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LIGHT, FORM AND TEXTURE IN XVTH CENTURY PAINTING

The Fred Cook Memorial Lecture by

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*Director of the Warburg Institute, University of
London, delivered to the Society on Wednesday
6th May 1964, with Sir William Coldstream, C.B.E.,
D.Litt., Slade Professor of Fine Art, University
College, London, in the Chair*

THE CHAIRMAN: I think we should like first to express our gratitude to the late Fred Cook for making this lecture possible. This is the ninth in a very remarkable series devoted to the Old Masters. It is a great pleasure to be in this room in any case. I remember it first over forty years ago, when I used to be brought every Christmas to listen to some children's lecture on the wonders of nature, or on the marvels of wireless telegraphy, by my grandfather.

I am also happy and honoured to take the Chair for my friend, Professor Gombrich. For some years I had the privilege of being his colleague at the Slade School in University College, London. Every Friday afternoon during the autumn and spring terms he would lecture to a hundred art students, and he was able to hold their attention every time. Those of you who know how critical and sceptical art students can be and were, will realize that this is a great achievement. During this period Professor Gombrich's book *Art and Illusion* appeared. I believe that as long as the history of art is studied and the art of painting is practised this book will be read, which is saying a great deal. At that time a great many of our Slade students of painting, as well as students from the philosophy department and from the history of art departments, had a series of most interesting discussions about the book. It is fashionable to-day to say how desirable it is to make connection between different fields of human endeavour and knowledge. Professor Gombrich has really succeeded in doing this. He combines to a unique degree a vast and accurate knowledge of his subject with a great appetite for speculation and imagination, and all against a background of an uncommon degree of commonsense.

The following lecture, which was illustrated with lantern slides, was then delivered.

THE LECTURE

The way light falls on a body reveals its form. The way the body's surface reflects the light reveals its texture. Any tyro in art who has learnt the elements of drawing is aware of this distinction. He has learnt how to model form in light and shade and he has learnt how to indicate the reflections and highlights that impart the impression of glossiness or moisture.

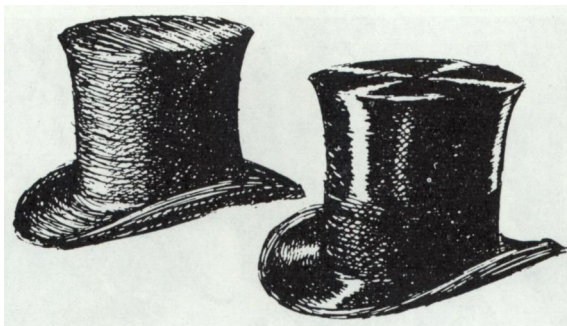
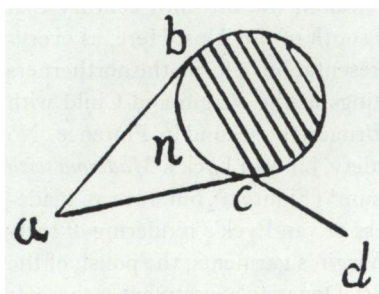


FIGURE 1. *Light on absorbent and reflecting surfaces (after E. J. Sullivan)*

An old-fashioned textbook of line drawing¹ explains this difference by means of two top hats (Figure 1). The surface of the matt variety reveals the direction from which the light comes. It is brightest where the light falls nearest to a right angle, darkest on the opposite side. This, of course, is an objective state of affairs which depends only on the position of the

object in relation to the light source. Clearly the matter is different with the shiny silk hat; the highlights you see are reflections of the light source, they are composed of little mirror images distorted by the curvature of the tissue, and the place where we see such highlights does not only depend on the position of the light source in relation to the object, but also on our own position. Strictly speaking we do not even see the highlight in the same place with both eyes. Like all mirror images these reflections appear to lie somewhat behind the reflecting surface which often gives their sheen a strangely hovering and elusive quality. The distinction to which I wanted to draw your attention was, of course, known to that great explorer of visual reality, Leonardo da Vinci. He calls it the difference between light and lustre, *lume et lustro*. Nothing fascinated Leonardo more than the subtle gradations from light to shade which can be observed when an opaque sphere is placed near a window. Several of his scientific drawings indicate the different gradations of light, the shape of the cast shadow and of what Leonardo called the



'derived' shadows.² Another diagram in Leonardo's notes illustrates the observation: 'Of the highest lights (de' colmi de lumi) which turn and move as the eye moves which sees the object. Here "a" represents the source of light and the zone "b" "c" the illuminated part of the sphere. If you stand at "d" the highlight or lustre will appear at "c" and the nearer you come to "a" the more will the highlight move to "n".'³

As there is no telling where these wandering highlights will settle and break up the even gradations of light, it follows that *lustro* is sometimes the enemy of *lume*. Indeed in extreme cases, let us say on a polished sphere, the reflection will totally swallow up the shadows; texture will impede the perception of form.

Vital as is this distinction and commonplace as it must be to painters who are interested in natural appearances, art historians have not to my knowledge paid a great deal of attention to these various manifestations of light. And yet it is obvious that what used to be called the various schools of painting divided their attention in

