La Cappella di San

Filippo alla Chiesa Nuova", *Oratorium. Archivum Historicum Oratorii Sancti Philippi Neri*, III, 1972, pp. 46-52.

<sup>30</sup> Terzago, ed. Scarabelli, *Museo ... Settala*, pp. 295 ff.

<sup>31</sup> J. Connors, "Alliance and Enmity in Roman Baroque Urbanism", *Römisches Jahrbuch der Bibliotheca Hertziana*, XXV, 1989, p. 241, fig. 38, which shows a damaged copy of the print in Avery Library of Colum-



2. Coin showing temple of Jupiter Tonans.

Second, baroque architecture is an optical art. "I resolved to deceive the sight of the passerby" (*ingannare la vista dei passaggieri*) is the way Borromini begins his description of the Oratory facade, alluding to the idea of *inganno dell'occhio* which is part and parcel of the culture of curiosity.<sup>32</sup> The catalogue of Manfredo Settala's collection begins with those clever tricksters, mirrors: curved, cylindrical, burning and multiplying, classified into seven types on the advice of experts in catoptrics.<sup>33</sup> Every lens-grinding virtuoso aspired to have the perfect *specchio ustorio*, the burning mirror that concentrates the sun's rays to make distant objects catch fire, like the mirrors that Archimedes turned against the ships of Marcellus during the siege of Syracuse.<sup>34</sup> Focused and flowing light is a hallmark of baroque architecture. It is used by Cortona in projects of the 1630s, by Borromini in the dramatic light-boxes over the doors of the Oratory in

bia University. An undamaged copy is preserved in the dal Pozzo volumes of prints in the British Library (King's Library 134.g.11., fols. 22 and 23; the provenance of the volume is identified in Griffiths). The last lines of the inscription, preserved only in the British Library copy, read: "Prior, et Pres. eiusdem Eccl.æ in animi grati symbolum / imprimenda curarunt Anno

1648. / Scala di palmi trenta Romani / Dominicus Barrière incidit."

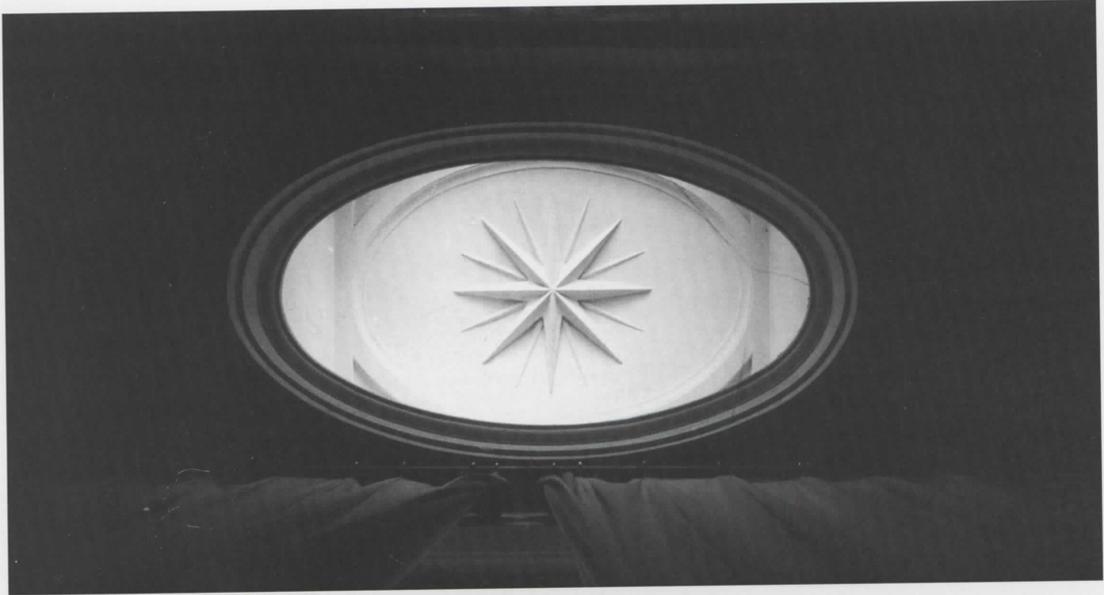
<sup>32</sup> Borromini, *Opus*, ch. VII.

