

The “Pastel” found: a new Portrait by Leonardo da Vinci?

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Dedication: To my mother Angela Maria Bianchi, mother and irreplaceable teacher, the one who makes me fly.

The *Portrait of a Young Woman in Profile to the Left* (**fig. 1**), which recently surfaced in a private collection, impresses itself from the very first encounter as a work beyond the ordinary, not only for the remarkable high quality of its conception but also because of the distinctiveness of the technical means by which it has been realized. It is with a mixture of surprise, caution and embarrassment that the name Leonardo comes readily to mind and, indeed, takes root with time, removing any possible alternative, beginning with the names of his pupils—not one of whom was capable of attaining this level of accomplishment nor mimicking so accurately and to so high a degree the art of his master. Nevertheless, it is essential to take account of the changes to the piece that have occurred as a result of an old restoration, which is both invasive and, more seriously, deceptive, and which presumably dates from the late nineteenth century. Without compromising the general effect of the work, it does, however, impair its overall legibility.

This portrait is far from straightforward to explain, a state of affairs that results above all from the ambiguity of the work itself, a hybrid creation wavering between drawing and painting, whose original appearance, with its outlines applied “*a secco*”, has to be separated in the mind’s eye from subsequent retouches with the brush in liquid colour. For this reason, it is not surprising that it was mistaken for a nineteenth-century work of the Renaissance revival, associated with the Nazarenes, and sold by Christie’s, New York, ten years ago, with an attribution to the early XIXth-Century German School.¹

Only now has the *Portrait of a Young Woman in Profile* been recognized—firstly by Nicholas Turner, and then by a group of Leonardo specialists, still quite restricted in number, among them

the present writer²—as an astounding, unpublished work by Leonardo, lost to sight for five centuries, and a significant addition to the small corpus of portraits that are given to the artist today. And only now has the historical and critical study of the piece been initiated, in conjunction with its physical examination entrusted to Lumière Technology, a Paris-based diagnostic laboratory that specializes in new techniques of non-invasive, multi-spectral digital photography.

The aim of this preliminary contribution to the subject, which is still fraught with unanswered questions, is not completeness but to put forward a strong proposition—already expressed in the title—which is based on the convergence between the technique employed in the execution of the portrait and what Leonardo himself maintained on the use of such media. It is a thesis that ought to be judged in the light of the technical and scientific analyses that are at the moment underway in order to complete the “clinical record” of the work.

The portrait is carried out almost to life size on a piece of vellum cut into a rectangle, measuring 328 x 238 mm, laid down with copious amounts of glue on to an old oak panel; this vellum support was presumably attached to this backing at some time in the second half of the nineteenth century, perhaps at the same time as the restorations to the work itself. Two old customs’ stamps of Central Customs, Paris, are imprinted on the other side of the panel (*DOUANE CENTRALE / EXPORTATION / PARIS*), telling us that the work was kept in France for a time at some point before the Second World War, before travelling to the United States.

In spite of the insertion of “butterfly keys” to minimize the bowing of the panel, the poor adherence of the skin to the wooden backing has resulted in considerable lifting of the vellum in the upper centre, increasing the losses of pigment in the face and neck. This problem has been exacerbated by the apparent crudeness in the preparation of the parchment and by its mediocre state of preservation, covered by horizontal furrows, with three poorly mended tears along the edges and a fourth on the chin, as is shown in the photograph in raking light (**fig. 5**).

The edges seem untrimmed, with the exception of that to the left, which has been cut crudely: an important clue, on the basis of which one can presume that the leaf was originally contained in a hand-stitched volume and so had been detached from a parchment codex.

Besides the presence of the follicles, the rough unworked surface of the hide and its darkened, somewhat yellowish colour show that the portrait was made on the outer surface of the skin (formerly fur-covered) and not on the inner one covering the flesh, which was aesthetically the superior of the two and commonly used as a support for written documents. This observation opens up the possibility that the verso of the parchment may have writing on it, a point that could be verified were it to be lifted from its present backing in some future (and much hoped for) restoration.

The choice of the skin side was dictated in all probability for technical and stylistic reasons: the porosity and permeability that characterize it would have, in fact, guaranteed a better adhesion to the surface of the “dry” colours, while the yellowish tint of the ground would have provided a more inviting base for the colours of the drawing, reinforcing the lights, in just the same way as a tinted paper does. In any case, one is here dealing with a parchment or part of a recycled codex: one can deduce this from the superimposed numbers visible through the parchment above the central decoration of the costume, which should be decipherable, like others written in pen, such as a very pale inscription visible along the upper border of the sheet and the little winged dragon—at least this is what it seems—in the lower left corner. This feature, too, counts in favour of an attribution to Leonardo, who, even though he has never to our knowledge used a parchment support in his work, was in the habit of re-using the paper on which he wrote or drew.

As far as the *media* used and the subsequent restoration are concerned, the recommendation must be that all the necessary technical investigations are completed to identify the pigments and their binders, so that the materials used in the execution of the work may be clarified once and for all, together with an irrefutable scientific report as to the author of the work, as well as to its restorer. But already the direct examination of the work, extraordinarily strengthened by the multi-spectral, exceptionally high-resolution scanning of Lumière Technology—visible on the computer screen in macro-photographic detail, with the possibility of successive enlargements—and the comparison made by Pascal Cotte, who is already investigating these materials and perfecting his fundamental mapping of the different pigments and restorations, furnish sufficient information to back up our proposition.

Indeed, this multi-spectral analysis confirms that, as originally sketched in, the *Portrait of a Young Woman in Profile* was drawn in black chalk, red chalk and white chalk (*pierre noire*,

sanguine and *craie blanche*), and then finally picked out with the most obviously appropriate graphic medium for the purpose—pen and brown ink.³

Many experimental outlines, *pentimenti* and corrections bear witness to the drawing's complex process of elaboration as well as to the artist's *modus operandi*.⁴ This is unquestionably a strong indication that one is here dealing with an original work, created from scratch (*ex novo*), and not with a copy derived from a pre-existing model that cannot be traced.

The outlines drawn in lightly on the parchment had to make way eventually for the definitive solution of the head, occupying the same relative position on the sheet and having essentially the same proportions, as is suggested by the contour, partly covered by shading, that runs just outside and parallel to the line of the sitter's forehead, nose and neck, and the same applies to the preparatory contour within the neck itself, which is notably smoother and more spontaneous than the final outline, as well as to the preliminary lines around the nape of the neck that were eventually cancelled. The artist then redrew the contour of the face with black chalk, reinforcing it eventually with a delicate line of brown ink, which does not always follow the underlying contour in chalk drawn beneath. Along the lean, but differently modulated line of the profile one can detect numerous "pentiments"—which are more legible in the infra-red reflectographs (**fig. 6**)—corresponding in position to the forehead, the rounded point of the nose, the lower lip, the throat, the neck and the curve of the breast.

