How did Leonardo Perceive Himself? 
Metric Iconography of da Vinci’s Self-Portraits

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Abstract
Some eighteen portraits are now recognized of Leonardo in old age, consolidating the impression from his best-established self-portrait of an old man with long white hair and beard. However, his appearance when younger is generally regarded as obscure, although he was described as very beautiful as a youth. Application of the principles of metric iconography, the study of the quantitative analysis of the painted images, provides an avenue for the identification of other portraits that may be proposed as valid portraits of Leonardo during various stages of his life, by himself and by his contemporaries. Overall, this approach identifies portraits of Leonardo by Verrocchio, Raphael, Botticelli, and others. Beyond this physiognomic analysis, Leonardo's first known drawing provides further insight into his core motivations. Topographic considerations make clear that the drawing is of the hills behind Vinci with a view overlooking the rocky promontory of the town and the plain stretching out before it. The outcroppings in the foreground bear a striking resemblance to those of his unique composition, 'The Virgin of the Rocks', suggesting a deep childhood appreciation of this wild terrain. and an identification with that religious man of the mountains, John the Baptist, who was also the topic of Leonardo's last known painting. Following this trail leads to a line of possible self-portraits continuing the age-regression concept back to a self view at about two years of age.

Introduction
How did Leonardo perceive himself? As formulated, this question should be addressed on two levels; in terms of physical appearance and in terms of character. Addressing the former should be expected to shed light on the latter. The approach of this paper is to follow the evidence of the image structure to determine which portraits be Leonardo and his contemporaries may reasonably be identified as those of the master himself, and then to use this corpus to analyze aspects of his character and his perception of himself as a player in the Renaissance world in which he was such a dominant figure.

Fig. 1. Leonardo's red chalk self-portrait (~1515). A rotated version of this self-portrait is provided here to give an additional view of Leonardo's physiognomy. (Created in Morpheus Photomixer. © C.W. Tyler 2010)
Although a great deal is known of Leonardo’s activities, much less is known of his character. Vasari (1550) describes him as being of "great strength and generosity" and having a "regal spirit and tremendous breadth of mind" but, however complimentary, these leave us with little understanding of his internal motivations. Opinions vary as to how many portraits of Leonardo exist. The red chalk portrait of an old man in the Milan collection of Leonardo’s papers (Fig. 1) is the only one acknowledged by Kenneth Clark, a foremost art authority. Even this identification has been questioned, as appearing older than his early sixties, which are the latest that it could have been drawn (since he left for France at age 63), and thus perhaps a portrait of his father Ser Piero da Vinci or his uncle Francesco. These doubts may be resolved by the fact that he was described by contemporaries as looking ten years older than his actual age, matching the appearance of the portrait.

There is widespread speculation, for example, that he was homosexually inclined, based partly on the Florentine court records of 1476 showing that he and three other young men were charged with sodomy. However, all were acquitted, and the motivation has been proposed to be professional jealousy rather than actual homosexuality. Leonardo’s own notebooks describe his ironic affection for his young assistant Gian Giacomo Caprotti da Oreno, whom Leonardo nicknamed ‘‘Salai’’ (‘‘the dirty imp’’). Leonardo drew young men, but he also drew old men and young women with equal power. Some of his most compelling portraits, in fact, are of beautiful young women. He also painted erotic pictures of women, notably an evocative ‘‘Leda and the Swan’’ that exists in the form of several copies. He is also reputed to have painted erotic versions of the Mona Lisa and of Mary Magdalene. These works seem to balance the accusations of homosexuality and leave us with an almost completely inconclusive assessment of these deeper aspects of Leonardo’s persona, motivating the search for fuller information through the medium of a corpus of self-portraits.

This paper follows the approach that a fuller examination of the structural and iconographic aspects of the many portraits drawn and painted by Leonardo through his full life may lead to further insights into to his physical view of himself, and in consequence his perception of his own persona. The focus of the treatment is on the details of the facial features in the portraits. Other iconographic aspects that are considered in the remainder of the paintings may be verified by viewing online version of the paintings, which are readily accessible simply by entering the title and artist’s name into an image search engine.