<sup>33</sup> Terzago, ed. Scarabelli, *Museo ... Settala*, chs. 1 and 2.

<sup>34</sup> Bonaventura Cavalieri, *Lo specchio ustorio ovvero trattato delle settioni coniche*, Bologna, 1632.



3. Domenico Barriere, Print of the facade of SS. Vincenzo ed Anastasio in Rome, 1648 (British Library, King's Library 134.g.11., fols. 22 and 23).



4. Francesco Borromini, Oratorio dei Filippini, detail, 1637.

1637 (Fig. 4), and by Bernini in the Cornaro Chapel of 1645. Then it takes a curious turn in the high altar of S. Ivo, which Borromini finished in 1659-60. Morning light entered through an eastern window (now blocked), where it was reflected by steel mirrors down through an oval aperture, where it spread its glow over the altarpiece of S. Ivo, the saint who died on Pentecost amidst miracles of illumination. This delicate architectural instrument was closed up in 1804, but a print of 1720 gives some idea of the effect of flowing light.<sup>35</sup>

Settala also had multiplying mirrors which, with typical virtuoso wit, are said to turn a few coins and gems into vast treasures, accumulated without toil, enough to torture any miser. When flowers were multiplied in such mirrors they become gardens:

“Flowers turn into rich gardens, and the blossoms have no other life than a life in glass, they show themselves in their lucid fragility superb demonstrations of their brief life.”<sup>36</sup>

What these mirrors teach is “la regola di essere piacevolmente ingannato”. These apparently frivolous aesthetics derive from the serious work in catoptrics of an earlier generation of Minim monks shuttling back and forth between the Place Royale in Paris and the Trinità ai Monti in Rome. The book of 1638 by Jean François Nicéron, *La perspective curieuse*, is a study in applied mathematics and perspective in the service of what the author calls natural magic. The aim is to produce pleasant deceptions:

<sup>35</sup> Del Piazzo, *Ragguagli borrominiani*, p. 227: “si discorse di farvi splendore in guisa della cappella di Santa Teresia”; and p. 228: “Che per lumi alla tribuna, voleva metter alcuni specchi o acciari che con il riflesso farebbero effecto essendo ad oriente”.

<sup>36</sup> “Se fiori, ecco campeggiare fioritissimi Giardini, i cui fiori non havendo altra luce di vita, che quella de’ vetri, dansi à vedere anche nel seno d’una lucida fragilità superbi ostentatori della caduca lor vita.” Terzago, ed. Scarabelli, *Museo ... Settala*, p. 11.





6. Francesco Borromini, Tulip fountains in the Casa dei Filippini, 1639.



7. Francesco Borromini, Column in the staircase vestibule of the Casa dei Filippini, 1643.

“un agreable divertissement, et qu'on se laise tromper de la sorte avec contentement”.<sup>37</sup> It shows how to use anamorphic perspective, cylindrical mirrors and faceted lenses to multiply coins and medals, pearls and jewels until they assume the appearance of infinite treasures:

“Is it not beautiful to make an army appear, by means of these mirrors, where before there was just a single man? or a long colonnade and a well-ordered building, by reflecting a column or some other piece of architecture in a mirror? Is it not to become rich at no expense?”<sup>38</sup>

The place where Minim optics and architecture intersect is the Palazzo Spada in Rome.<sup>39</sup> The owner, Bernardino Spada, was the cardinal protector of the Minims. After his brief diplomatic career in Paris he retired to 30 years of tinkering with the palace by installing various perspectival and astronomical curiosities. In 1640-42 he had the architect Paolo Maruscelli paint an illusionistic perspective on the garden wall, which was changed in 1653 to the famous three-dimensional *prospettiva* built by Borromini's shop

<sup>37</sup> Jean François Niceron, *La perspective curieuse ou magie artificiele des effets merveilleux*, Paris, 1638, p. 101.