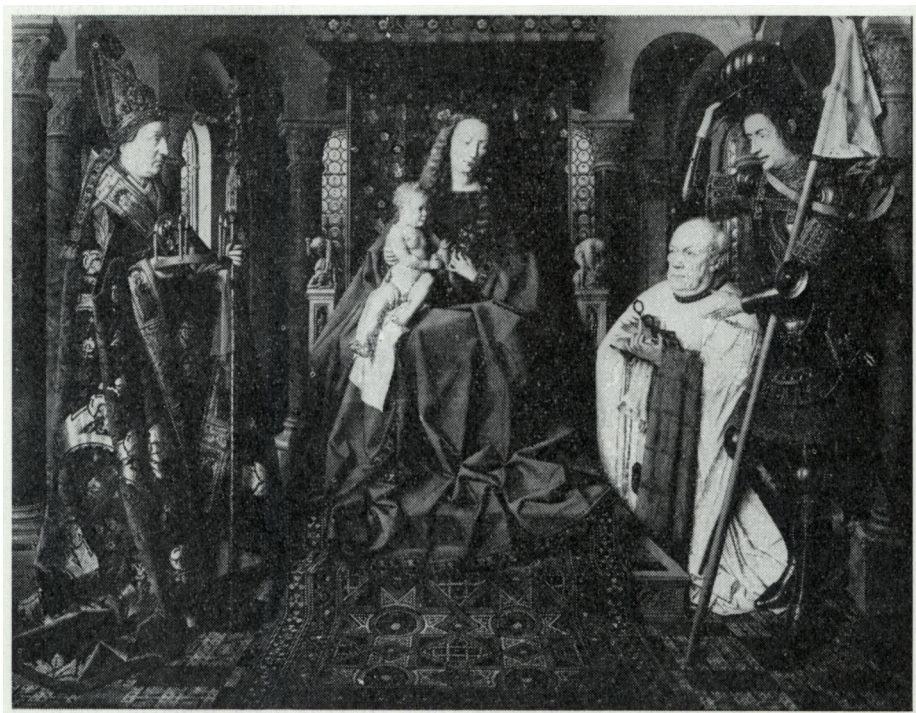


FIGURE 2. *Jan van Eyck, Madonna with the Canon van der Paele. Bruges, Museum*

very different ways. This becomes particularly clear in the fifteenth century that witnessed the conquest of appearances north and south of the Alps. Here, as everybody knows, the Florentines triumphed in the representation of form, the northerners in the rendering of texture. Take two altar paintings of the Virgin and Child with Saints painted within the same decade: the first in Bruges, the second in Florence. No illustration can hope to convey that miracle of subtlety, Jan van Eyck's *Madonna with the Canon van der Paele* of 1436 in the Bruges Museum⁴ (Figure 2), but even an inadequate image gives some idea of the range and richness of van Eyck's rendering of texture. The sparkle of the jewels on the hem of the Virgin's garments, the polish of the armour of Saint George, the stiff brocade of St. Donatian's vestments, the soft carpet with its woolly texture, the feel of the leaded glass and of the shiny marble columns—one could go on almost for ever enumerating these magic evocations of any kind of substance and surface by means of Jan van Eyck's miraculous and mysterious technique. In a sense it is true to say that it is all done with mirrors, for Jan van Eyck is supremely aware of the fact that reflections are mirror images. Standing in front of the original you can actually see the reflections of the red cloak of the Virgin at various points of the armour of Saint George and we are aware of the fact that if we were to move the reflection and the sparkle would change and



FIGURE 3. *Domenico Veneziano, The Virgin and Child with Saints. Florence, Uffizi*

scintillate. It is a commonplace of art history that compared with this miraculous fidelity in the rendering of surfaces, the rendering of forms in space is less secure in van Eyck. He is not in possession of the art of perspective construction, and so the floor seems slightly to slope and the spatial relationships between the figures and the building are not completely convincing.

We become aware of this difference when we look at the painting done in Florence some five years later, Domenico Veneziano's *Madonna and Child with Saints* in the Uffizi (Figure 3).⁵ In this masterpiece the figures stand clearly and firmly on the patterned floor, which is constructed according to the rules of projective geometry. We feel that solidity of form which Berenson described as tactile values. You are aware, of course, that this impression of solidity and spatial clarity does not

only depend on the linear construction of the picture but even more on the treatment of light. Not only is every form consistently modelled in light and shade, we see the sunlight streaming into the open courtyard and imparting on to the whole scene that feeling of radiant serenity which is a characteristic of that great artist, the master of Piero della Francesca. Remember that the light Domenico Veneziano represents is an objective state of affairs. If we imagine our standpoint to shift, the overlap of the columns would change but the light would not. It is *lume*, not *lustro*. The difference of emphasis becomes perhaps particularly clear at points of the greatest similarity; compare the way Domenico paints the head of the Bishop with his mitre and that of Jan van Eyck. To use the chilling language of photographers, you might say that the one is matt, the other glossy. Of course, this difference extends to the actual surface of the painting. Domenico's tempera technique is evident in the Uffizi panel, despite Vasari's gruesome thriller according to which Domenico was murdered by Castagno because he held the secret of oil painting. We are less sure than Vasari was that the secret of van Eyck's technique depends mainly on the use of oil, but clearly the surface of van Eyck's painting, with its layers of transparent glazes, suggests something of the fattiness of oil which he undoubtedly used.

And yet it seems to me that the contrast in techniques is here less important than the contrast in emphasis on light or lustre. It is this attention to the appearance of solid forms modelled in light which gives the Florentine painting that sculptural quality. When we come from Jan van Eyck, who so convincingly conveys the softness of the child's body and the sheen of the Madonna's hair, Domenico's group looks indeed almost like the rendering of a sculpture made of solid inert material.

Given the vital importance for this impression of texture of a study of reflections, of highlights, it is surprising, as I said, that no historian of art seems to have devoted a monographic study to the development of this effect. Here as elsewhere the question of space seems almost to monopolize the attention of the great pioneers of stylistic analysis, and the only book specifically devoted to the history of light in painting, Schöne's *Über das Licht in der Malerei*⁶ is so much concerned with the metaphysics of divine radiance that the author is too dazzled to pay much attention to these mundane lights. Yet it would be unfair to be too severe on that author. For the question: 'When was the first highlight painted and *lume* distinguished from *lustro*?' is more easily asked than answered. Even so I have found it not a useless question to ask. In fact, my lecture will not have been in vain if I have sent you on a wild goose chase to the National Gallery hunting for the first highlight. I suppose the first thing you will notice on such an expedition is the way painters before the fifteenth century managed to evade the problem. For wherever you come across the representation of an object that should really shine and sparkle in the painting, a piece of jewellery or a golden chalice, you are as likely as not confronted with real gold paint or even the imitation of a jewel in coloured paste. The Wilton Diptych, whatever its exact date or school, is a characteristic instance of that procedure that was current in the generation before van Eyck, the period of the International Gothic Style.⁷ For all its splendour it has no *rendering* of the sheen of gold. It has



