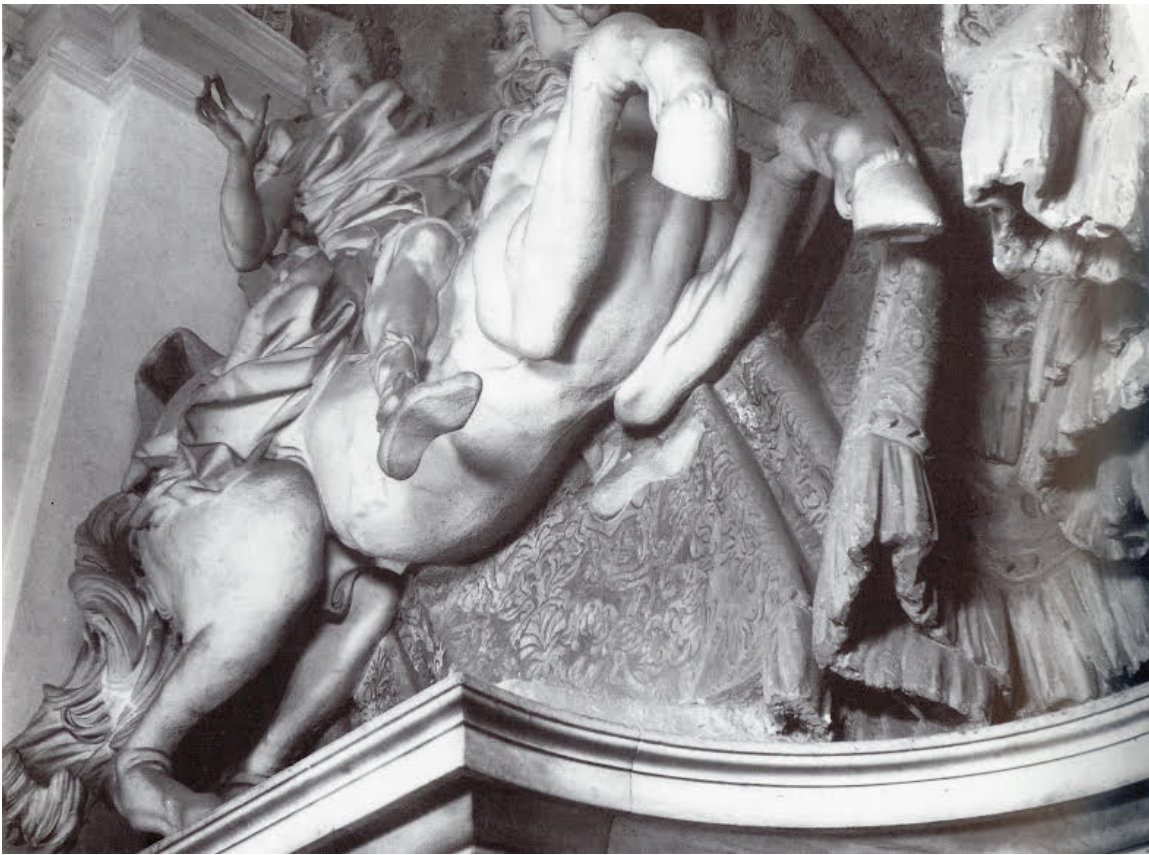**How large was the size of the block of marble used for Bernini's *Constantine*?**
Franco Mormando, Boston College, June 29, 2016

[Bernini, Vision of Constantine*, St. Peter's, side view, from Marder, 1997, plate 22]*

Domenico (orig. p. 107) says that the single block of stone was the equivalent of thirty *carrettate*. Normally Domenico's account of things tends toward exaggerations that enhance his father's reputation, but in this case, his description may have instead been an under-estimation. Before entering into details, it must be mentioned, as I have already mentioned in my note (Domenico, p. 366, n. 19), that no one seems to have published anywhere the precise dimensions of the actual finished statue, so until those are known, any discussion of the issue is not final.

Be that as it may, the *carrettata* (or *carrata*) is a unit of <u>volume</u>, rather than of weight but in my note, I attempt an answer to the question of the block's size by estimating the <u>weight</u> of the original block -- based upon estimated dimensions of

the finished statue and the known <u>average</u> density of Carrara marble. Based on this estimated weight, the original block of marble would appear to have been much larger than the 30 *carrettate* claimed by Domenico (probably based on what he heard from his father).