<sup>38</sup> “N'est-ce pas une belle chose de faire par le moyen des miroirs, paroistre une armee ou il n'y aura qu'un seul homme? ou bien un long ordre de colonnes & un

edifice bien ordonné, en opposant au miroir une seule colonne, ou quelq'autre piece d'architecture? N'est-ce pas devenir riche à peu de frais...?” Niceron, *Perspective curieuse*, p. 77.

<sup>39</sup> L. Neppi, *Palazzo Spada*, Rome, 1975.

on the designs of an Augustinian monk, Giovanni Maria da Bitonto. Here the "regola di essere piacevolmente ingannato" is used for moralizing effect. The "epigrametto morale" originally painted over the colonnade told the visitor that if he explored the gallery he would find its length illusory, just as all worldly *grandezza* is an illusion.<sup>40</sup> Rewriting Nicéron, we might say, "N'est-ce pas devenir sage à peu de frais?" Another optical refinement was designed at the Palazzo Spada by the Minim mathematician Emanuel Maignan in 1644 and illustrated in his book, *Perspectiva Horaria*, in 1648. This was a gallery where the sun entered through a lens and a mirror and was reflected onto the vault, where it told the time and gave its position in the zodiac (Fig. 5). As an inscription says:

"If there is anything new in the world, anything old in the city, you will see a noble exemplar of it in this palace. When you see various marvels in other houses, you will say, O what riches of the Orbs and the Urbs! Here, where the sun itself shall be seen for many hours, and trace its path with shining light, go and say, Who has been able to bring the sun itself down from heaven? O what a prodigy is this of genius and of art!"<sup>41</sup>

Not without a barb at Giustiniani and his unmatched gallery, or the Farnese and their unattainable wealth, the inscription proclaims the triumph of the virtuoso, who can compete because he is clever enough to bring the sun itself into his cabinet.

Third, baroque architecture is natural architecture *par excellence*. It is indebted to the most exuberantly naturalistic strains in ancient architecture. The classical motif of the "peopled scroll", where birds, lizards and other *animaletti* scamper around vine rinceaux, occurs frequently in Borromini's decoration, as do columns and capitals of a Flavian richness of surface.<sup>42</sup> Montano taught an exuberant antiquity. "La veneranda antichità ... nella natura feconda."<sup>43</sup> When he read Montano in Cassiano's house Borromini may have absorbed something from the surroundings as well as from the manuscripts. In the years of the tulip craze he designed two *lavamani* or hand-washing fountains in the shape of huge tulips, where the flower stores water and four drooping petals act as basins, while tiny birds, lizards and bees were cast on the surface of the bronze water spouts (Fig. 6).<sup>44</sup> The Falconieri family had as its coat of arms a falconer's perch in the form of a checkered ladder, but Borromini introduced the idea of using the falcon itself as part of the decoration of the palace, sharp-beaked and hawk-eyed, an unmistakable bird of prey, enough to make a Cassiano or an Olina shudder for the safety of the *uccellini* in their charge.

A deeper naturalism pervades Borromini's use of the orders. If the old concepts of a fixed number of species were giving way before the vast numbers of exotic new plants and animals flooding into the gardens and menageries of the city, why should the number of architectural orders remain fixed for all eternity? "La Natura, quale dobbiamo

<sup>40</sup> Neppi, *Palazzo Spada*, pp. 280, doc. 37.