FIGURE 4. *Duccio, The Healing of the Blind. London, National Gallery*

real shining gold. But during the 1430s, the time that is when van Eyck's and Domenico's Madonnas were taking shape, Leone Battista Alberti explicitly censured this convenient practice. In his *Treatise on Painting* of 1435 he criticized artists who used much gold in the paintings, believing, as he says, that this would impart majesty to their work. As the perfect humanist he avoided Christian examples and wrote that 'Even if someone were to represent Dido as Vergil describes her, with her golden quiver . . . her golden girdle and the golden trappings of her horse, I would not want him to use gold, since it contributes to the admiration and praise of the artist if he imitates the sparkle of gold with colour' (Book III).⁸

It will not take you long to discover in any Gallery that this trick of imitation must indeed have been a novelty in Alberti's time. Before his period artists both north and south of the Alps universally preferred the short cut of using real sparkling gold and silver to the imitation of their sparkle in paint. But this particular evasion, after all, need not deter us from continuing our search for the first rendering of lustre, for it is not only polished metal that reveals its texture through reflection but also cloth, for instance.

And yet the more closely you study Trecento paintings the more you may be baffled for an answer. Take that treasure of the National Gallery, the *Healing of the Blind* by Duccio from the Siena *Maesta* (Figure 4). It is clear that Duccio handled the treatment of light with assurance. Mark in particular the way the windows are illuminated from the side and the precise gradations of white in the buildings clarifying their shape and position. The draped bodies of the figures are also modelled with assurance, and even the blind man's stick shows an illuminated and a shaded side. But are these modifications of the draperies to be seen as lustre? The answer depends on our interpretation of what we have in front of us. Indeed the more insistently we ask the more we feel that Duccio would not have wanted us to interpret his tonal effects in such a precise way. No more, in fact, than he would have wanted us to ask how far and how tall the buildings in the background are, or whether the Apostles standing farther back are taller or standing on higher ground. We are told, and rightly so, that in medieval art such questions must not be asked, because this tradition operates with conceptual or conventional symbols which tell the sacred story without direct reference to visual reality. And yet this is a slightly deceptive answer. For in a sense, as I have tried to argue elsewhere,⁹ all art operates with conceptual or conventional symbols, though the character and amount of information these symbols are able to convey may differ radically. From this point of view medieval art happens to be a highly complex case, for it grew out of the naturalistic conventions of ancient art which it put to a novel use. It was in the illusionistic art of antiquity that the methods of suggesting light and reflection were developed, and the distinction of *lumen* and *splendor* is explicitly mentioned by Pliny in this context.¹⁰ Having announced a lecture on fifteenth-century painting I must be careful at this point not to be caught in an infinite regress, beyond convincing you that here as elsewhere the Renaissance was indeed a Renaissance, the rediscovery of potentialities in the classical tradition that had lain dormant during the Middle Ages. Not that the distinction between *lumen* and *splendor* is always quite clear in those works of ancient painting that have come down to us, but the more subtle of the still lifes from Pompeii and Herculaneum and of the mummy portraits from El-Faiyum and Hawara of the first centuries A.D. (Figure 5)¹¹ show distinct highlights on glass, grapes, gold and pearls. The portraits usually also show a highlight on the tip of the nose that was to become conventional in medieval art. I remember noticing, by the way, that discussion of this point tends to bring out the powder compacts of my female listeners. But whether they want it or not, the human face can and does show *lustro*, particularly in the intense *lume* of the south.

It is this precise differentiation which is lost in the traditions of medieval art. In a way, of course, this loss is less surprising than the persistence with which medieval styles held fast to the effects of tonal painting as such. You find it in many of the most schematic and conventionalized styles of the West, and the convention is frequently revitalized by contacts with Byzantium, where the link with ancient painting is of course closest. The exact transformations, however, by which a naturalistic idiom became transformed into the hieratic style of the Icon still await analysis. In the Washington *Madonna* (Figure 6), which Berenson attributed to



FIGURE 6. *Byzantine Master, The Virgin and Child. Washington, D.C., National Gallery*

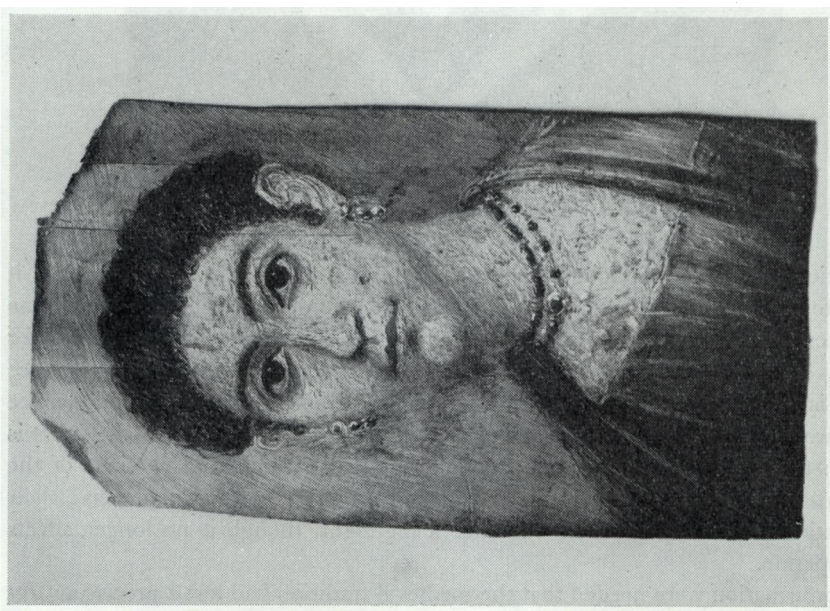


FIGURE 5. *Graeco-Egyptian Portrait (2nd century A.D.). London, British Museum*



FIGURE 7. *Tuscan Master, Head of St. Michael. Vico l'Abate*

Byzantium around 1200, light is stylized into gold.¹² On the throne we can call it *lume*, for we see the incidence of the light on the sunk panelling—though no consistency is aimed at. The golden lines along the folds might stand for lustre, for they give us the impression of a precious material shot with gold, but we soon notice that it is not only pedantic but illicit to worry our heads over this distinction since there are no cues which would allow us to tell what the painter intended. If that is true in the East it is all the more obvious in the provincialized versions of the *Maniera Greca* that we find in Italy (Figure 7).¹³ Even here jewels receive their conventional white spot which was once a highlight, though it no longer affects us as sparkle.