As I also mention in my note -- and as Klapsich-Zuber 1969, 69-73 reports -- the size of the *carrettata* actually varied in size over time and space in early modern Italy. Klapsich-Zuber's statistics stop at the year 1600, the last figures she gives being those specifically for the year 1594 for Genoa where the *carrettata* reached 28 and 30 cubic palmi. So the question is: what size was the *carrettata* in Bernini's Rome? In estimating the size of the *Constantine* block, Lavin ("Bernini's Image of the Sun King," 1993, p. 294, n. 65) appears to have taken his information about the conventional size of the *carrettata* from the 1981 handbook, *Italian Weights and Measures from the Middle Ages to the Nineteenth Century,* compiled by Ronald E. Zupko (not "Zupke," as in Lavin): In his *Italian Weights,* p. 85 (entry "carrata"), Zupko gives the *carrettata* simply and without qualification as the equivalent of 25 cubic *palmi* (and note that Zupko, idiosyncratically, uses the measure of <u>decimeters</u> – not the more conventional <u>centimeters</u> – in converting 25 cubic *palmi* into metric system dimensions, to wit: "362.436 cu dm."). But was that truly its measure in the mid-17th century when the marble was ordered for Bernini's *Constantine*?

Further complicating the question of the size of the original marble block is the report by Tod Marder (*Bernini's Scala Regia at the Vatican Palace*, 1997, pp. 166-67) about the contract given to Roman stone supplier Filippo Frugone: it specifies the delivery of <u>two</u> blocks of stone to be used for the Constantine commission, one larger than the other. But there is no indication anywhere that the Constantine was carved from two separate blocks; perhaps the second block was never used.

But we return to the question: what size was the *carrettata* in Bernini's Rome? Marder does not address the question, so we do not know if it is specified in any of the documents pertaining to the Constantine commission that he cites in his text. (Marder does not reproduce the text of the contract or his list of expenses of

the Fabbrica for the period in question, nor supplies further details about the marble contract or cost or size.) However, in a later contract (1706) made with the same Roman stone supplier Frugone for the statues for the tomb of Pope Alexander VIII in St. Peter's Basilica, it is specified that the *carrettata* of marble would measure 30 cubic *palmi* (Edward J. Olszewski's *Cardinal Pietro Ottoboni [1667-1740] and the Vatican Tomb of Pope Alexander VIII*, 2004, p. 271).

One *carrettata* in Bernini's time was, therefore, most likely of the same size, i.e., 30 cubic *palmi* (not 25 as in Zupko), as indeed Olszewski reports it as in his footnote to the aforementioned contract. To convert that size to the modern metric system, one must recall that a *palmo romano* = 22.34 cm. For those who have forgotten their high school geometry, here's a refresher on how to convert cubic centimeters to cubic meters: https://www.youtube.com/watch?v=Ye6yPRwCyMU (Note that a cubic centimeter is one-millionth of a cubic meter.) So the equation is: 22.34 cm x 22.34 cm x 22.34 cm / 1,000,000 = 0.0115m^3. Converting that volumetric measure into one of weight (based on the average density of Carrara marble given in my original Domenico note) we learn that one *carrettata* must have weighed about one ton.

The conclusion to this story? None, until we get more information (i.e., exact dimensions of finished *Constantine* and exact dimensions of the *carrettate* delivered to Bernini) except to say (again) that Domenico underestimates the size of the Constantine block. (And, by the way, the *Constantine* and the *Louis XIV Equestrian* statues seem to be of approximately the same size, comparing my estimate of the Constantine -- in my aforementioned note to Domenico -- with the exact dimensions given for the *Louis XIV* supplied by Lavin, "Bernini's Image of the Sun King," 1993, p. 294, n. 65.)

Finally, I have thought that my estimate for the depth of the original block used for the Constantine (i.e., 1.5 meters) was too small, but Marder's photograph (shown above) of a side view of the "relief" reveals the statue to be more shallow indeed in its depth than one would expect seeing it from the front. Once again, Bernini succeeds in fooling us with his clever optical illusions. Very baroque!