

# Great Art Requires More Than Optical Technology

by Karel Vereycken

**Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters**

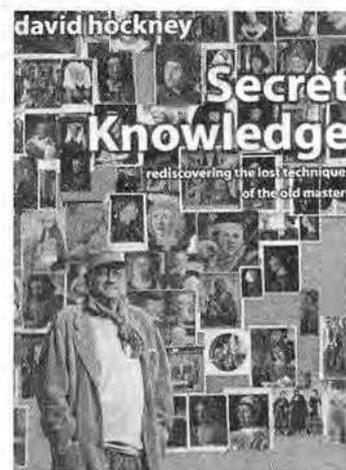
by David Hockney  
New York: Penguin Putnam Inc., 2001  
Hardcover, 296 pp., \$60.00

To glorify contemporary artist David Hockney's two years' investigation as "a sensational discovery that became the subject of headlines, and media attention and debate among prominent scientists, art historians, and museum directors worldwide" (as one promoter of this book did) is overdone.

Trained at the age of 16 at the Bradley School of Art in England, where he did

drawing four days a week from a life model, author David Hockney proudly writes today, "I am probably one of the last people trained in the old art school ways." Although his conclusions are sometimes brilliant observations of one who knows "how to look," the "secret knowledge" he discovered has the dimension of what the English call a "tempest in a teapot." But, as another old saying goes: In the land of the blind, the one-eyed is king.

The two-year inquiry, debate, and



epistolary exchanges between Hockney and some of his professional friends, such as the Newton-loving Leonardo expert Martin Kemp, nevertheless gave birth to a little messy but useful and



**Figure 1**  
**TWO TYPES OF DRAWING**  
*Portrait of Mme. Louis-François Godinot, 1829, by Jean Ingres, in the Collection of André Bromberg, Paris.*

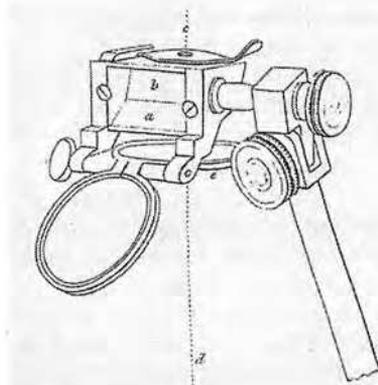
Source: Photograph by Sothby's, Paris.

**Figure 2**  
**THE CAMERA LUCIDA**  
**LUCIDA**  
**OR LIGHT ROOM**

The camera lucida, shown here in a diagram, was invented by the English chemist W.H. Wollaston (1766-1828), who described it as follows:

"The principles on which it is constructed will probably be most distinctly explained by tracing the successive steps, by which I proceeded in its formation. While I look directly down at a sheet of paper on my table, if I hold between my eye and the paper a piece of plain glass, inclined from me downwards at an angle of 45°, I see by reflection the view that is before me, in the same direction that I see my paper through the glass. I might then take a sketch of it; but the position of the objects would be reversed. To obtain a direct view, it is necessary to have two reflections. The transparent glass must for this purpose be inclined to the perpendicular line of sight only the half of 45°, that it may reflect the view a second time from a piece of looking glass placed beneath it, and inclined upwards at an equal angle. The objects now appear as if seen through the paper in the same place as before; but they are direct instead of being inverted, and they may be discerned in this manner sufficiently well for determining the principal positions. . . ."

Source: D. Hockney, *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*



sympathetic book. Hockney's "revelation" started when he visited the Ingres exhibition at the National Gallery in London in January 1999. A close look at Ingres's drawings, allowed him to identify two sharply contrasting ways in which Ingres handles the pencil, including differences within a single drawing.

For example, take the difference between the face and the clothes in the 1829 Ingres drawing of Mme. Louis-François Godinot (Figure 1). The first method of drawing is called "eyeballing," which is even more visible in Ingres's smaller drawings of arms and hands, where he shows a typical "groping": This is the hesitating search for the adequate line able to catch the ephemeral manifestation of life and form, as visible in the face of Mme. Godinot.

The second method of drawing, as seen in the rendering of her clothes,

produces a full-of-confidence, continuous line. This is similar to those seen in Pop artist Andy Warhol's drawings, when he contours on a board images projected from a slide projector. Ingres's drawing strongly suggested to researchers the use of an artists' instrument, made in 1806, called the *camera lucida* (Figure 2).