Remarkably, a team of art historians and scientists from Italy’s National Committee for Cultural Heritage headed by Silvano Vicenti, has reached agreement in principle with the French officials responsible for Leonardo’s grave to exhume Leonardo’s remains at the Chapel of St Hubert, in the chateau of Amboise, in order to determine the shape of Leonardo’s skull. The motivation is explicitly to test the hypothesis, that the Mona Lisa may be a cryptic self-portrait by Leonardo, as proposed by art historian Lillian Schwartz and Alessandro Vezzosi, founding director of the Museo Ideale Leonardo Da Vinci in Vinci. If the exhumation goes forward, it will enable the team to compare the dimensions of the skull with those of the head of the Mona Lisa in order to evaluate this hypothesis. Consideration of the many self-portraits identified and integrated in the present paper could substantially enhance this effort, and is likely to ensure a positive result even if it turns out that the Mona Lisa hypothesis is a red herring.

**Contemporary Leonardo portraits**

Even though only one authoritative portrait is recognized, there is an increasing set of portraits purporting to be of Leonardo that are gradually gaining increasing recognition. In a recent book, the curator of the Museo Ideale in Vinci, Alessandro Vezzosi, acknowledges eighteen portraits of Leonardo, although many date as late as the nineteenth century. These latter are obviously derivative from earlier portraits, so it is more interesting to focus on those that are by Leonardo’s contemporaries, with direct knowledge of his appearance. In fact, there are just three known contemporary portraits, one by Leonardo’s loyal pupil, Count Francisco Melzi, one by Raphael (who knew him from Leonardo’s visits to his father Giovanni Sanzio in Urbino), and a newly discovered one by French stained-glass artist Guillaume de Pierre di Marcillat (who had relocated to Arezzo many years earlier, where in fact he was Giorgio Vasari’s master). These three portraits are illustrated in Fig. 2, along with the red chalk self-portrait. The latest, by Marcillat, confirms Leonardo’s very aged appearance.
Note that all three of these contemporary portraits are in agreement that Leonardo's nose was straight with a high bridge, somewhat modulating the impression of an aquiline nose from his self-portrait. However, all four portraits agree on the downward tilt of the noise, the long horizontal eyebrows and the long, full and wavy beard, predominantly white in color.

Fig. 2. The best-established contemporary portraits of Leonardo. A. Self-portrait. B. Plato/Leonardo, by Raphael (1510). C. Leonardo by Guillaume de Pierre di Marcillat (1520). D. Leonardo by Francesco Melzi (~1510).

**Metric iconography**

Iconography is the study of the significance of the objects depicted in paintings, either on their own or in relation to the overall theme of the painting. It has played a large role in art history since the time of Vasari (1550) and is a largely qualitative evaluation of the explicit and implicit motifs in paintings. Some aspects of iconography, however, are quantitative, such as the analysis of perspective constructions in relation to the compositional structure. Though not previously recognized, this kind of pictorial analysis may be termed 'metric iconography'. The present analysis incorporates a different form of metric iconography, which is the use of quantitative analysis of facial structure in identifying cryptic portraits and self-portraits in works of art. In its simplest form, this analysis consists of the measurement of the proportional distances between pairs of features in frontal views of faces. At a more sophisticated level, it might include the spatial reconstruction of the 3D structure of the face, and quantification of its quantitative fit in paintings under question.

The result of such iconographic analysis may give deeper meaning to a painting than is obtainable by a purely qualitative examination. For example, it may reveal that the subject of a painting had a strabismic condition of ocular misalignment, as in the case of Rembrandt's self-portraits (Livingstone & Conway, 2004). The geometric reconstruction of vanishing points may reveal how the artist intended to use the perspective construction to guide the eye to regions of importance in the painting. A quantitative match in the proportions of different faces may confirm whether they are plausibly a portrait of a particular person (or a self-portrait of the artist). And so on.

**Leonardo drawings as a theme of self-portraiture**

Leonardo's appearance in middle age and when young is generally regarded as unknown, although he was described by Vasari as of 'outstanding physical beauty'. Application of the principles of metric iconography to take the three-dimensional structure of the depicted objects and figures into account, by measuring 2D features of the figures in matching poses. Three of Leonardo's drawings of men in middle age are compared with the old-age portrait in terms of the height of an array of features (Fig. 3). The Vitruvian Man is a natural choice as a self-portrait, cleaned of his likely beard (Fig. 3B). This is Leonardo's most iconic image, epitomizing the humanism that burgeoned in the Renaissance. (Interestingly, the proportions of the
construction are almost exactly specified by Vitruvius in his 'Ten Books on Architecture', making clear that, although the artistic interpretation is Leonardo's, the core concept came from 1500 years earlier, even before the founding of the Roman Empire.)