The artist has gone over his entire preliminary drawing in pen and brown ink, the strokes of which are touched in with incomparable delicacy, their springiness suggesting the flexibility of line of an engraving.⁵ The superlative quality of this draughtsmanship may be observed in the detail of the eye shaded by the long eyelashes, in the worn pen-work showing the interlacing of her garment—in part, poorly retouched with the point of the brush in black ink, an intervention that is contemporaneous with similar restorations found in other areas of the drawing—as in her hair-do, beautifully modelled through the use of the parchment colour as a mid-tone (in a technique referred to in Italian as "*a risparmio*"), and then finally in the complex, mixed graphic effects of the hair itself, the reading of which has, however, been disturbed by the restorer's numerous retouches with the point of the brush.

The silhouette of the head detaches itself from its neutral background as if it were a bas-relief set on a slab of travertine, thanks to the fine external hatching in pen and ink that reinforces the underlying shading in black chalk: this shading is unequivocally leftwards slanting in direction—from the lower right towards the upper left, or vice-versa, instead of from the lower left towards the upper right—as is found in some other areas of the drawing. The artist responsible for the execution of the portrait was, therefore, left-handed, and this fact alone rates as incontrovertible proof of Leonardo's authorship, since he did not share this very personal peculiarity with any of his major pupils.

As far as the colouring of the portrait is concerned, the variations in the naturalistic polychromy are essentially suggested by the mixing of the three different coloured "chalks" with the surface of the ground—the yellowish, slightly transparent, skin side of the parchment support. In spite of the modifications to its surface caused by subsequent restorations—which Cotte is in the process of demonstrating—the undisturbed transparency of this ground remains fundamentally intact.

The yellow of the young woman's undergarment, the red-brown colour of her leather sleeve, seen at her shoulder showing through the cut in the garment above, and the grey-green of her bodice, originally covered by light passages of shading in red and black chalk, are in fact the result of glazes of watercolour. The coppery-gold colour of the hair is strengthened in hue by the underlying red and black chalk, as well as by the interaction of these materials with the yellow ground, the untouched passages of which function as the highlight that strikes the top of the head and gives it convexity, while the lifelikeness of the flesh tints, also indicated in red and white chalk, is enhanced because these same materials gain in resonance as rendering human complexion by being drawn on this same yellowish ground. In both the original drawing of the young woman's hair and face, the delicate opaque colouring, applied "*a secco*", is subtly changed and intensified as a result of the watercolour retouching in several areas at the time of its restoration, bringing, as it were, a covering of lavish *fin de siècle* cosmetics to the purity of a Renaissance face. These additions can be observed even with the naked eye in the flesh-colour, where the initial, diaphanous tonality can be distinguished from the mawkish rose tint that light up the heavy brushwork in the cheek, in the forehead and in some small areas of the neck, not to mention the touch of "lipstick" on the lips (where the incoherent modelling of the brushstrokes is clearly visible in **fig. 7**).

Close examination of the portrait's surface reveals it is extensively drawn with fine, left-handed shading (slanting from top left to bottom right), which may be seen both with the naked eye and, far more effectively, in the digital scans made under infra-red light (**figs. 1, 3-4, 6**). With parallel strokes of red and black chalk the artist has modelled chromatic harmonies of the flesh across a predominantly cool setting that ranges between pallid rose and violet to the intensity of the shaded areas, reinforced in some passages with pen and brown ink. With abundant use of white chalk the artist has then brightened the flesh and picked out those parts that catch the light. And with precise, masterly strokes, he has picked out the more sharply structured highlights, such as on the outer surface of the eye, the cornea and on the eyelids, details that are well seen in the ultra-violet reflectographs (**fig. 7**).

The areas of the young woman's flesh have suffered rather significant damages. Abrasions and losses—confusingly and only partially integrated by the restorer, whose additions, as has been already pointed out, have strayed into some undamaged areas—are to be found in the uneven parts of the upper eyelid and orbital cavity, on the cheek, the jaw, the chin, the upper lip, and, again, on the neck, the shoulder and the *décolleté*, as is well demonstrated in the false colour infra-red reflectographs (i.e. the yellow areas against a blue background) and in those for inverse false colour (i.e. the blue areas against a red background) (figs. 3-4). The degradation of the media and the interventions of the restorer, which not even the cleverest faker would have known how to achieve, *ex novo*, ought to be considered, in my opinion, as decisive arguments in favour of the authenticity of the work.

In conclusion, the *Portrait of a Young Woman in Profile* is the product of an experiment in mixed techniques, that bring together into partnership the new method “*a secco*” of three chalks with the traditional liquid medium of ink,⁶ and for this union of the two the artist made use of an unusual support of parchment, which, for drawing and some other media, had already been substituted by paper by the end of the fifteenth century, with the notable exception of the niche production of *deluxe* illuminated manuscripts. Thanks to this singular *mélange* of materials and techniques, the artist succeeded in combining the pictorial values of softness and colour with linear decisiveness and a sense of the volume of figurative form.

With this new work, we are therefore at the opposite extreme to what is generally understood as Leonardo's draughtsmanship, namely a practice that was tied either to the creation of a specific

work in another medium or to engage with some cognitive undertaking or research. The portrait that we have before us now, coloured and finished with extreme accuracy in every detail, belongs to another category of drawing: it is autonomous, having been made as a work in its own right, or better still, an exceptionally refined hybrid between drawing, miniature and painting, conceived as a finished work of art in order to decorate some precious manuscript to be placed among the rarities of a private study.

The close physical analysis of the work has reduced, if not completely eliminated, the main doubts that originally weighed down the *Profile of a Young Woman*, including the claims that it was a period copy, or a fake from the late nineteenth or early twentieth century. Overcoming such deceits now opens the way to the recognition of Leonardo's paternity of the work, which may be backed up on the basis of four fundamental arguments: the style and female typology of the sitter; the overall quality of the work; the left-handed execution; and the self-same experimental technique with which the portrait has been realized.

Regarding the first point, I will confine myself to only a few introductory remarks. In my opinion, the hand of a master is indicated in the limpid transparency of the aqua-green iris, in whose small shape is concentrated an ingenious play of reflections that take advantage of the natural colour of the parchment to create this subtle effect. Equally his, excluding of course the subsequent interpolations, are the subtly animated waves of the hair, the movement of which allows the jutting-out form of the ear faintly to be seen beneath its surface and the structure of the face itself, with the well-defined cheekbone, as is also found in the *Head of a Woman, Seen almost in Profile*, a metal-point drawing, datable around 1490–92, in the Louvre (**fig. 9**), which was used for the *Madonna Litta*.⁷ The anatomy of the head, the understanding of its setting in space and its three-dimensionality are impeccable. But then there is another, even more important point to take into consideration: the coherence of the definition of the light and shade of the face, lit from above, with the reflections of colour, the transparent shadows, either coloured or in azurite, and other aspects of the work seem to reflect the artistic theories of Leonardo, founded on the observation of the phenomenal world and expounded in the precepts set out in his *Treatise on Painting (Libro di pittura)*.⁸

Another striking element in favour of Leonardo's hand is the frieze that decorates the border of both her snood and the edge of the slashed cut-out in the shoulder of her bodice. These bring to

mind the celebrated “Vincian knots” in the pages of the *Achademia Leonardi Vinci* at the Ambrosiana (c. 1495) and the intertwining vegetation in the Sala delle Asse, Castello Sforzesco, Milan (1498),⁹ previously seen in the dress of the *Woman with an Ermine* in Cracow and the *Virgin of the Rocks*, in London, which would point to a date for the drawing in the last decade of the fifteenth century. All the same, this should not prevent one from noting the incongruousness of the triangular opening in the sleeve of the young woman’s bodice, which has no apparent parallel in the fashion of the period, where the cuts, either vertical slits in the sleeves or armholes, had the function of puffing out the shirt worn beneath.