If confirmation were needed that the medieval tradition had lost a precise awareness of our distinction it could be found in both those late codifications, *The*

Painter's Handbook of Mount Athos and Cennino Cennini's *Libro dell'Arte*.¹⁴ This latter one is particularly interesting as it was written near the very threshold of the New Age, possibly only a few years before Alberti's *Treatise* and Jan van Eyck's *Madonna*. I must introduce you to this method in some detail, for it exemplifies the rôle which schematic conventions play in the traditions of paintings. In my book on *Art and Illusion* I have tried to condense this conviction in the formula that making comes before matching. It is with the making of images that Cennini is concerned, and there is no clear distinction in his mind between recipes for the grinding and mixing of pigments and prescriptions for the painting of folds.

Having decided, he says (Chapter LXXI), whether the drapery is to be in white, yellow, green, red or any other hue, the painter must take three dishes to represent the three gradations of tone.¹⁵ If he decides for red, for instance, he must put into the first dish cinnabrese with a little white, well mixed with water. In another dish he should mix a lighter red by using much more white. Having established these extremes he can always find the required mean by mixing the two in his middle dish. He then begins laying in the darkest parts with the darkest of the three tones, taking care not to go beyond the middle of the thickness of the figure.¹⁶ (I take this to mean that the figures are on the whole envisaged to be lit from in front and to recede into the shade.) Then you lay in the middle tone from one dark tract to the next, blending them well in. Then comes the third and lightest of the tones with which you colour the protruding parts (*il rilievo*), arranging the folds with good design, feeling and practice. Having gone over these several times in order to blend them well, take another dish with a colour that is lighter even than the lightest of the three and pick out and whiten the ridges of the folds. Then take pure white and pick out perfectly all the places which protrude. And finally, take pure cinnabrese and go through the darkest parts and some of the outlines. Watching this work, Cennini adds rather disarmingly, you will understand it rather better than reading this. Note that he says watching it being done, he does not say looking at real drapery. Making comes before matching.

For though the result is certainly convincing, there is very little reference to natural appearances in this method. In this respect, by the way, the excellent translation of Cennini's *Handbook* by Daniel Thompson is a little misleading. For Thompson always makes Cennini say 'put on lights' where the original merely speaks of *biancheggiare*, whitening. The lights sound as if Cennini had thought of reflections, but his expression *bianchetto* which marks the utmost relief is much more neutral. Clearly in all Cennini's precepts, whether for drawings, fresco or tempera the implication is that ridges in lit areas should be marked with white—it is the procedure we still call heightening with white, and which belonged to the technique of drawing on tinted paper also recommended by Cennini.¹⁷ Even the term highlight may still carry with it some of the implication not only of the highest, that is the brightest light, but also of the relief it tends to give; so much at least is suggested by the French word *rehauts*.

There is some reason in optics for this identification, for highlights do indeed tend to settle on ridges and protrusions of lit objects. For since highlights are reflections of the source of light, the sun, the sky, a window or a lamp, any curved

surface that acts like a convex mirror will be more likely to catch this reflection since the whole of the surrounding will be reflected much as in the side mirror of a motorcar. The steeper the curvature, the smaller and more concentrated will this mirror image be, the more irregular the surface, the less will it be recognizable. If you want to extend your hunt for highlights beyond the National Gallery to your backgarden, study, kitchen, pantry or wherever else you happen to look, you will also notice that highlights are not only more likely to settle on such edges and protrusions but that they also remain there more tenaciously for equally good geometrical reasons. A flat polished surface acts like any flat mirror—we see the shifting as quickly as we see change in our surrounding. But in the convex mirror the displacement is as reduced in size, and hence in speed, as is the whole of the reflected area. Hence we scarcely notice the shifting of the highlights in these exposed positions—the eyeball or the tip of the nose can thus be described accurately, though scarcely poetically, as one of those reducing mirrors which are most likely to receive the image of a lightsource from somewhere and to retain it faithfully wherever we turn.

The rule of thumb recorded in Cennini, therefore, and confirmed by the practice of painters and draughtsmen to mark the *rilievuzzi* by *bianchetti*, will certainly achieve its aim of giving the impression of relief. It does so precisely because we have good reason on grounds of probability to interpret a strongly illuminated part as a protrusion. But a moment's reflection—in both meanings of the term—will show us that this guess can also lead us astray, for in the visible world it is not only convexities which thus catch the image of a light. The concave sides of a bowl or sphere also act like a mirror when polished; though functioning like magnifying mirrors they will of course invert the image of a distant lightsource if we, too, stand beyond the distance of the mirror's focal length.

There is quite a gap, in other words, between the simplified convention and the variety of possibilities realized in the visible world. But the most striking omission in Cennini is of course the absence of any trace of awareness that different materials should receive more or less white linings on the ridges according to their tendency of reflecting or absorbing light. Cennini's silence about texture in this context is all the more telling as he does have advice to offer elsewhere to painters who may want to imitate the texture of velvet, wool or silk exactly. His method here is briefly to imitate these textures directly on the wall or panel just as gold brocade in his time is still imitated with a surface of stencilled gold. If the painter wants to achieve the exact appearance of a lining or dress that really looks like a woollen cloth, Cennini advises him to roughen up the surface of the wall with a wooden block to give it the appearance of woollen texture (Chapter CXL). The idea is the same as with the imitation of gold—you try to copy or duplicate the actual texture and material character of the stuff rather than its characteristic reaction to light.

Knowing, as we do, Jan van Eyck's astonishing success with this latter method, Cennini's advice inevitably strikes us as rather naïve. Yet his concern with real texture is clearly a sign that the medieval tradition was breaking up and that he meant what he said when, in a famous passage, he speaks of the triumphal arch of drawing from nature, a guide that is superior to all exemplars (Chapter XXVIII).