Another Leonardo drawing constructed with some care is the one used to illustrate the canonical proportions of the face with which Leonardo much concerned himself – a kind of Vitruvian face (Fig. 3C). It shows the truncated pyramid relationship between the eyes, brows and mouth. Finally, there is the allegorical portrait of a warrior, (Fig. 3D), which has a greater resemblance to the aged self-portrait of Fig. 1. The use of a realistic lion as a breastplate enhances the identification as a self portrait, being a visual pun on his name. Note the broad arched brows and cleft chin in the frontal-pose portraits. The construction lines show the close alignment of the forehead line, eyebrows, nostrils, nose tip, mouth, chin, throat and neck crease. The precision of these alignments is the more remarkable in that these are drawings, not photographs (of course!), so that their accuracy depends on the visual acumen of the artist in question. Notice also the pale-colored irises of the eyes in all four portraits, the downward curve in the mouth with its prominent lower lip, the cleft chin in the two cases where it is visible and the slight bulge in the middle of the nose in all four images but stronger with advancing age. Although the net configuration of the nose could be seen as straight, Leonardo was apparently acutely aware of the details of its configuration.

Alleged portraits of Leonardo as a Renaissance youth

In the case of Leonardo, a 3D model may be available in the form of the statue of David by Verrocchio, the pre-eminent artist and craftsman in the Florence of his time (the 1470s). The statue is indeed strikingly beautiful and is stated by Vasari to have been modeled on the youthful Leonardo. This claim is not often taken too seriously by art historians (such as the above-mentioned Clark and Vezzosi), but is given plausibility by the fact that Leonardo was well-known as Verrocchio's favorite pupil, and was just the right age for that role. In principle, the fact that it is a 3D work provides views to be compared with any 2D painting. It is particularly valuable in that the expression of the Verrocchio statue is a kind of quizzical smile that flickers between confidence and fear. This paper takes the approach of using this statue as a touchstone for the youthful Leonardo, leading to an integrated picture of numerous speculative and previously
unidentified pictures as portraits of Leonardo throughout his life, including a several new identifications as self-portraits, in addition to several discoveries of putative self-portraits that have been recently publicized.

One puzzling portrait from this era is a portrait of a young man in the Biblioteca Ambrosiana, Milan, originally listed as 'Portrait of Ludovico il Moro' (Ludovico Sforza, Duke of Milan, who was born in the same year as Leonardo), and as painted by Bernardo Luini, one of Leonardo closest adherents. However, a cleaning in 1905 revealed that the sitter is holding a piece of sheet music on which can be seen the letters 'CANT...ANG...' (most likely meaning 'songs of angels'), which would be inconsistent with the identification of the subject as Duke Ludovico, but would fit with the angelic persona attributed to the young Leonardo. Moreover, in Milan, the painting has often been attributed as Leonardo.

We do know, moreover, that Leonardo had a great reputation for being able to play any stringed instrument at first sight, even those that he had never encountered before. Vasari described him as being exceptionally musical: "He gave some time to the study of music, and learnt to play on the lute, improvising songs most divinely." Leonardo played a number of musical instruments including the *lira da braccia* and the lyre and he even designed a silver lyre to play before Duke Ludovico. It was in the shape of a horse’s head which was said to be more resonant and have a more beautiful sound than conventional wooden lyres. Thus, the painting fits with an attribution of being a portrait of Leonardo as a musician, as is further supported by the similarity of the physiognomy in this painting with that of the Verrocchio sculpture (Fig. 4) and the hazel eyes compatible with the light-colored irises in the four drawings of Fig. 3.