In my opinion, it is in the technique of the portrait, however, that the key to the issue of its attribution resides, since one is here dealing with a decisive argument that confirms the authorship and at the same time a determining factor in placing correctly the *Profile of a Young Woman* at a particular moment in Leonardo’s lifetime as well as in his artistic development.

It is precisely the technique *aux trois crayons* that links the portrait in question to a note contained in the enigmatic memorandum in the *Codice Atlantico* known as the “Memorandum Ligny” (fol. 669r): “Get from Jean de Paris the method of dry colouring and the method of white salt, and how to make coated sheets; single and many doubles; and his box of colours; learn the tempera of flesh tones, learn to dissolve gum lake.” In other words, Leonardo was reminding himself to learn from the French court painter Jean Perréal, known as Jean de Paris (c. 1460–1530), the new technique of fine pastel that was still unknown in Italy. Created in France in the mid-fifteenth century by Jean Fouquet, it became established only in the century that followed, with the two Clouets and Holbein, who were the precursors of its great European flourishing during the eighteenth century.¹¹

That the passage of the *Codice Atlantico* refers precisely to pastel, and not to miniature or a *secco* mural painting, is proven by the reference to papers (“*carte*”) and the use of *gommalacca*, gum lake or gum arabic, as a fixative for the friable outer layer of coloured chalks; but also, especially, by some neglected words in the *Codex Forster II* (London, Victoria and Albert Museum, II, fol. 159r). Here the master notes the recipe for producing pastel crayons by binding the powdered pigment with wax: “To make tips [for chalk holders] for dry colouring: [mix] the tempera with a little wax, and it will not rub off, a wax that will dissolve with water, and, having tempered the white, the distilled water will evaporate in steam, and only the wax will remain,

and it will make good tips. But you should understand that the colours must be ground on a hot stone”.¹²

However, the note does not clarify whether the inventor of the first “wax pastels” – whose origins are unknown, as far as I know – was Perréal or Leonardo himself, a genius obsessed with technical problems and passionately fond of trial and error, who could well have reworked the formula taken from his French colleague. That it could be Leonardo is justified by the fact that the sole pastel by Perréal to have come to light so far—a study for the *Portrait of Jean Le Veneur*—was not made with the “tips of dry colouring” mentioned by the Tuscan artist, but with black and red chalk alone.¹³

This was the formula for drawing *aux deux crayons*, or *à demi-couleur*, as it was called at the time, fully adopted by Jean Clouet from 1516 onward—based, it seems, on the example set by Perréal—in the ample group of portraits in the Chantilly album.¹⁴ This is a drawing technique, which together with the *aux trois crayons* used in the *Profile of a Young Woman*, is considered as the origin of the pastel medium in France, since the color effects obtained through natural chalks look forward to those of artificial polychrome crayons. It was also an innovative solution for Leonardo, who had abandoned metalpoint since the early 1490s and was among the first to specialize in the new medium of red chalk, sometimes used contemporaneously with black chalk, but without ever combining the two media in a single drawing.

The passages from the two Leonardo manuscripts leave little doubt that he experimented with this new French-based process. That he passed this on to his students already by 1500 is proved by the precocious pastels of Boltraffio: a *Study for a Female Head* in the Uffizi, preparatory for the figure of the Virgin in the Casio altarpiece (1500), and the two well-known heads in the Ambrosiana (1502).¹⁵ The point here is that a real “pastel” has never been identified among Leonardo’s recognized works.

Indeed, such a work cannot be—as Pedretti already noted¹⁶—either the controversial *Head of Christ* at the Brera, in black and red chalk, confused and transformed by later reworkings, or the cartoon for the *Portrait of Isabella d’Este* of 1500 in the Louvre (**fig. 11**), executed in black chalk with additions in red for the flesh tones and hair, and occasional heightening and touches of ochre chalk on the dress.¹⁷ In the latter, however, the hint of a formula *aux trois crayons*, with

an additional color, presupposes contact with Perréal and the assimilation of his technique. As for the “heads of Christ and the Apostles [in pastel], excellent and miraculous, on paper” recorded by Lomazzo as originals by Leonardo (1584), which continue to be identified as lost evidence of the Florentine master’s use of *crayon*, these are in fact copies made after the *Last Supper* and now in the Museum in Strasbourg (**fig. 13**), executed in the pastel medium by a pupil who may be identifiable, as I have sought to demonstrate, with Gianpietrino.¹⁸

Considered in this context, the discovery of the *Portrait of a Young Woman in Profile*, in which the *trois crayons* technique aims to recreate the colors found in nature with an outcome similar to that achieved by colored pencils, assumes exceptional significance. In this work, I believe, we must recognize the “missing pastel” in Leonardo’s oeuvre, supported by unquestionable circumstantial evidence (the “smoking gun”) and the first evidence of the experimental use of a new graphic process learned from his French colleague.

But there is more. If—as is believed to be the case—Leonardo was the first Italian to know and practice a medium from north of the Alps, the *Portrait of a Young Woman in Profile* would also hold the record for being the incunabulum of pastels in Italy.

When did the fateful meeting between Leonardo and Perréal take place? Establishing the exact date of this would also provide a chronology for the “pastel”.

Gerolamo Calvi (1907), who succeeded in deciphering the “Ligny Memorandum”, argued that there were two possible dates: 1494–95 or 1499.¹⁹ But already in 1895, René de Maulde de La Clavière had used reasoned arguments to reject the hypothesis (still firmly adhered to by some) that Perréal’s first journey in Italy was during the expedition to Naples by Charles VIII of France (1494–95).²⁰ Instead, accounts and contemporary documents provide conclusive proof that he sojourned in Lombardy in 1499, among the retinue of Louis XII, who made a triumphal entry into Milan on October 6th, remaining there until November 7th; the artist is still documented in the city on November 14th.²¹

On the other hand, the prospect of an uncertain future following the fall of Ludovico il Moro and the search for a new patron among the French conquerors provides a logical context for the “Ligny Memorandum”. In fact the *incipit* alludes to an upcoming journey to Naples that Leonardo had planned to make *incognito* with Louis de Luxembourg, Count of Ligny,²²

commander of the French troops in Italy and a prominent patron of the arts: he commissioned Bramantino's *Muses* in the castle of Voghera, and was an admirer of Perréal. The French artist was the author of the metalpoint portrait of the *condottiero* (c. 1500) now housed at Chantilly, which was a probable *modello* for an untraced painting.²³ The close similarity between this portrait and the head of a bearded man with a hat, clear eyes and a pronounced aquiline nose, sketched in red chalk on an overwritten sheet from the *Codex on the Flight of Birds* (before 1505)²⁴ might also suggest that Leonardo had drafted a portrait of Ligny when they met to arrange the journey.