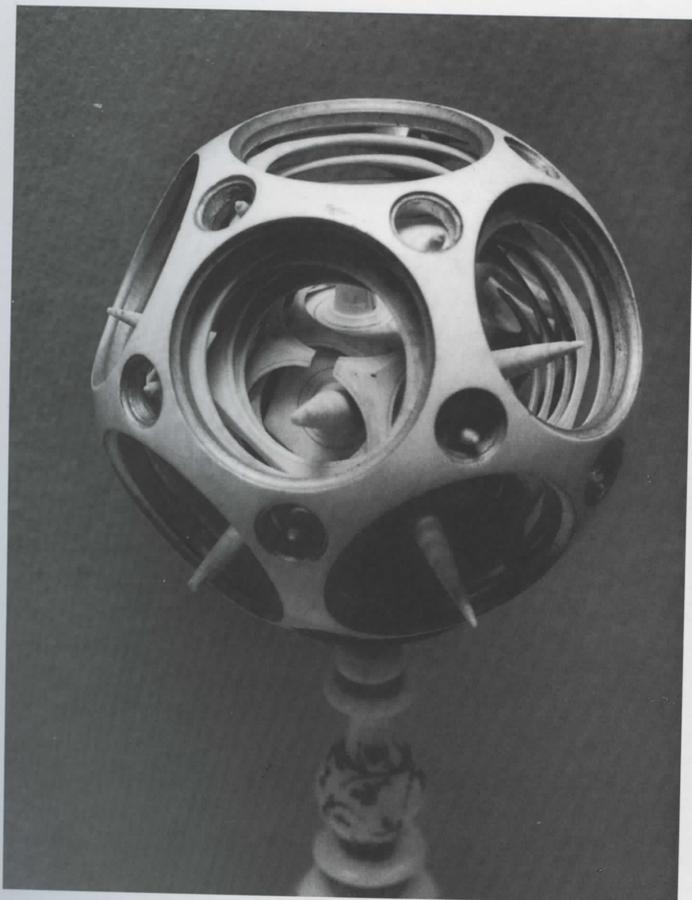
<sup>41</sup> "Si quid in Orbe novum, si quid sit in Urbe vetustum, / Huius in hac specimen nobile cerne domo. / Dum diversa aliis miranda videbis in aulis: / O quales, dices, Orbis et Urbis opes! / Hic ubi diversas Sol ipse videbitur horas, / Et signare suam luce vibrante viam: / Dic, age, quis potuit Solem deducere coelo? / O quale est istud mentis et artis opus!" E. Maignan, *Perspectiva Horaria*, Rome, 1648, p. 396; Neppi, *Palazzo*

*Spada*, p. 190.

<sup>42</sup> J. M. C. Toynbee and J. B. Ward Perkins, "Peopled Scrolls: A Hellenistic Motif in Imperial Art", *Papers of the British School at Rome*, XVIII (N.S. V), 1950, pp. 1-43 (reference courtesy of Richard Brilliant).

<sup>43</sup> G. B. Montano, *Architettura con diversi ornamenti cavati dall'antico*, Rome, 1636, preface by Calisto Ferrante.

<sup>44</sup> Connors, *Oratory*, fig. 87.



8. *Contrefaitkugel*, Museo degli Argenti, Florence.  
 9. Ivory turnery, Museo degli Argenti, Florence.

imitare”, was a more encouraging master than the usual architectural textbooks. A revealing example of Borromini’s mentality is found in his brief description of the four columns in the staircase vestibule of the Oratory (Fig. 7). Ancient columns had been discovered in the foundations but were a little short. The defect was remedied by inserting travertine bases cut in the form of leafy tufts under the columns. Borromini had often seen this “bizzaria” in ancient models, but here it had the effect of making the whole order look like it was sprouting (“par che nascono le colonne”), like a plant with leafy base, stalk and flower.<sup>45</sup> In the Falconieri altar in S. Giovanni dei Fiorentini the columns also sprout from flowery bases, but now bear strange palmette capitals that derive from no known order, which in turn support a pediment where pomegranates and other fruit hang from the soffit, ripe for plucking. The theme of both the altar and of Orazio Falconieri’s testament endowing it is the immortality of the family, and to symbolize it Borromini invented an unheard-of new species of giant flower, petrified in

<sup>45</sup> Borromini, *Opus*, ch. XI.

exquisite stone, what a virtuoso would call a "nuova specie di mezana natura fra le piante, e metallie del legno".<sup>46</sup>