Hockney writes that "the camera lucida is not easy to use. Basically, it is a prism on a stick that creates the illusion of an image of whatever is in front of it on a piece of paper below. This image is not real—it is not actually on the paper, it only seems to be there. . . . Because it is portable and can be carried anywhere, it is perfect for drawing landscapes."

This discovery got him so excited, that he began a re-examination of all the visual heritage of the past, tracking down, detective-style, anything that was able to serve as proof, witness, indication, or example of the use of optical devices by the old masters. The recent brawl over Vermeer's supposed use of a "camera obscura" (box, p. 59) made Hockney's curiosity even stronger.

#### A Great Wall of Images

To visualize his thoughts, Hockney took the longest wall of his studio in

California and pasted up hundreds of portraits, trying to bring coherence in his ideas about the evolution of the image over centuries. By looking at his "Great Wall," he realized that there was a sudden, brutal change in handling of the image at the time of the early Renaissance—a change most prominent in Flanders. That sudden eruption of "naturalism" became apparent through the rendering of the individual's details, such as skin folding or double chin. There was also the appearance of strong shadows, indicating a powerful source of light.

Hockney writes: "The sudden change I could see suggested to me a technical innovation rather than a new way of looking that then led to a progressive development of drawing skills." In Flanders, at the same time, notably in Roger Campin's and Van Eyck's paintings of the 1430s, appear two basic optical instruments: convex mirrors (easier to make than flat mirrors) and lenses.

With a simple shaving mirror (which is not convex, but concave, and which has technical challenges required to manufacture it, which Hockney avoids), the author did an amusing experiment:

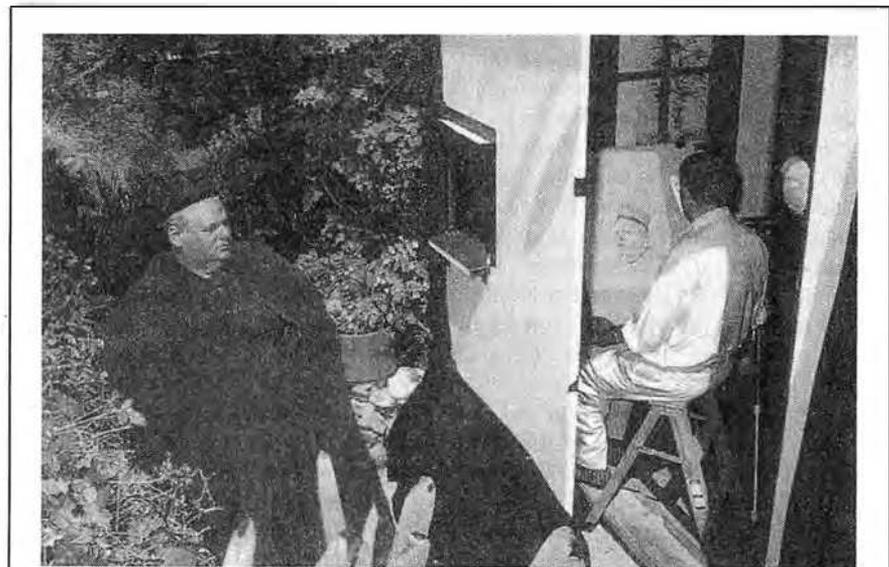
"To make the projected images even



**Figure 3**

#### BASIC OPTICAL INSTRUMENTS

This detail from the 1438 Heinrich von Werl triptych, by Robert Campin, shows a convex mirror. The painting is at the Museo del Prado, Madrid.



**Figure 4**

#### HOCKNEY'S MIRROR AND DARK ROOM METHOD

The mirror-lens set-up (with curtain pulled away to show inside the darkened room).

Source: D. Hockney, *Secret Knowledge: Rediscovering the Lost Techniques of the Old Masters*; photo by Richard Schmidt.