In the pile of tasks to do prior to his departure, there also appears the item "Get from Jean de Paris...", which reveals his intention of securing the workshop secrets from his French colleague after a stimulating moment of comparison. But Ligny, who had already led the Neapolitan campaign of 1494–95 and claimed feudal rights over the territory, failed to enact a private secret expedition to re-conquer the Kingdom of Naples, projected through diplomatic channels in September 1499, since Venice denied him the support he had requested.²⁵ This explains why Leonardo's project failed.

At the end of December the master left Milan to return to Florence, after stopping in Mantua, where he was a guest of the Gonzaga, *en route* for Venice, an ally of France. As we know, his Mantuan sojourn produced the cartoon in the Louvre with the *Portrait of Isabella d'Este*, preliminary to a painting and preceded by a now untraced life study mentioned in 1501 by the Marchioness herself, who asked Leonardo to send "another sketch for the portrait" since the first one had been given away by her husband.²⁶ Marquess Francesco II Gonzaga was one of Perréal's earliest admirers in Lombardy; in November 1499, after a meeting that probably took place in Milan before the French King, the artist sent him some swiftly-sketched portraits.²⁷ An inspired and multi-faceted artist, but above all a worthy portrait painter, as evinced by the group of portrait drawings, miniatures and paintings unanimously attributed to him,²⁸ Perréal appears to have specialized in the innovative genre of small souvenir-portraits for private patrons, more immediate and objective in nature than traditional ones—a genre well-suited to this new expressive medium, which could be completed in one sitting.

It was therefore in the autumn of 1499, most probably in October, that Leonardo and Perréal met in Milan, and the *Portrait of a Young Woman in Profile* was the concrete result of that meeting.

The woman's clothing is also appropriate for this date. Indeed the square-collared dress and elaborate hairstyle, with hair divided into two soft bands below the ears, collected in the long plait (*coazzone*) wrapped in a sheath of ribbons, the small snood made of a network of knotted silk, and the circlet (*lenza*) around the brow, all correspond to the canons of Milanese and Po region fashion of the last decade of the fifteenth century. This was a fashion of Spanish origin, imported by Milan upon the marriage of the daughter of the King of Naples, Isabella of Aragon, to Gian Galeazzo Sforza (1489), but refined and imposed by Beatrice d'Este, daughter of Eleonora of Aragon and younger sister of Isabella, who married Ludovico il Moro in 1491 and was already dead in 1497.²⁹ The hairstyle “*a coazzone*” is also worn by the *Belle Ferronière* (*Lucrezia Crivelli*) in the Louvre (**fig. 10**), datable to about 1496–99 and thus chronologically close to our portrait. This look quickly dwindled at the turn of the century with the arrival of the French and the abrupt end of the era of Ludovico il Moro, and was replaced by the loose, layered cut inspired by Transalpine fashion, already adopted by Isabella d'Este in the Leonardo cartoon, datable to early 1500, mentioned above (**fig. 11**). This is therefore an important element for securing the *Portrait of a Young Woman in Profile* to Milanese territory, and to a time period before 1499, when the artist left the Lombard capital.

In the *Portrait of a Young Woman* Leonardo adopted the conventional format of pure profile depiction derived from Roman medals and a constant element of Italian Renaissance courts from the Florence of the Medici to the Milan of “il Moro”. As regards Florentine art, one almost cannot help recalling the aristocratic *Portrait of a Young Woman in Profile* by Pollaiuolo in the Museo Poldi Pezzoli, crisp as a cameo and emblematic of a tradition against which Leonardo gauged himself since his early years in Florence. Evidence of this appears in the sheet with sketches of *Female and Male Profiles*, among others, and in the sensitive, objective *Profile of a Woman Turning to the Right* portrayed from life in metalpoint (Windsor Castle, RL, nos. 12276rv and 12505)³⁰ (**fig. 8**), a precursor of the *Isabella d'Este* that shows clear points of contact with our portrait in the definition of the contour line of the profile, and in the handling of chiaroscuro.

In Milan, abundant examples are offered by official Sforza court portraits, entrusted to the Master of the Sforza Altarpiece and Ambrogio de Predis: suffice it to mention the portrait of Beatrice d'Este in the *Sforza Altarpiece* in the Brera Gallery (1495); the less attractive *Bianca*

Maria Sforza at the National Gallery of Art in Washington, datable to her marriage to Emperor Maximilian (1493); and the dazzling *Lady with a Pearl Head-Dress* in the Ambrosiana, datable to about 1490, which establishes a particularly stimulating comparison with our portrait, its disputed attribution now leaning towards Ambrogio de Predis, based on a presumed drawing by Leonardo.³¹

Unlike these portraits, where the display of wealth and jewels accentuates the social rank of the sitters, in line with the taste of a court that was more lavish than refined, the *Portrait of a Young Woman in Profile* has nothing to do with courtly celebration, and is characterized by utter sobriety that seeks to emphasize the natural beauty and natural elegance of the figure. It brings to mind the passage in the *Treatise on Painting* where Leonardo praises beauty without artifice and recommends that the painter should “not use affected hairstyles and coiffures”: “Don’t you see that the resplendent beauty of youth is diminished in excellence from excessive and over-indulgent ornament?”³²

The portrait represents a young woman, blonde and angel-like, the most seductive that ever came out of Leonardo’s hands, but at the same possessed with a true and vibrant intimacy, reserved in how she offers herself, and inert in her proud firmness of posture. The crystalline eye, offset from the axis of the profile, is slightly tilted and rotates towards us, yet cannot cross our gaze. From this barely perceptible infringement of the rule—that of the absolute profile—comes the “motion of the mind” of our protagonist, an internalized, ineffable look that captures the attention of the beholder with magnetic force.

The face has no distinct individual characteristics, even though the slightly abbreviated nose and forehead hint at the presence of the model; but the grace of the features is such that it becomes particularly difficult to imagine how objective this portrait can be. For this reason the *Portrait of a Young Woman in Profile* seems to stand mid-way between the “*retracto de naturale*” and the “*ritratto idealizzato*”. While the first demands verisimilitude and a recognizable subject, the idealized portrait looks to a potentially universal ideal of femininity, though it adheres to Leonardo’s aesthetic canons, and emerges during his last decade in Lombardy through a process that finds its apogee in the *Mona Lisa*.³³

The identity of the model, probably a young Milanese girl of aristocratic lineage, remains unknown for the time being.

Having abandoned the audacious exploration of psycho-physical motion of the *Lady with an Ermine* (*Cecilia Gallerani*) of 1489–90, Leonardo appears to return to the canonical portrait types of the three-quarter and pure profile, with the aim of renewing them from within. In this context even a work such as the *Portrait of a Young Woman in Profile*—as disconcerting as it may be, at first sight, for its compositional form and archaism—has its reasons.