Borromini's view of the natural world seems to have been influenced by the father of allegorical botany, Giovanni Battista Ferrari.<sup>47</sup> It has been recently shown that his great export piece, the Filomarino Altar in Naples, was designed around Ferrari's *conchetto* of the amaranth, the never-fading flower, as the symbol of the immortality of the Filomarino family, whose very name was read (*via* a Greek etymology) as a symbol of immortality.<sup>48</sup> Ferrari also left his mark on S. Carlo alle Quattro Fontane, which should have been the most austere of *Scalzi* churches but which instead became one of Borromini's most floreate creations. The Trinitarian prior, Fra Juan de la Anunciacion, was Francesco Barberini's confessor, and must have crossed the Barberini gardens many times on his way to see the cardinal in the family palace on the other side of the Quattro Fontane. He brought back with him a touch of Barberini floral culture. The early plans for the church all show a small garden with parterre patterns close to those on Ferrari's plates.<sup>49</sup> And when the prior wanted to tempt Francesco Barberini to assume more responsibility for the financing of the church, he had Borromini build the Barberini Chapel, rich in both blossoms and bees. A flowering garden that awaits the bees was the emblem of Barberini literary patronage.<sup>50</sup> Fra Juan tried to use floral imagery to tempt the Barberini to alight on his church, but aside from kind words and small favors they never really smiled on S. Carlino, which remained a small church with great expectations.

Baroque architecture is numismatic, optical, and natural, but it is also very intricate. Architects like Borromini prided themselves on their art of *modinature*, the wonderfully expressive mouldings full of delicate curves and countercurves designed around complex geometrical templates. The minor members of his buildings can be quite complex, but so are the larger plans. S. Carlo alle Quattro Fontane is a shell within a shell, a screen of columns set inside a quatrefoil plan that itself is moulded to fit inside the box of the outer walls.

Intricacy has an honored place in virtuoso culture, best represented in the curiosity cabinets by pieces of ivory turned on the lathe.<sup>51</sup> *Kunstdrechselei* is an art of extreme delicacy. Ivory is reduced to elfin thinness and shaped in concentric hollow globes called *Contrefaitkugeln* inside of which one might find a many-pointed star or a well-turned urn (Fig. 8). They stun the spectator who cannot believe that they are carved from a single piece. Mouldings are multiplied beyond all limit and deeply undercut.

<sup>46</sup> Letter of Federico Cesi of 1 December 1624 describing fossil wood, in BIM, MS. H 170, fols. 8v-10r. See Solinas (1989d), p. 92.

<sup>47</sup> G. B. Ferrari, S.J., *Flora overo Cultura di fiori*, Rome, 1638, especially pp. 454 ff., 484-91, and 395-407.

<sup>48</sup> Bartholomaeo Chioccarello, *Antistitium Praeclarissimae Neapolitanae Ecclesiae Catalogus*, Naples, 1643, pp. 370-73; Sebastian Schütze, "Die Capella Filomarino in SS. Apostoli: Ein Beitrag zur Entstehung und Deutung von Borrominis Projekt in Neapel", *Römisches Jahrbuch der Bibliotheca Hertziana*, XXV, 1989, pp. 295-328.

<sup>49</sup> Albertina 171-173.

<sup>50</sup> Silvester de Pietra Sancta, S.J., *De Symbolis Heroicis*, Antwerp, 1634, p. 328, with the motto "Expectat Apes".

<sup>51</sup> Kirsten Aschengreen-Piacenti, "Documented Works in Ivory by Balthasar Permoser and Some Documents Related to Filippo Sengher", *Mitteilungen des Kunsthistorischen Instituts in Florenz*, X, 1963, pp. 273-85; Idem, "'Beschreibung einer von Helffenbein Gedrehten Kunststücks ... beneben desselben geistliche Bedeutung' von Markus Heiden, 1640", *Anzeiger des Germanischen Nationalmuseums (Nürnberg)*, 1964, pp. 82-98; Dorothea Diemer, "Giovanni Ambrogio Maggiore und die Anfänge der Kunstdrechselei um 1570", *Jahrbuch des Zentralinstituts für Kunstgeschichte (München)*, I, 1985, pp. 295-342; and J. Connors, "Ars tornandi: Baroque Architecture and the Lathe", *Journal of the Warburg and Courtauld Institutes*, II, 1990, pp. 217-36.