In fact I oversimplified matters a little when I represented Cennini as a source for our knowledge of medieval conventionalism. It is true that his advice on painting draperies and his remarks on the distribution of tones are generally in accord with procedures that can be traced back through the centuries and possibly as far as classical antiquity. But there are passages where the conventional term *bianchetti*, whitenesses, gives way to the term *lumi*, lights, and there is that astonishing chapter in which the artist is advised to pay heed to the fall of light and the position of the windows in a given chapel where he works. 'You must', he writes, 'grasp and follow it with the required understanding, for else your work would show no relief whatever and would turn out a crude thing of little skill.' (Chapter VIII.)

It was of course Cennini's special pride that the skill and method he taught was the tradition he had received in direct line of succession from none other than Giotto, the master of the master of Cennini's master Agnolo Gaddi. 'It was Giotto who transferred the art of painting from Greek into Latin and made it new.' How much we would all give to be able to ask Cennini what exactly he meant by this remark ('Giotto rimuto l'arte del dipignere di grecho in latino, e ridusse al moderno'). Unfortunately there is only one other passage where Cennini comes back to Giotto's achievement and the procedures he started and that, too, is not easy to interpret. It seems, however, that it has a direct bearing on our subject, for Cennini here contrasts Giotto's methods of modelling a head in fresco with two other traditions he considers inferior. Basically, I think, the contrast is one between crude and slap-dash methods and the care and finish demanded by Giotto's heirs. What all methods he discusses have in common is the preliminary work in sinopia of which we now know several examples revealed to us by the restorers. The face is first roughed out with a soft brush whereby the painter must remember to divide it into three equal parts, the forehead, the nose and the chin. Then one must proceed to shade the face under the chin and the nose and on the side where it is to be darker with liquid terre verte. Some masters continue now with the lights, or rather the whites, searching out the highest points and reliefs of the face one by one. It is only when the whole modelling in light and shade is completed that they superimpose a transparent layer of flesh tint in water colour. Only a few of the reliefs remain then to be picked out in white. This, says Cennini, is a good method. Much better in any case than first to lay in the flesh colour and then put in the shades with verdaccio and touch it all up with white, which is done by those who know little of the craft.

But Giotto's tradition which Cennini had learnt in twelve years of apprenticeship demands infinitely more care. Start colouring the underpainting by indicating the lips and the cheeks in red, and then use three shades of flesh colour in three dishes, as many in fact as for the modelling of any drapery, start with the lightest one, then paint the half tones and then seek out the deepest shadows with the darkest tone but take care that the terre verte underneath still tells at the extremes. Go over it all several times softening the transitions from one flesh tone to the other as nature shows it. It is only after this careful modelling that the last touches are applied with a sharp minever brush, the white of the eyes and the tip of the nose in pure white, the outlines of the eyes, the nostrils and the openings of the ear



FIGURE 8. *Giotto, Head of the Virgin. From The Last Judgement, Padua, Arena Chapel*

in black, some dark red, for instance, between the lips, and all is done except the hair for which there are still special procedures (Chapter LXVII).

It is clear, I think, that in this procedure and tradition the emphasis is on modelling, on modelling moreover from light to shade, for this is the sequence in which the three flesh tones are applied. It is surely not fanciful to connect this procedure with that impression of solidity we all associate with Giotto and his tradition (Figure 8). For in this careful tonal method with its meticulous application and blending of three flesh tones the conventional lights are devalued in their function. The method condemned by Cennini depended largely on the darks and lights superimposed on the uniform flesh tone to indicate form; in what he described as Giotto's way these accents become subordinate to the establishment of structure from the very beginning. I believe that the visual evidence supports this interpretation. What Vasari called the Greek manner—including the paintings we



FIGURE 9. *Attributed to Cimabue, Angel. Assisi, S. Francesco*

attribute to Cimabue or Duccio—still relied much more on the effects of undifferentiated lights which you can see in the head of an angel attributed to Cimabue in Assisi (Figure 9). Any visitor to the Uffizi must be struck by the incomparable clarity and majesty of Giotto's *Ognisanti Madonna* (Figure 10) that is enhanced by the absence of those fussy lights which can be seen on any well-preserved panel of the *Maniera Greca*. As always, there is both gain and loss in this revolution. Compare the head of the Christ Child from Duccio's *Madonna Rucellai* (Figure 11), with its charming highlight on the tip of the nose, with Giotto's heavy modelling and smooth transitions into the shadows so well described by Cennini. It is clear from these and other details how far Giotto had moved away from the Byzantine convention of painting light and had concentrated on the function of light as a revealer of form. It is not for nothing that it was Giotto who apparently painted the first monumental grisailles in the Arena Chapel imitating sculpture.

It was with this method of modelling in large, clearly lit planes that Giotto 'transferred the art of painting from Greek into Latin and made it new'. We can study the effect of his innovation in the Florentine tradition of the Trecento, and I recommend to you here the many details of Florentine frescoes which have recently become available in excellent new photographs in the Phaidon edition of Berenson's



FIGURE 10. *Giotto, Madonna Ognisanti. Florence, Uffizi*

lists,¹⁸ which show the concentration of form rather than texture. It fits in well with this interpretation that the Sienese tradition remains relatively unaffected by Giotto's reform and rather continues developing that detailed attention to minor articulations that is consistent with individual strokes of white—witness the details from a fresco in Siena by Ambrogio Lorenzetti available in Miss Borsook's invaluable book on the *Mural Painters of Tuscany*.¹⁹

Which of these two methods is more realistic? You realize that this is not really



FIGURE 11. *Attributed to Duccio, Madonna Rucellai. Florence, S.M. Novella*

an answerable question. For each tradition develops an idiom, or (to use modern jargon) a code in which certain features of reality can be recorded or coded. But once the attention of the artist and of his public has become focused on this possibility of suggesting reality the painter will watch out for those effects he can best express in his system. That mnemonic formula that making comes before matching is meant to remind you that such schematic methods as Cennini had learned from



FIGURE 12. *Masaccio, Heads of Bystanders. From The Chairing of St. Peter, Florence, S.M. del Carmine*

Giotto's tradition were not so much based on observation as that they led to fresh observations. I believe, for instance, that it was this emphasis on modelling in firm planes that necessitated increasing attention on the imagined fall of light and the effect of tonal gradations.