Indeed, the portrait makes a vital contribution to Leonardo's ongoing reflection on the theme of the heraldic profile, and fits neatly into a tight sequence of chronology and style. Dating the picture to 1499 gives it an intermediate position between two works: the portraits of the ducal couple of *Ludovico il Moro* and *Beatrice d'Este* with their children, painted *a secco* in Montorfano's frescoed *Crucifixion* immediately after the completion of the *Last Supper* (1498; unfortunately faded)³⁴—figures that conform to the archaizing genre of devotional court portraits, as typified by the *Sforza Altarpiece*; and the *Isabella d'Este* of 1500 (**fig. 11**), more modern in conception, and a portrait that updates the traditional model by grafting an absolute profile onto a nearly frontal bust. Similarities in type and technique with the latter are evident, although color plays a markedly more marginal role in the Louvre cartoon; but the atmospheric lightness of the *Isabella d'Este* does not appear to be shared by the portrait discussed here, notwithstanding the effects of restoration, in which the prevailing values of painterly form encourage comparison with *La Belle Ferronnière* (**fig. 10**).

Stylistically, then, rather than looking ahead, the *Portrait of a Young Woman in Profile* appears to wrap up the first Milanese phase of Leonardo's career with a highly personal version of the Sforza period portrait, combining the strict profile formula with the delicacy of the pastel medium, and transforming its heraldic quality into an image of pure beauty. But the bold experimentation of the drawing's execution, though by nature transitory, was to play an important role in perfecting the *sfumato* technique in red and black crayons, which attains a level of vaporous proto-Baroque handling in the *Head of the Virgin* in the Metropolitan Museum of Art, New York (c. 1508–12), preparatory for the *St. Anne* in the Louvre.³⁵

In the wake of this invaluable incunabulum, together with the master's indications and likely contacts with French painters present in Lombardy, Boltraffio, Solario (**fig. 12**), Gianpietrino (**fig. 13**), Luini and other "Leonardeschi" adopted the new technique in its most evolved form, as defined by Leonardo in the *Codex Forster* passage—that is, drawing with colored crayons, generally associated with red and black chalk or charcoal, on a customary paper support.³⁶ Thus, engendered by the meeting between the Italian master and the most authentic Transalpine tradition, the birth took place in Milan in the first decade of the sixteenth century of a Leonardesque "pastel" school in the modern sense of the term.

Milan, 11 June 2008

Afterword

Since the writing of the historical note published here, there has been notable progress in research on the *Portrait of a Young Woman in Profile*, from both art-historical and technical-scientific points of view.

As regards the former, one should point out four contributions fully in favour of Leonardo's authorship: the monograph by Alessandro Vezzosi, with an introduction by Carlo Pedretti, where the portrait is published for the first time in paper copy;³⁷ and my report and two extensive essays by Nicholas Turner and Martin Kemp, available on the website of Lumière Technology.³⁸ For the sake of completeness, one should also mention Pedretti's letter to the owner of the portrait,³⁹ in which the scholar confirms Leonardo's authorship after the positive outcome of laboratory tests, resolving the reasoned objections previously expressed about it.

With regard to scientific analysis, special mention must be made of Carbon-14 testing, carried out on samples removed from the left margin of the sheet, by RTH, the Swiss Federal Institute of Technology in Zürich (September 2008), which established the age of the parchment to the period 1440–1650. Another Swiss Federal Laboratory, EMPA Materials Science & Technology in Dübendorf, was responsible for Raman spectroscopy to identify pigments and organic binders (June 2008). Unfortunately, however, the laser could only penetrate a minimal

part of the varnish covering the drawing, and only detected white lead (*biacca*) and *rùtilo* (titanium dioxide) in the restored parts of the face, as well as soot (carbon), found in each of the eleven irradiated sample areas, something that demands clarification.

The broader, more in-depth analysis was made, as has been said, by Lumière Technology, greatly enriching the sequence of multispectral images (visible and raking light, infrared, ultraviolet, false color, , x-rays, etc.) for accurate monitoring of the physical condition of the work.⁴⁰ Pascal Cotte also completed a “Map of pigments and restorations”—with virtual sampling made in 25 areas (pixels), each corresponding to a different spectrum—which must be added to our initial photographic folder (**fig. 2**), since it allows for a clear distinction between the original fifteenth-century application and subsequent reworking.

Radiocarbon analysis represents a further significant phase of this work in progress, since it strengthens the argument for the work’s authenticity. The proven age of the parchment defeats the hypothesis of a modern object in neo-Renaissance style, though not that of a fake made with ancient materials and techniques; but in this case one would have to postulate the existence of a diabolical forger of Leonardo who was able not only to counterfeit the master’s left-handed strokes and exalted artistry, but also to take in a contemporary restorer, and even conceive a false “pastel” by Leonardo—what is more, using a support that was foreign to his customary practice, even before studies had confirmed the connection between Leonardo and pastel technique. That, in my opinion, seems excessive.

However, it is still early for a definitive word on a work as fascinating as it is problematic, and which currently involves art historians, scientists, and (one hopes) conservators such as the experts of the Opificio delle Pietre Dure in Florence, whose technical advice has been sought—engaged one and all in an analytical investigation of every aspect of this portrait.⁴¹

Milan, 19 March 2009

Notes:

- 1). *Old Master Drawings (part II): French and Northern Schools*, 30th January, 1998, lot 402: “German School, early 19th Century. The Head of a young Girl in Profile to the left in Renaissance Dress, pen and brown ink, bodycolour on vellum”.
- 2). The others are Carlo Pedretti (with some reservations), Alessandro Vezzosi and Mina Gregori.
- 3). For a discussion of various types of support used in Old Master drawings, as well as materials and techniques employed, see A. Petrioli Tofani, *I materiali e le tecniche*, in G. C. Sciolla, ed., *Il Disegno, I: Forme, tecniche, significati*, Cinisello Balsamo, 1991, pp. 184–251; for further comments, see also L. Montalbano, “I disegni rivelati: Analisi delle tecniche grafiche, problematiche, ricerche e punti di vista,” in C. Frosinini, with the assistance of L. Montalbano and M. Piccolo, eds., *Leonardo e Raffaello, per esempio... Disegni e studi d’artista*, exh. cat., Florence, Palazzo Medici Riccardi, 2008, pp. 25–37. It is necessary to point out here, as Montalbano herself has told me, the terms black chalk (“*matita nera*”) and red chalk (“*matita rossa*”), which have been in general use up until now, have been substituted in recent professional associations for works on paper by the more specific “*pietra nera*” and “*pietra rossa*” (meaning literally “black stone” and “red stone”), in order to avoid any possible confusion between the actual substance and the instrument employed in its use.
- 4). For some of the latest views on Leonardo as a draughtsman, see the catalogues to the recent monographic exhibitions in Paris and New York, in particular the introductory texts to the exhibition sections by F. Viatte and V. Forcione, eds., *Léonard de Vinci: Dessins et manuscrits*, exh. cat., Paris, Musée du Louvre, 2003, *passim*; Carmen C. Bambach, “Leonardo and his Drawings,” and C. Pedretti, “The Critical Fortune of Leonardo’s Drawings,” in Carmen C. Bambach, ed., *Leonardo da Vinci: Master Draftsman*, exh. cat., New York, Metropolitan Museum of Art, 2003, pp. 3–30 and pp. 79–109 (with previous bibliog.).
- 5). Other drawings by Leonardo are known that are carried out in this same “dry” technique, which were then reinforced in pen and brown ink in order to give greater sharpness to the image, for example *Bust of an Old Man (St. Peter?)*, in metalpoint, in the Albertina, Vienna (c. 1490–93), and a group of drawings in red chalk, datable between the first and second decade of the sixteenth century, of which various anatomical studies form a part, the *Cataclysm*, the botanical study of *Flowers* and the *Nude Tied to a Column* (Windsor, RL, nos. 12376, 12424, 12583A). In this connection, see New York 2003, pp. 442, 539, note 1.
- 6). The analogies should be noted between this mixed technique and that used by Hans Holbein in the majority of his surviving pastel portraits, reinforced in precisely the same way in ink with the pen or the point of the brush. See J. Roberts, *Drawings by Holbein from the Court of Henry VIII*, exh. cat., Houston, Museum of Fine Arts, 1987, *passim*.
- 7). See Paris 2003, pp. 90–93, no. 21 (entry by F. Viatte).