10. Francesco Borromini, Vallicella Library, detail of balusters, 1643.

Clustered forms are piled high: a many-pointed star inside a globe, then six cubes inside one another, then finally six concentric spheres (Fig. 9). The Keplerian universe, one feels, has been reduced to a play of miniature forms.

The connection between architecture and turning is drawn by the turners themselves. In the first great monograph on the subject, Charles Plumier's *L'art de tourner*, we find the author searching for models of creative freedom and invention, and finding them in baroque architects. In fact, Plumier is the source who tell us about a lost manuscript by Michelangelo, "contenant plusieurs belles leçons d'architecture", which had been in Borromini's possession.<sup>52</sup> And there is some evidence that the influence between architecture and turning was reciprocal. Borromini was familiar with the lathe. He used it to shape the giant balusters which line the shelves of his Vallicella Library (Fig. 10), and thanks to this tool he says he was inspired "ad uscire dagl'ordini d'Architettura".<sup>53</sup> Throughout his work, the mouldings are as complex and as deeply undercut as the contours shaped by turners on wood and ivory. And finally, when Bernini was asked to give his opinion about Borromini, he drew his imagery from the world of turning. Bernini said that Borromini was the only man in Rome who understood architecture, but that he was never satisfied, and that he wanted to hollow out one thing inside another, and that inside another, without ever coming to an end ("voleva dentro una cosa cavare un'altra, e nell'altra l'altra senza finire mai").<sup>54</sup> With a mixture of annoyance and perception the great sculptor hit upon the image of a *Contrefaitkugel* to characterize the mind of his virtuoso rival.

The young man who studied Montano and the Codex Coner in Cassiano's house went on to invent an architecture that was steeped in antiquity (studied in coins as well as on the site), full of optical refinements and deceptions that caused delight, as exotic as the new flowers sprouting in virtuoso gardens, and as intricately involuted as a well-turned piece of ivory. But it looked rather little like the architecture in the backgrounds of Poussin's paintings. Cassiano could only shake his head at what was happening around him. Carlo Dati makes him say that it was the great disgrace of the age to allow the whim of a few architects who wish to break away from the antique to bring architecture back to barbarism. This was not the way of Brunelleschi, Buonarroti, Bramante, Serlio, Palladio, Vignola and the other restorers of this great art.<sup>55</sup> Possibly this is just the classicizing Tuscan, Dati, making Cassiano sound much more grouchy about contemporary architecture than he really was. But what matters most is that Borromini and a few others saw the creative potential of the virtuoso cabinet and made a living architecture out of it.

<sup>52</sup> Charles Plumier, *L'art de tourner en perfection*, Paris, 1749, p. 139.

<sup>53</sup> Borromini, *Opus*, ch. XXVIII.

<sup>54</sup> J. Connors, "Borromini's defence of Virgilio Spada", *Burlington Magazine*, CXXXI, 1989, p. 87.

<sup>55</sup> Dati (1664), unpaginated: "Onde mi sovviene d'averlo per tal cagione più volte udito esclamare, Gran vergogna dell'età nostra, che quantunque sempre rimiri si belle idee, e norme tanto perfette negli edifici vetusti, tuttavia permetta, che per capriccio

d'alcuni professori, i quali si vogliono dipartir dall'antico, l'architettura alle barbarie faccia ritorno! Non così fecero il Brunellesco, il Buonarroti, Bramante, il Serlio, il Palladio, il Vignuola, e gli altri restauratori di sì grand'arte, i quali dalle misure delle fabbriche Romane trassero le vere proporzioni di quegli ordini regolatissimi, da cui niuno giammai s'allontanò senz'errore". See Haskell (1963), p. 103; and M. Vigilante, "Carlo Roberto Dati", *DBI*, 33, 1987, pp. 24-8.