In a fresco in Santa Croce dating from about 1390 by Angolo Gaddi, in whose workshop Cennini was trained for twelve years, the figure of St. Mark is conceived in a unified light which is indicated by contrasting planes.²⁰ Once these effects were noticed and studied the way was open for a genius such as Masaccio to use these contrasts for the suggestion of sunlight (Figure 12). In one sense this involved the sacrifice of Giotto's method of smooth transitions, and yet it is hard to see how this realistic innovation could have emerged directly out of the conventions of the *Maniera Greca*. For Masaccio knows how contrasts in areas create the impression of strong light and shade. It was this discovery also that enabled him to include in his scenes from the Life of St. Peter the miracle of the Saint healing cripples with the shadow of his body.²¹

It is surely no accident that Masaccio's methods of clarifying the position of forms in unified illumination coincide with the first application of scientific

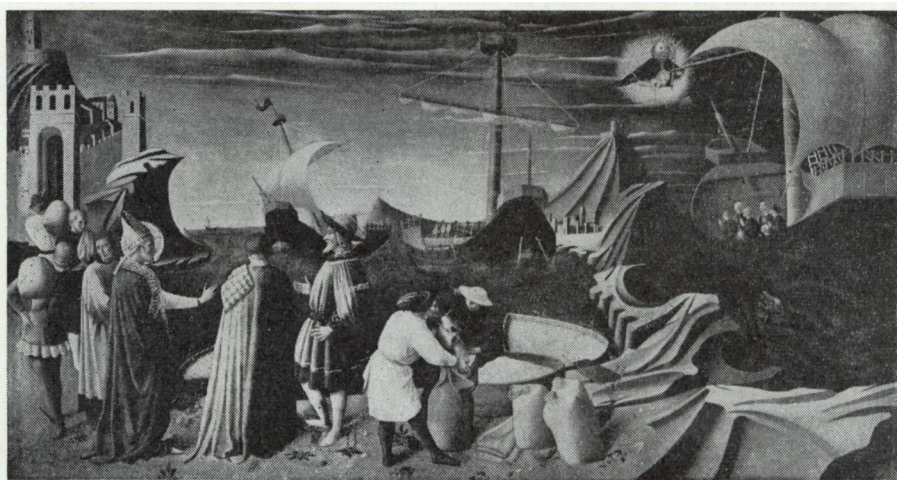


FIGURE 13. *Fra Angelico, Scenes from the Life of St. Nicolaus. Rome, Vatican*

perspective, the clarification of spatial relationships by geometrical means. It was Masaccio, of course, who completed that effect of sculptural solidity and firmness that we still associate with the central tradition of Tuscan art from Giotto to Michelangelo. Its glory remains the clarification of structure, not of texture, for the flickering highlights that shift with our position have no place in this objectivized world.

There exists perhaps an indirect confirmation of my hypothesis that this achievement rested on a supreme act of concentration that involved the elimination of disturbing *bianchetti*. I find it in that memorable passage of Alberti's *Della Pittura* where the treatment of light and colour is discussed. For Alberti no less than for Cennini white and black serve the all-important purpose of creating the impression of relief. To achieve this purpose, we learn, the painter must always balance the whites against darks. He suggests in fact that the painter should proceed in a gradual process of adjustment, always adding a little white here and a little black there and watch the form acquiring relief.²² The best illustration I found of this method comes in this Predella by Fra Angelico painted in Rome in 1437, two years after Alberti's treatise (Figure 13). Notice the curiously artificial effect of this procedure despite Alberti's mistaken idea that it is based on a study of nature. In nature, of course, not every object shows us its illuminated and its shadowed side. But to Alberti this idea of an exact balance is so important that he even suggests marking the pivot or dividing line with a very faint brush stroke to aid in these calculations. It is clear that this procedure excludes the medieval convention of marking the ridges with white. Giotto's reform is carried to its logical conclusion.

It is quite consistent, therefore, that Alberti inveighs against an excessive use of white no less than he censures the use of real gold. Modifying a remark Vitruvius makes about minium, he says that he wishes white pigments were as expensive to

buy as the most precious jewels, for then painters would use them sparingly. The passage is doubly important for us for it is here that Alberti explicitly refers to the problem of highlights and reflections. He knows—and he may have been the first to know this—that the painter's gamut of relationships can never match the range of light intensities that can occur in nature. He must scale them down. The painter must remember—he writes—never to paint any surface so white that it could not be whiter still. Even if you dressed your figures in the most shining white you would have to stop short very far from utmost whiteness. For the painter will find that he has nothing but white with which to render the extreme lustre of the most polished sword and nothing but black to show the utter darkness of night. The power of a correct juxtaposition of black and white can be seen where vessels appear to be of silver, gold or glass and seem to shine, though they are only painted (Book II).

The passage remains admirable despite the fact that Alberti here slightly mixes up two different things, that of light intensities and that of reflections. It was an understandable confusion, for the brightest flash of a polished sword would indeed be a mirror image of the sun and would thus come close to its intensity. But we also see texture and the sparkle of gold on a darkish day when the highlights may be darker than the painter's most intense light. It is indeed *only* what Alberti calls the correct juxtaposition of black and white, the gradients or steps between the tones, that results in this impression of sparkle.

Even so Alberti was right that the painter will have more scope for light-effects the darker he keeps the general tone of the picture. He must sacrifice his enjoyment of bright colours if he is to suggest brightness. The development of painting from Leonardo to Caravaggio and Rembrandt has tended to confirm this analysis.

Was Alberti aided in his astonishing diagnosis by acquaintance with Flemish paintings? He had been north of the Alps between 1428 and 1431, at the very time the new art took shape there, in fact he probably knew it before he returned to Florence from his family's exile. But this is guesswork, and not very important in my present context. What matters is that in the period that was my starting point, the period of Domenico Veneziano and Jan van Eyck, the problem of white and of light was the subject of this searching discussion.