(a)



(b)

**Figure 5**  
**TWO PORTRAITS OF**  
**CARDINAL NICCOLO ALBERGATI**  
*Both the silverpoint drawing of the*  
*Cardinal (a) and the oil on wood (b)*  
*by Jan Van Eyck (1431) are in the*  
*Kunsthistorisches Museum, Vienna.*

clearer I cut a hole in a piece of board to make a little window like those I had seen in Netherlandish portraits. I then placed this board in a doorway and blacked the room. I pinned a piece of paper next to the hole, inside the darkened room, and set up the mirror opposite the window and turned it slightly towards the paper. Then a friend sat outside the hole in the bright sunlight. Inside the room, I could see his face on the paper, upside down but right way round and very clear. Because the image was not reversed I was able to make a few key 'measurements' and mark out the corners of the eyes, nose, mouth, just like I had done with the camera lucida. Then I took the paper down, turned it right up and worked from life. . ." (Figure 4).

#### Fallacies of Composition

So far, so good, and lots of fun. But then, several fallacies of composition enter. Overwhelmed by an all-explaining surge of enthusiasm, Hockney lines up a considerable amount of errors and "anomalies" in European painting, all of them, of course, explainable by the use, bad use, or non-use of optical devices. In this, he reminds us of the discoverers of "the libido" or those of "genetics," who imagined their discovery gave them the cosmic key to apprehend the alpha and omega of the universe.

Hockney ends up with an historical time-line, trying to classify painters into two schools: the "eyeballing/geometrical" school and the "lenses/optical" one. Some painters, obviously, were part of both of them, while others were dominantly on one side. Because most of the arguments are "demonstrated" through the 460 illustrations of the book, it is not possible to go through all of them here.

Admittedly, several of these explanations appear fairly credible, as the cases of the Italian Caravaggio and the Dutch Honthorst, two fashionable painters, hunting easy glory and fast income, who were obviously out to gain time, and would be eager to use optical devices for that purpose.

Other arguments, such as left-handed drinkers, supposedly indicating mirror projections; multi-focussed compositions; and nonlinear perspectives do not appear credible. The worst case of lack of rigor, presented as a valuable piece of Hockney's "proof," is his analysis of Van Eyck's portrait of Cardinal Albergati (Figures 5a and b), who presided over the Council of Florence in 1438 (p. 78). This is an explanation which Hockney largely derives from an exchange with professor Charles Falco of the University of Arizona at Tucson:

"Van Eyck's drawing of the cardinal is about 48 percent life size, but the

painting is 41 percent larger than the drawing. What is amazing is that when you enlarge the drawing by that amount and lay it over the painting, many of the features line up exactly: the forehead and the right cheek, the nose and the nostrils, the mouth and the lips, the eyes and the laughter lines—all align perfectly. Now shift the drawing up the right by just 2 mm and the neck and the collar match; shift it up by 4 mm and the ear and the left shoulder are spot on."

Obviously, here the "proof" is somehow contaminated by the desire to be right. Let's be honest: Either it fits, or it doesn't. When it fits, it's a "good proof," and when it doesn't fit, the painter is accused of having drawn an inappropriate gesture! Moreover, I can add from my own experience as drawing teacher, that pupils can be trained to copy the exact size of models, with precision near to the millimeter!

#### Missing Pieces

Another weak part of Hockney's thesis is the missing pieces of his "Great Wall." Notably missing are the classical figurative Greek painting of Apelles, the school of Sycione as recounted in Plinius the Elder, and the Greek influence in Egypt. This last is shown by the very realistic "mummy"-portraits painted in the Faiyûm region of Egypt, west of the Nile, during the 1st Century A.D., more than a thousand years before the production of lenses and mirrors in Flanders (Figure 6)!<sup>1</sup>

Even more regrettable is the fact that Hockney does not really clarify the ambiguous case of Johannes Vermeer. Vermeer, a close friend of Anthony van Leeuwenhoek, the inventor of the microscope and a Leibniz correspondent, seemed totally fascinated and charmed by the poetical power of images produced by such "camera obscura" devices. But for Hockney, technical arguments overrule poetry. He writes:

"Foreground objects and figures are sometimes very large; some things are painted in soft focus, or out of focus all together. In the painting of the milkmaid, for example, the basket in the foreground is out of focus compared with the basket hanging up behind, a distortion Vermeer would not have seen with the naked eye. Nor could he have ren-



**Figure 6**  
**AN EGYPTIAN MUMMY PORTRAIT,**  
**1st CENTURY A.D.**  
*One of several life-like Faiyûm por-*  
*traits.*  
 Bildarchiv Preussische Kulturbesitz

But Allan Mills, an astronomer and expert on early optics, argues that there is no solid proof of Vermeer's use of such a device, because the quality of the images produced by single lenses would have been so poor at this period, as to render them valueless for painters. Mills says that the lines become slightly curved, poorer in focus, and less bright at the edge of the image, an effect known as "vignetting."