The attribution of the musician as a portrait of Leonardo has also been supported by the portrait artist Siegfried Woldhek (2008). In a video essay, Woldhek analyzes 120 depictions of faces in Leonardo's work, and uses an iconographic criterion to exclude most of them, resulting in just three faces that he considers to be plausible self-portraits by Leonardo: the aged self-portrait drawing of Fig. 1, the famous drawing of the Vitruvian man of Fig. 3B and the Milan portrait painting of Fig. 4. Thus, there seems to be strong evidence supporting the identification of the Milan portrait as being of Leonardo, regardless of whether it was painted by Leonardo himself or a contemporary.
But who was the painter? Many candidates have been proposed, from Leonardo himself and his pupils Bernardo Luini or Ambrogio de Predis, to Verrocchio, his master. My own novel suggestion is that it may have been by Botticelli, based on the style and its similarity to the series of other young men in red caps that Botticelli is known to have painted at around that time. The assumption is that Leonardo would have taken the painting with him when he moved to Milan because it was his own portrait, explaining why it did not end up in the Uffizi with the other Botticelli portraits. However, for the present purpose, the question of the artist is not especially relevant as long as it is agreed that it is a portrait of Leonardo as a young man.

An even younger portrait of Leonardo is mentioned by Vasari: the figure of Tobias in the paintings 'Tobias and the Angel' by Leonardo's master, Verrocchio (although this is sometimes attributed to Verrocchio's workshop rather than the master himself). Again we see a young man with long blond curls, a straight nose, full lips and broad arched eye-brows, only this time he is about 14 years of age. Vasari's attribution to Leonardo has apparently been dismissed by the art-historical community, but the age of Leonardo when he began his apprenticeship with Verrocchio matches that of Tobias in the painting.

![Fig. 5. A. 'A Tuscan View' (view of the Montalbano valley from Vinci to Empoli). Leonardo (dated 1473, Uffizi, Florence). B. 'Virgin of the Rocks'. Leonardo, 1495-1508, National Gallery, London.]

**Self-identification as John the Baptist**

We can glean something of what was most important to Leonardo from the pictures that he chose to transport to France when he relocated to the French Court at Amboise. These were the Mona Lisa, the Madonna and Child with St Anne, and a painting of John the Baptist in the wilderness. All three are likely to have referred to his youth. The first two may have referred to his family situation (Freud, 1910), with his birth mother Catarina living in the hills and his stepmother bringing him up at home, while the John the Baptist most likely referred to his youthful experience in the hills around Vinci. From the Merejkowski (1918) biography we learn that Leonardo was suckled as a baby by a goat bought for the purpose because his mother Caterina had dry breasts, probably because she was shamed by having been spurned in marriage by his father, Ser Pietro da Vinci (after he had taken the full period of a six-month grouse hunting vacation to seduce her). As an illegitimate child, Leonardo spent much time away from school in the rocky hills behind Vinci and was a kind of wild goat, or John the Baptist figure, himself.

The terrain around Vinci is strikingly rocky, as can be seen from Leonardo's drawing of the region when he was age 21, held by the Uffizi (Fig. 5A). Vinci juts out on a rocky promontory at the right of the drawing, while a large pile of rocks capped by a horizontal pediment forming a kind of natural arch dominates the
scene at the left. Vertical pillars of rock are arrayed in front of this geological edifice. Remarkably, no art critic seems to have drawn the parallel between these features and the rocky structures that form the background to his unusual composition of the 'Virgin of the Rocks' (shown in Fig. 5B as the London version completed in 1495, but originally painted in 1483). Once the parallel is pointed out, it seems hard to gainsay it, since the structure of the rocks is so similar to those in the drawing, with vertical pillars, horizontal pediments and natural archways. It is particularly noteworthy that Leonardo is the originator of this concept, highlighting in his imitable fashion the contrast between the gentle delicacy of the affectionate grouping and the jagged, unforgiving rocks. And yet there is a resonance between the foreground and background, with the rocks giving the impression of sentinels in a protective cadre.

Leonardo's childhood adventures must be the genesis of his highly original concept of the Virgin of the Rocks, who seems to be Caterina herself (since it is notable that she is cherishing John the Baptist while indicating the divinity of Jesus, a unique switch in the history of Madonnas, who are usually shown as holding Jesus). The paintings draw on a legend of the meeting between the baby Jesus and John the Baptist on the flight into Egypt. Jesus is blessing John, who holds out his hands in a gesture of prayer. In the Louvre version, the angel Uriel points towards John while looking out at the viewer. These attributes clarify the identification of the babies Jesus and John.