Giotto had started to reduce the conventional whites of the *Maniera Greca* which broke up and disturbed the clarity of structure that could only be achieved by balanced modelling in light and shade. You will have guessed by now that what I want to suggest here as my hypothesis is precisely that this reform had never affected the tradition of Northern painting to the same degree, and that it was therefore easier for the north to rediscover the potentiality of these conventional whites to give the effect of reflections.

I realize that this hypothesis must look redundant to those who see the Renaissance both north and south of the Alps exclusively in terms of a break with the past and a fresh discovery of nature. The historian so minded will be less interested in the chain of traditions. For him Jan van Eyck painted highlights because he observed them, just as Masaccio painted clear forms modelled in light because he knew how to use his eyes. But in a sense the very difference between Masaccio and



FIGURE 14. *Netherlands Master, The Coronation of the Virgin. Brussels, Musée Royal*

Jan van Eyck would suffice to put this explanation out of court. What we observe in nature depends on our interest and on our attention. To the Florentine painters the criss-cross of flitting reflections on the surface of things appeared like a random noise which they disregarded in their search for form. Some artists in the north who also looked at nature became fascinated by the unexpected power of these lights to reveal and suggest texture. I am not, alas, a specialist in Gothic painting, but some of the stages in the rise of the new realism have by now been so well mapped out by those who are,²³ that we know roughly in what territory to look for the first signs of the new skill. Looking at the paintings of the so-called International Gothic style around 1400 we find that the realism of minute details does not yet imply a clear awareness of *lusto*, but we also observe that with all its Italian, especially Sienese and North Italian, motives this idiom still embodies the ambiguities of the medieval tradition that favoured the picking out of bright ridges and luminous points in gold or white. Study the panels of Bohemian masters from the last decades of the fourteenth century²⁴ or of Meister Francke of Hamburg from

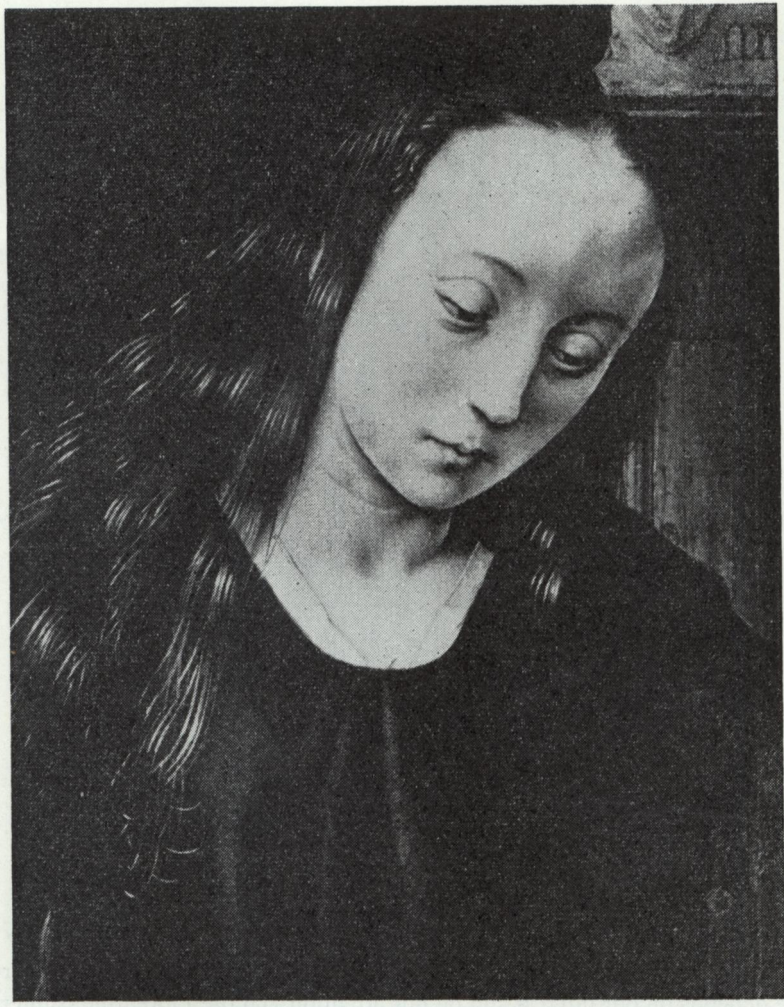


FIGURE 15. *Hugo van der Goes, Head of the Virgin. From the Portinari Altar, Florence, Uffizi*

the early fifteenth²⁵ and note their use of the scattered conventional lights on narrow folds, on hair and on the tip of the nose; pursue these tell-tale details into the Burgundian *ambiente*²⁶ of Melchior Broederlam, and the contrast between these refinements of an old tradition and the methods practised in contemporary Tuscany will become apparent. The rendering of *splendor* as practised in antiquity lies dormant but ready to be revived. In the *Scenes from the Life of the Virgin* (Figure 14)²⁷ painted in the Northern Netherlands around 1400 these white ridges on the drapery, on still life objects and particularly on the organ pipes can be interpreted like real highlights, but there is no consistency yet in the distinction between light and lustre.