According to Mills, proponents of the contrary view, like Hockney, are misled by the superb quality of images obtained by modern cameras.

After many acrobatical half-demonstrations, Hockney realizes that his thesis "it is that simple," somehow spoils not only his scientific but also his artistic credibility, and reduces the making of art to a barely technical performance. After all, lenses and mirrors have no brains, which mean that if it is all

feels obliged to say: "It is worth repeating here, I think, that optics don't make marks—they only produce an image, a look, a means of measurement."

### The Real Power of Art

Although Hockney's book sharpens our mind and teaches our eyes to look not only at "what" we see, but also to look at "how it was done," we have to emphasize that there exist much more important forgotten and lost secrets of art, far distant from the insane competition between handmade and technical representations of our vision.

The making of art today is not defined by technical problems of representation, but by the realm of generating powerful metaphorical paradoxes and ideas, capable of uplifting our species into everlasting beauty. That challenge goes far beyond the practical obsession of a simplistic Aristotelian want of "mimesis" (imitation of nature).

*Karel Vereycken, an artist, works with the LaRouche political movement, based in Paris.*

dered the 'halo' effect of out-of-focus highlights, seen here on the basket, the bread, the tankard and the jug, unless he had seen it."

easily done by optics, the art is gone . . . and so is the artist.

In order to prevent the reader from coming to such a conclusion, Hockney

### Notes

1. Karel Vereycken and Philippe Messer, "A Gaze from the Beyond: The Extraordinary Faiyûm Portraits," *Fidelio*, Summer 1999, p. 83.

## The Camera Obscura or Dark Room

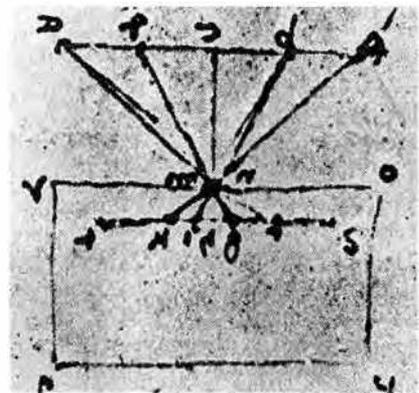
Mostly known by the studies of Leonardo da Vinci, the *camera obscura* is a natural phenomenon, and has a long history. In its simplest form, it is nothing more than a small hole through which light passes from a sunlit garden into a dark room, projecting an inverted image onto the wall opposite the hole. The size of the hole will affect the sharpness of the image.

Aristotle wrote about the *camera obscura* in the 4th Century B.C., at about the same time as philosophers of China were recording their observations of images of pagodas, projected through gaps in window blinds. Early observations appear also in the Arab world, notably in the writings of Alhazan (Ibn al-Haitham 985-1038). But in 1086, the Chinese scholar Shen Kua writes beautifully in "Meng Chhi Pi Than":

"When a bird flies in the air, its shadow moves along the ground in

the same direction. But if its image is collected (like a belt being tightened) through a small hole in a window, then the shadow moves in the direction opposite to that of the bird. The bird moves to the east while the shadow moves to the west, and vice versa.

"Take another example. The image of a pagoda, passing through the hole or small window, is inverted after being 'collected.' This is the same principle as the burning mirror. Such a mirror has a concave surface, and reflects a finger to give an upright image if the object is very near, but if the finger moves farther away, it reaches a point where the image appears inverted. . . . Are not human beings also rather like this? There are few people whose thinking is not restricted in some way. How often they misunderstand everything and think that true benefit is harmful, and that right is wrong. In more serious cases



### LEONARDO'S CAMERA OBSCURA

*One of Leonardo's many drawings of his experiments with the camera obscura. The objects at top are illuminated and their images are reflected through a pinhole into a darkened chamber. Their images appear there upside down and transposed right to left.*

they take the subjective for the objective, and vice versa. If such fixed ideas are not got rid of, it is really difficult to avoid seeing things upside down."