8). Leonardo da Vinci, *Libro di Pittura. Codice Urbinate lat. 1270 nella Biblioteca Apostolica Vaticana*, ed. by C. Pedretti, with critical transcription by C. Vecce, Florence, 1995, esp. chapters 155, 165, 205, 514 and 628.

9). For this topic, see C. Bambach Cappel, “Leonardo, Tagliente and Dürer: ‘la scienza del far groppi’”, *Achademia Leonardi Vinci*, iv, 1991, pp. 72–98. A knot that is almost identical to that at the top is found in the engravings in the Ambrosiana, reproduced as figs. 1 and 40.

10). Leonardo da Vinci, *Il Codice Atlantico della Biblioteca Ambrosiana di Milano*, critical transcription by A. Marinoni, introduction by C. Pedretti, vol. ii, Florence, 2000, p. 1312.

11). For an accurate commentary on the passage referring to pastels and dating to 1499, see C. Pedretti, *The Literary Works of Leonardo da Vinci Compiled and Edited from the Original Manuscripts. Commentary*, vol. i, Berkeley and Los Angeles, 1977, p. 359. On the relationship between Leonardo and Perréal, see the analysis of L. Dorez, “Léonard de Vinci et Jean Perréal (conjectures)”, in M. Mignon, ed., *Léonard de Vinci*, 2nd ed., Rome, 1919, pp. 67–86 (without reference to pastels); P. Durrieu, “Les relations de Léonard de Vinci avec le peintre français Jean Perréal”, *Études italiennes*, i/3, 1919, p. 153 (where the “*modo de colorire a secco*” is describe as a manuscript technique); C. Vecce, “Piglia da Gian di Paris,” *Achademia Leonardi Vinci*, x, 1997, pp. 208–13; M.T. Fiorio, “Leonardo, Boltraffio e Jan Perréal,” *Raccolta Vinciana*, xxvii, 1997, pp. 325–55; C. Vecce, “Léonard de Vinci et la France,” in Paris 2003, pp. 21–22 (where the passage by Leonardo is anticipated in 1494–95 and refers to technical experiments in the *Last Supper*). The origin of the use of pastels begins with the preparatory study (Berlin, Kupferstichkabinett) for the *Portrait of Guillaume Jouvenel des Ursins* in the Louvre by Jean Fouquet, carried out c. 1455 in black, red and white chalks. It is considered the first example of a portrait *au crayon*, a type that emerged in France from the beginning of the reign of Francis I with the work of Jean Clouet and his son François, and then developed in the rest of Europe (see L. Dimier, *Histoire de la Peinture de Portrait en France au XVI^e siècle*, 3 vols., Paris and Brussels, 1924–25; and for a synthesis, J. Leymarie, *Les Crayons Français du XVI^e siècle*, Paris, 1947).

12). Leonardo da Vinci, *I codici Forster del Victoria and Albert Museum di Londra: Il Codice Forster II*, critical edn. by A. Marinoni, Florence, 1992, p. 136, facs., fol. 159r. The conclusion derived from the note in the *Codice Forster II* that it may be later, probably only slightly, than the *Codice Atlantico*, and thus datable c. 1499–1500 (the two passages have been discussed together in my 1998 study of the pastels in Strasbourg, p. 164). Such a date does not contradict the chronology of the second manuscript of the *Codice Forster*, assigned to 1495, but according to Marinoni (*Introduzione*, *ibid.*, pp. XXI–XXII) continued for some years, as demonstrated by the mention of the vineyard that Leonardo received as a gift from Ludovico il Moro in 1497–98. The implicit reference to 1495 is on the same page as the note on pastels, but the handwriting makes it clear that the two notes were written at different moments.

13). N. Reynaud, “Deux portraits inconnus par Jean Perréal au Louvre,” *Revue du Louvre*, iv, 1996, pp. 42–43, fig. 11. Without Leonardo’s reminder to himself, we would not have known that Perréal, before Clouet, was a specialist in pastel. The information is reiterated in a letter from Perréal himself to Louis Barangier, secretary to Margaret of Austria (9 October 1511), in which the artist tells him that he has made a portrait of his wife “*de croions qui n’est que demy couleurs*” (see G. Ring, “An Attempt to reconstruct Perréal,” *Burlington Magazine*, xcii, nos. 562–73, 1950 [rev. 1981], p. 260 and note 62; P. Pradel, “Les autographes de Jean Perréal,” *Bibliothèque de l’École des chartes*, cxxi, 1963 [1964], p. 178).

14). See P. Mellen, *Jean Clouet: Complete Edition of the Drawings, Miniatures and Paintings*, London, 1971, esp. pp. 26–28, 70, note 36. Only in a few cases does Clouet add touches of colour (blue, yellow or brown) to the eyes or the hair. The technique of black and red chalks on white paper, of French origin, was probably transmitted from Fouquet to Perréal, and from Perréal to Leonardo and Clouet, while Holbein (1497/98–1543) had adopted it already before his trip to France in 1524, enriching it with the use of other coloured pastels.

15). M.T. Fiorio, *Giovanni Antonio Boltraffio, un pittore milanese nel lume di Leonardo*, Milan and Rome, 2000, pp. 152–56, nos. B12–B14, and New York 2003, nos. 127–28.

16). Pedretti 1977, p. 359.

17). For the first, see *Disegni lombardi del Cinque e Seicento della Pinacoteca di Brera e dell’Arcivescovado di Milano*, exh. cat., Milan, Pinacoteca di Brera, 1986, pp. 27–31, no. 1 (entry by P.C. Marani); for the second, see Paris 2003, pp. 185–89, no. 61, esp. p. 189 (entry by F. Viatte).