Even so, I hope these few examples may illustrate what I have in mind when

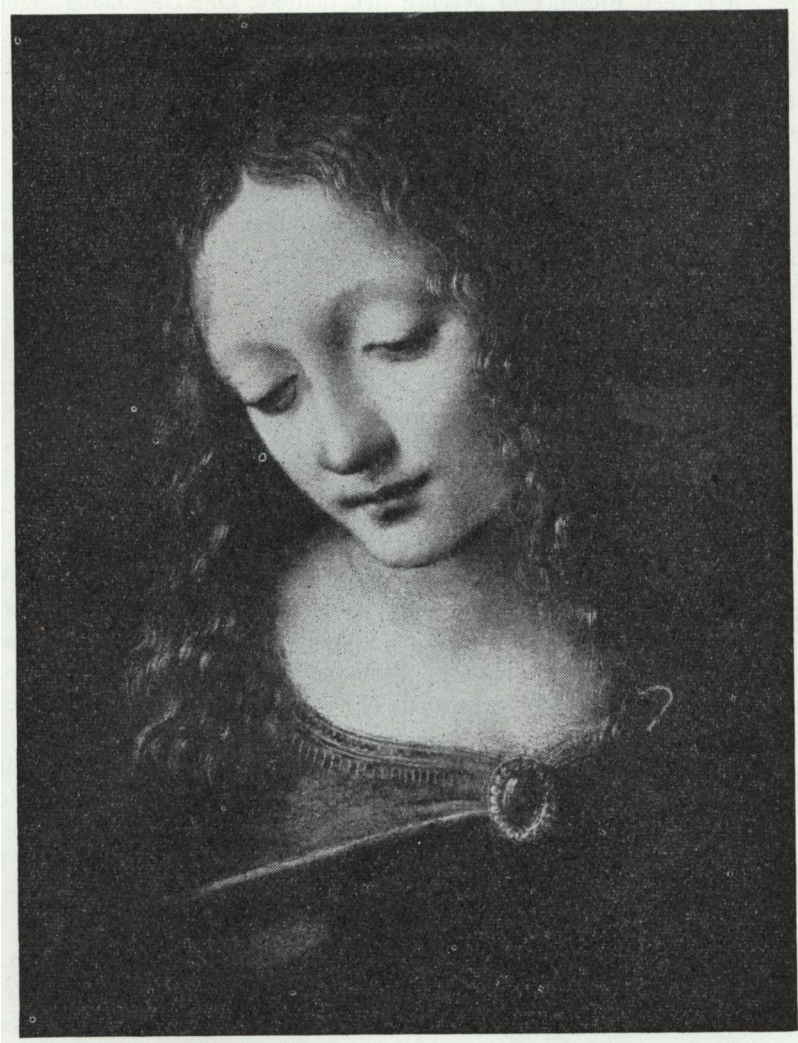


FIGURE 16. *Leonardo da Vinci, Head of the Virgin.*
From The Virgin of the Rocks, Paris, Louvre

I say that the new interest in illusionist effects may have led to the discovery that these lights could be made to suggest sparkle and texture, provided, as Alberti knew, they are sparingly used. For the real discovery of Flemish illusionism is not completed with the new use of these *bianchetti*. It lies in the introduction of a new differentiation, a new gamut that is superimposed on the traditional gamut of tonal gradation. It is the gamut of textures from sparkling jewels to matt velvet that can be expressed by the distribution of lights. Again this magic makes use of a psychological fact of no mean importance. In grasping a system of notation, be it of a language, of a game or of an art, we become alert to what are called distinctive

features—it is their presence or absence that matters. One convincing highlight placed correctly on a pearl or jewel or on the pupil of an eye will also, by force of contrast, help to impart on to the surrounding surfaces the effect of a matt, absorbent texture. It is likely that van Eyck found this method in the making when he set out on his career. It is certainly adumbrated in the work of the so-called Master of Flémalle who is probably identical with Robert Campin.

There is more of Giottesque modelling than of real sparkle in the *Madonna of the Firescreen* in the National Gallery,²⁸ but the subtle lights are placed on such strategic points as on the jewels of the Virgin's garment, the eyes of the Christ Child and on the drop of milk that comes out of the Virgin's breast.

But the full potentiality of *lustro* to reveal not only sparkle but sheen is a discovery that will always remain connected with the art of the van Eycks. This conviction, however, need not deter the historian from exploring the links of van Eyck's technique not only with that of Robert Campin or the brothers Limbourg but with the earlier traditions. The way Jan van Eyck picks out the lights on the Bishop's vestment of brocade²⁹ can perhaps be seen as an infinite refinement of those networks of gold that were conventional in Byzantine art. These networks could be seen as light, as reflection or as that elusive and fascinating effect of shot silk that also gained its place in the repertory of painting, requiring the most careful grading of transitions through hatching or stippling. Nobody, to my knowledge, has yet analysed in any detail how Jan van Eyck combined these effects with those of lustre. Maybe art historians shied away from this task because the admiration of illusionistic effects is considered a hallmark of the untutored and philistine. Maybe also they overrated the explanatory force of a phrase such as 'the meticulous observation of nature'. One would like to see a more technical analysis of the making as well as the matching. What one can even see on any large enough reproduction is the way Jan van Eyck systematically increases the density and brightness of the highlights on the gold threads to conform with the sheen of reflections. It is certainly more easily said than done, but up to a point the trick was picked up by most Flemish artists of the fifteenth century.

I hope that in thus stressing the importance of the systematic modification and refinement of traditions I have not given you the impression that I underrate the importance of the observation of nature in this give and take. Nothing could be farther from my intention. If it were, countless details in Netherlandish paintings would quickly refute me. But if looking alone would suffice to observe and to paint, the discoveries of the *Fiaminghi* would not have made such an impression on the Italians, who surely knew how to use their eyes. We know what a stir was created in Florence by the arrival of the Portinari Altar by Hugo van der Goes (Figure 15). Among those who admired its rendering of natural effects there was also the greatest observer of them all, Leonardo da Vinci (Figure 16), who strove in his formative period to overcome the sculptural neutrality of his native idiom and make his art a mirror of *lume* and of *lustro*, giving each effect its due by following Alberti's advice of lowering the key³⁰ and thus tuning the great instrument of painting afresh for the recording of further aspects.

It is true that the variety of styles confirms the idea that nature can be described

in many different languages, but it happens to be wrong to infer from this premise that any of these different descriptions can not be either good or bad, true or false. We art historians are perhaps guilty here in having concentrated so long on the morphology of different styles and visual idioms without seriously probing their descriptive potentialities in matching the visible world. It is for this reason that I am particularly grateful to our Chairman for having consented to preside over this lecture and thus to honour us with the presence of an artist who is both an original innovator of the language of painting and a great explorer of visual truth.

The Proceedings terminated with the usual expressions of thanks to the Lecturer and to the Chairman.

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