Fig. 6 shows four Leonardo portraits in young-to-middle age, all of which appear to be self-portraits. The first two are generally considered to be portraits of his favored assistant Salai. However, the similarity of the features and expression to those of the Verrocchio 'David' from 40 years earlier make a compelling case that there is more to the story. Leonardo was clearly attracted to Salai, and it may be suggested that a basis for this attraction may well have been his resemblance to Leonardo himself when he was young. Moreover, as Oscar Wilde has commented, “Every portrait that is painted with feeling is a portrait of the artist, not of the sitter.” Thus, even if there were differences between the young Leonardo and the assistant, they would have drifted towards a self-portrait by virtue of the difficulty of artists in entirely removing themselves from the pictures of others. Note especially the dimple in the chin, which is evident in the portraits of Figs. 3 & 4.

The one feature that is notably different is the expression of the mouth, which fits with the impish persona of Salai as described in Leonardo’s notebooks. However, the mouth in general is notably labile (pun intended), and it has been remarkable how similar its expression has been in the portraits discussed so far (Figs. 1-4). Clearly Leonardo as the sitter has typically adopted a relaxed, neutral expression and must have had a much wider range of expressions of which the face would have been capable. Perhaps he too had impish moments when one would have to ask whether he looked similar to these two self-portraits. Finally, the ‘John the Baptist’ is one of the three paintings that Leonardo took with him on the difficult journey over the mountains to the French court at Amboise, France in 1515 (at age 63). Does this speak to his affection for Salai, or does it support the case that this reflected his nostalgia for his wild life in the mountains behind Vinci, as expressed in a self-identification with the rough-cast character that is the explicit subject of the painting? The latter interpretation seems the more likely.

The next head is that of ‘Salvator Mundi’ (‘the Savior of the World’), of which the known version is often considered to a copy of the original by Leonardo. The existence of the original is not in doubt, as it was a commission for the King of France, Louis XII, to whom its delivery is fully documented. Vasari’s description of this painting is worth quoting in full, even though he had never seen the painting himself: “In his head, whoever wished to see how closely art could imitate nature was able to comprehend it with ease, for in it were replicated all the minutiae that are capable of being painted with dexterity. Seeing that the eyes had that lustre and watery sheen that are always visible in life, and around them were all those rosy and pearly tints, as well as the lashes, that cannot be represented without the greatest subtlety. The eyebrows, through his having shown the manner in which the hairs spring from the flesh, here closer and here sparser, and curve according to the pores of the skin, could not be more natural. The nose, with its handsome nostrils, rosy and tender, appeared to be alive. The mouth, with its opening, and with its ends united by the red of the lips to the flesh-tints of the face, seemed in truth to be not painted colours but flesh. In the pit of the throat, if one gazed upon it intently, could almost be seen the beating of the pulse. And, indeed, it may be said that it was painted in such a manner as to make every valiant craftsman, whoever he may be, tremble and lose heart.
Fig. 6. Likely Leonardo self-portraits as a young man: Incarnate Angel (drawing ~1514, private collection), St John the Baptist (~1514, Louvre, Paris); Salvator Mundi (1513, Collection of the Marquis de Ganay, Paris); Man with Dog (National Museum, Washington DC).

These words indicate the awe in which Leonardo’s craft was held by his contemporaries (or successors). It is noteworthy that Vasari was a close associate of Michelangelo (who was still alive at the time of writing of the ‘Lives of the Artists’), and is unlikely to have said anything of which Michelangelo would have disapproved. This adulation therefore speaks to the respect that Michelangelo must have had of Leonardo’s oeuvre, despite the common presumption that they were serious rivals.