18). Giovan Paolo Lomazzo, “Trattati sulle arti,” in *Scritti sulle arti*, ed. by R.P. Ciardi, vol. ii, Pisa, 1973–74, p. 170; C. Geddo, “Disegni leonardeschi dal Cenacolo: Un nuovo nome per le Teste di Strasburgo,” in “*Tutte le opere non son per istancarmi*”: *Raccolta di scritti per i settant’anni di Carlo Pedretti*, ed. by F. Frosini, Rome, 1998, pp. 159–72, figs. 1–16, pls. XI–XII (a study summarized in an entry, which credits the pastels to a generic Lombard artist, in *Il genio e le passioni. Leonardo e il Cenacolo: Precedenti, innovazioni, riflessi di un capolavoro*, exh. cat., ed. by P.C. Marani, Milan, Palazzo Reale, 2001, pp. 192–95, nos. 54–59; see C. Geddo, “Un nodo della mostra sul Cenacolo di Leonardo: Le Teste di Strasburgo e di Weimar,” *Arte incontro in libreria*, xii/34, 2001, p. 11). The identification of the series cited by Lomazzo with that in Strasbourg, supported by my reconstruction of their provenance, is based on the following two arguments: Leonardo could not have copied himself; nor could he have executed cartoons in pastel for the *Last Supper* (c. 1493–98) before he met Perréal, which could only have occurred in 1499; the pastels in Strasbourg were considered to be autograph works by Leonardo already at the beginning of the seventeenth century, when they entered the collection of Galeazzo Arconati, and thus it is highly probable that the attribution was based on Lomazzo’s authority. Finally, if

twelve pastels by Leonardo with heads of the figures from the *Last Supper* had really existed, how does one explain their complete disappearance?

19). G. Calvi, "Leonardo da Vinci e il conte di Ligny ed altri appunti su personaggi vinciani," *Raccolta Vinciana*, iii, 1907, pp. 99–107.

20). R. De Maulde De La Clavière, "Jean Perréal dit Jean de Paris: Sa vie et son oeuvre," *Gazette des Beaux-Arts*, xiv/3, 1895, pp. 272–74. The fact that Perréal entered the service of Charles VIII at the end of 1495, as was demonstrated by Pradel (1963, pp. 162–64), is not a sufficient argument to resurrect the hypothesis of his participation in the Italian campaign of 1494–95.

21). See Maulde De La Clavière 1895, p. 275 (with sources and earlier bibliog.). Perréal would return to Milan, again in the retinue of Louis XII, in 1502 and again in 1509, when the paths of the two painters would cross for the second time. For a full investigation of Louis XII's conquest and domination of the Milanese, see Ph. Contamine and J. Guillaume, eds., *Louis XII en Milanais: XLI^e Colloque international d'études humanistes* (Tours, Centre d'études supérieures de la Renaissance, 30 June–3 July 1998), Paris, 2003; L. Arcangeli, ed., *Milano e Luigi XII. Ricerche sul primo dominio francese in Lombardia (1499-1512)*, Milan, 2002 (Studi e ricerche storiche), esp. L. Giordano, "Milano da corte a dominio," pp. 449–60.

22). As was well argued by Pedretti, reconfirming the date of 1499 for the reminder note, in C. Pedretti, "Introduzione," in A. Vezzosi, ed., *Leonardo dopo Milano: La Madonna dei fusi (1501)*, exh. cat., Vinci, Castello dei Conti Guidi, 1982, pp. 12–14, pl. 1, and the transcription after pl. 22. Along the same lines, see C. Vecce, *Leonardo*, Rome, 1998, pp. 182–86.

23). The drawing was attributed to Perréal by R. Maulde De La Clavière, "Jean Perréal dit Jean de Paris. Sa vie et son oeuvre (troisième article)," *Gazette des Beaux-Arts*, xv/3, 1896, p. 246, note 2, with the confirmation of Ring (1950, p. 259, no. 4, fig. 11) and Charles Sterling, "Une peinture certaine de Perréal enfin retrouvée," *L'Oeil*, ciii–civ, 1963, p. 10, fig. 14. On the frieze by Bramantino recently discovered in the Castello di Voghera, of which Ligny was feudal lord from October 1499 to 1503, the year of his death, see M.T. Binaghi Olivari, "Le Muse di Bramantino," *Artes*, v, 1997, pp. 8–20; eadem, "Il castello di Voghera: le "Muse" di Bramantino e Luigi di Ligny," in Contamine and Guillaume (eds.) 2003, pp. 341–48; and, for a definitive confirmation of his patronage, see M.L. Paganin, "Un'impresa decifrata: il conte di Ligny committente di Bramantino a Voghera," *Prospettiva*, cxix–cxx, 2005, pp. 95–97.

24). Leonardo da Vinci, *Il Codice sul volo degli uccelli nella Biblioteca Reale di Torino*, critical edition by A. Marinoni, Florence, 1976, facs. fol. 10v; C. Pedretti, ed., *Disegni di Leonardo e della sua scuola alla Biblioteca Reale di Torino*, exh. cat., Turin, Biblioteca Reale, 1975, p. 48, no. 25, pl. 25; and idem, *I disegni di Leonardo da Vinci e della sua cerchia nella Biblioteca Reale di Torino*, Florence, 1990, p. 112, fig. 118.

25). See Calvi 1907, pp. 103–4, 106.

- 26). Letter dated 29 March 1501 (L. Beltrami, *Documenti e memorie riguardanti la vita e le opere di Leonardo da Vinci in ordine cronologico*, Milan, 1919, p. 65, no. 106).
- 27). One of *Cardinal of Rouen* (George d'Amboise), preparatory for a painting of the *Madonna and Child, with St. John and the Donor*, commissioned from Mantegna, the “*retracto de la putta*” (in pastels) and one of Louis XII that the painter offered to carry out, mentioned in letters to Gonzaga from Jamet de Nesson and Jacopo d'Atri (dated 26 October and 15 November 1499), and from the same Perréal (14 November 1499). See Pradel 1963, pp. 142–44, 166; C.M. Brown, “‘*Una Immagine de Nostra Donna*’: Lorenzo Costa’s *Holy Family* for Anne of Brittany,” in *Cultura figurativa ferrarese tra XV e XVI secolo: In memoria di Giacomo Bargellesi*, Venice, 1981, pp. 119, 129–32.
- 28). Ring 1950, pp. 254–62; Sterling 1963, pp. 2–15, 64–65; B. Hochstetler Meyer, “Jean Perréal and portraits of Louis XII,” *The Journal of the Walters Art Gallery*, xl, 1982, pp. 41–56; N. Reynaud, “Jean Perréal, dit Jean de Paris,” in F. Avril and N. Reynaud, “Les manuscrits à peintures en France, 1440–1520,” in *Quand la peinture était dans les livres: Les manuscrits enluminés en France, 1440–1520*, exh. cat., Paris, Bibliothèque Nationale, 1993–94, pp. 365–369; and esp. Reynaud 1996, pp. 36–46.
- 29). See M.T. Binaghi, “La moda a Milano al tempo di Ludovico il Moro,” in *Milano nell’età di Ludovico il Moro: Atti del convegno internazionale* (Milan, 28 February–4 March 1983), vol. ii, Milan, 1983, pp. 633–50, esp. pp. 640, 642.
- 30). K. Clark, *The Drawings of Leonardo da Vinci in the Collection of Her Majesty the Queen at Windsor Castle* (1935), 2nd rev. edn., with the assistance of C. Pedretti, vols. i and ii, London, 1968–69, nos. and pls. 12276^{rv} and 12505. Variouslly dated either in the Florentine or Lombard period, the latter endorsed by Clark, the Windsor profile, according to Binaghi Olivari (1983, pp. 633–637, fig. 1), predates the 1470s on the grounds of the hairstyle.
- 31). Formerly attributed, in my opinion correctly, to De Predis by Morelli, Frizzoni, Berenson and Suida, who believed it to be a collaborative work with Leonardo, the painting was reassigned to Lorenzo Costa or Francesco Francia by Longhi and his followers. It now lies in limbo “between Lombardy and Emilia” (*Pinacoteca Ambrosiana, I: Dipinti dal Medioevo alla metà del Cinquecento*, Milan, 2005, pp. 342–45, no. 147, entry by M. Rossi). Binaghi Olivari (1983, pp. 638, 642, fig. 6) dated it *c.* 1490 on the basis of the costume, suggesting that the sitter should be identified as Maddalena Gonzaga.
- 32). Leonardo da Vinci, *Libro di Pittura*, 1995, chap. 404.
- 33). See David Alan Brown, “Leonardo and the Idealized Portrait in Milan,” *Arte Lombarda*, lxxvii, 1983, pp. 102–16.

34). The attribution, based on a document (Beltrami 1919, pp. 43–44, no. 76) and on the evidence of Vasari and Lomazzo, has been convincingly endorsed by P.C. Marani (*Leonardo: Catalogo completo dei dipinti*, Florence, 1989, p. 90 and figs. on pp. 91–93). It has also been supported by Pedretti in his intelligent synthesis of Leonardo as a portraitist (“Leonardo: Il ritratto,” *Art e dossier*, suppl. to no. 138, October 1998, p. 31) and M. Kemp (*Leonardo da Vinci: The Marvellous Works of Nature and Man*, Oxford, 2006, p. 187, as Leonardo and workshop). The underdrawing (*sinopia*) could also be by Montorfano, but the *a secco* technique, which has brought about the ruin of the portraits, ought in itself to be a signal of the intervention of Leonardo.

35). New York 2003, pp. 566–69, no. 108 (entry by C.C. Bambach).

36). Besides the pastels of Boltraffio and Gianpietrino (**fig. 13**), one should also mention the *Portrait of a Woman (Ippolita Bentivoglio?)* by Luini in the Albertina, Vienna, from c. 1520–22 (New York 2003, pp. 663–66, no. 131, entry by C.C. Bambach); the *Portrait of a Man* in the Uffizi, of c. 1506–8 (**fig. 12**), and the *Bust-length Portrait of a Bearded Man* in the Metropolitan Museum of Art, New York, from shortly before 1524, both by Solario (David Alan Brown, *Andrea Solario*, Milan, 1987, nos. 44 and 77, figs. 138 and 219). Of these, the nearest to the *Portrait of a Young Woman in Profile* by Leonardo is the portrait by Solario in the Uffizi, which is likewise carried out on a doubled over piece of vellum (235 x 225 mm), using red and black chalks with a few touches of white. Brown (*ibid.*, pp. 179, 184) assigned it to Solario’s French period, linking it hypothetically to the lost fresco with the group portrait of Cardinal Georges d’Amboise and his family in the chapel of Château Gaillon (1507–9).

37). A. Vezzosi, *Leonardo infinito: La vita, l’opera completa, la modernità*, with introduction by C. Pedretti, Bologna, 2008 (July), pp. 138–42. Vezzosi interpreted it as a “marriage portrait”, linking it hypothetically with the wedding of Bianca Maria Sforza and Maximilian I (1493). See also the critical note by Pedretti.

38). C. Geddo, *Statement*, 2 July 2008, where the present study is announced; N. Turner, *Leonardo da Vinci (1452-1519), Portrait of a Young Woman in Profile*, September 2008; M. Kemp, “*La Bella Milanese*”. *The Profile Portrait of a Milanese woman by Leonardo da Vinci*, 19 October 2008 (www.lumiere-technology.com/discoveries.html; accessed 31 August 2009). Turner proposed a date in the beginning of the Milanese period (c. 1482); Kemp instead situated it “around 1494”.

39). University of California, Los Angeles, 16 January 2009.

40). See www.zoomorama.com/lumiere_technology (accessed 31 August 2009).

41). I would like to thank the owner and his collaborator, Giammarco Cappuzzo, for inviting me to study the work brought to my attention at the end of February 2008 and their assistance on numerous occasions. I am also grateful to the following for their help: Pascal Cotte of Lumière

Technology and Letizia Montalbano, Director of Conservation in the Section Disegni e Stampe of the Opificio delle Pietre Dure, Florence, with whom I exchanged an extensive correspondence; Édouard Pommier, who read and endorsed the present study (letter of 20 August 2008); and Luisa Giordano, who agreed to publish it.

CAPTIONS

1. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. Black, red and white chalks, pen and ink, on vellum (with later restorations in wash and black ink). Private collection (photo: Lumière Technology, Paris)
2. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. Restoration map (by Pascal Cotte, Lumière Technology). (photo: Lumière Technology, Paris)
3. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. 1499. False-colour infrared image, 900 nm. (photo: Lumière Technology, Paris)
4. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. False-colour infrared image, 1000 nm. (photo: Lumière Technology, Paris)
5. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. Real-colour image in raking daylight (photo: Lumière Technology, Paris)
6. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. Infrared reflectogram, 900 nm. (photo: Lumière Technology, Paris)
7. Leonardo da Vinci, *Portrait of a Young Woman in Profile*, 1499. Ultra-violet reflectogram, 380 nm. (photo: Lumière Technology, Paris)
8. Leonardo da Vinci, *Head of a Woman in Profile*, c. 1480. Metalpoint on pink prepared paper. Windsor Castle, Royal Library, inv. no. 2505. (from K. Clark, *Selected Drawings from Windsor Castle: Leonardo da Vinci*, London, 1954).
9. Leonardo da Vinci, *Head of a Woman in Profile*, c. 1490–92. Metalpoint on blue prepared paper. Paris, Musée du Louvre, Département des Arts graphiques. (from *Leonardo da Vinci: Dessins et manuscrits*, Paris 2003)
10. Leonardo da Vinci, *Portrait of Lucrezia Crivelli (La Belle Ferronnière)*, c. 1496–99. Paris, Musée du Louvre. (from *I leonardeschi: L'eredità di Leonardo in Lombardia*, Milan, 1998)

11. Leonardo da Vinci, *Portrait of Isabella d'Este in Profile*, 1500. Black and red chalks, with touches of opaque white and ochre; pounced for transfer. Paris, Musée du Louvre, Département des Arts graphiques (photo: RMN, Parigi, Thierry Le Mage)

12. Andrea Solario, *Portrait of a Man*, c. 1506–8. Charcoal with touches of red and white chalks on vellum. Florence, Galleria degli Uffizi, Gabinetto Disegni e Stampe. (from David Alan Brown, *Andrea Solario*, Milan, 1987).

13. Giovanni Pietro Rizzoli, called il Gianpietrino, *Head of St. James Minor in Profile*, from the series of heads of Christ and the Apostles from Leonardo's *Last Supper*, c. 1510–13. Black chalk, charcoal, opaque white, pastels or chalk suspensions in shades of pink, brown and flesh colour (?) on prepared paper (the background restored and covered with watercolour). Strasbourg, Musées de Strasbourg, Cabinet des Estampes et des Dessins. (photo: Musées de la Ville de Strasbourg, Strasbourg, A. Plisson)