In terms of the present issue of self-portraiture, the question is whether Leonardo would have explicitly constructed the Salvator Mundi as a self-portrait, or only have unintentionally incorporated his own physiognomy as being the most central concept for ‘the Son of Man’. In either case, the idea that it has elements of self-portraiture implies a greater degree of ‘amour propre’ than is typically attributed to Leonardo. And yet, he was a man with a great certitude of his own artistic gifts and capabilities in all fields of endeavor. Given what he was capable of, and the typical degree to which artists are inclined to leave personal traces of themselves, it would be far more surprising if he had, in fact, painted only one self-portrait. Conversely, it could be considered the height of arrogance to choose the Christ figure as the template on which to construct your self-portrait. On the other hand, Dürer had chosen the same theme for his ‘Self-Portrait at Age 28’, so there may well have been a softening in these attitudes by this time. Moreover, there is a cryptic element in making a self-portrait of oneself at a younger age, since direct comparison with the appearance of the painter is not longer possible by that time (in the way that it would have been in Dürer’s case). Dürer visited Italy in 1505, so it is even possible that the concept of Christ as a self-portrait would have been explicit in Leonardo’s original commission from Louis XII in 1506.

The final portrait, ‘Man with Dog’, is included because its features align with those of the other portraits, particularly the Salvator Mundi, not only in terms of the wide set eyes and the straight Roman nose, but the dimple in the chin and the sparse beard. The identification is suggested by Vogt-Lüerssen (2003). A very similar dog can be found in the painting of ‘Tobias and the Angel’ by Verrocchio and his studio, in which others have suggested that Leonardo painted the dog (although he would have been substantially younger then).

It should be recognized that the first two portraits in Fig. 6 have been previously suggested to be of Leonardo’s assistant Salai, rather than self-portraits. One line of thinking would extend this identification to the other two portraits in Fig. 6, since they share such strong featural similarity with that of the John the Baptist. This is particularly the case with response to the eye-color, which seems to be a similar brown in all
four cases. It seems likely, then, that these four portraits represent the progression of the same person from adolescence to adulthood.

There are two arguments in support of the self-portrait identification, however. One is that the match of the features to those of the Salvator Mundi is extremely close, and Leonardo seems unlikely to have chosen his devilish assistant as the model for the Savior. The other is that Leonardo is described as having found Salai very appealing, and the basis for such visual appeal is a featural similarity with oneself (as is known to have been the case with Caravaggio and his assistant Mario Minniti). Thus, even if the two portraits of Fig. 6A,B are literally of Salai, they may still be expected to have reflected Leonardo’s own appearance when he was a young man. In this case, we would have to view the eye color as being somewhat labile, as is indeed is true for hazel eyes. In strong sunlight they are seen as light-colored while in indoor lighting they may be seen as brownish. It may therefore be suggested that the variation in eye color among these putative self-portraits is attributable to the lability specific to the hazel variety of eye color.

A
B
C
D

Fig. 7. Progression of portraits from youth to manhood: John the Baptist (detail from Leonardo's 'Virgin of the Rocks'); drawing of a youth by Leonardo (detail from the frontispiece of 'Leonardo da Vinci', 1898, Eugene Muntz, curator of the High Renaissance Collection in Paris); 'Tobias', by Verrocchio or his workshop (detail from Tobias and the Angel, ~1475, National Gallery, London); and detail from 'A young musician', painter unknown (Pincoteca Ambrosiana).

The young portraits, extending into infancy (Fig. 7), are based on the continuity with the mid-life series. Vasari mentions the Verrocchio as a Leonardo portrait, and the identification with the musician has already been discussed. Note the masses of curly golden hair in all four portraits, together with the long straight nose and the broad arched brows. In conjunction with the concept of Leonardo's arguable self-identification with John the Baptist, the series in Fig. 7 provide a plausible case that these paintings represent a series in which he either consciously or subconsciously projected back to his appearance at the age of about two.

Conclusion

As a whole, this body of work provides insights into Leonardo as a man and an artist. The contrast between the rough-cut and the graceful seems to be expressed not only in the bittersweet 'Virgin of the Rocks', harking back to his childhood in the hills of Vinci, but also in the 'John the Baptist' of his last years (of which there was another version that Leonardo tellingly converted into a satyr or mountain spirit.) As is well known, John the Baptist was a wild character who wore 'a rough coat of camel's hair, with a leather belt round his waist, and his food was locust and wild honey,' (Matthew 3:4) and yet had a clear view of the future of humanity. This offbeat character certainly seems a fitting biblical correspondence for Leonardo himself, as the artistic figure who effectively ushered in the full spirit of the Renaissance in so many ways, yet somehow found himself a kind of outsider in the culture that he had done so much to create.
References


