

January 12, 2004 | home

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ONWARD AND UPWARD WITH THE ARTS

The Looking Glass

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In January, 2000, Lawrence Weschler published an article in *The New Yorker* about a startling theory advanced by the artist David Hockney: that the Old Masters used lenses and other projection devices to make their paintings—a technique, Hockney argues, that they considered a trade secret. This December, at a public www.artandoptics.com sponsored by the New York Institute for the Humanities at New York University, Hockney, Weschler, Gilles Peress, Chuck Close, and others will discuss new evidence that Hockney has uncovered as well as the larger controversy that his assertion has provoked. Hockney's book on the subject, "Secret Knowledge," is available through Viking Studio. The original article appears below.

Watch out! It looks like David Hockney is on another one of his perceptual/conceptual tears. Or so I came to realize several weeks ago when I happened to be in Los Angeles and, as I sometimes do on such occasions, called him up, and immediately found myself being ordered about. "Get up here!" Hockney commanded. "There's something I have to show you!" Meeting me at the door of his colorful Hollywood Hills home a few hours later, Hockney led me straightaway up the path to his hillside studio. Though his hearing has been deteriorating, and he now wears an earpiece, Hockney, at the age of sixty-two, is tall and determined, and, loping ahead of me as he opened the studio door, seemed more vigorous than he has in years.

The wall to the left of the studio entry was covered with dozens of recent portraits of friends—evidence of a suddenly renewed interest in the form. Hockney allowed me a few moments to admire the pictures, but rather quickly (and quite uncharacteristically) he drew me away toward a wide worktable in the middle of the studio, which was covered with art books, reference manuals, bulging folders, and scribbled memos. One might have been excused for imagining Hockney to be gearing up for a full-frontal assault on the entire history of the Western painterly tradition; and, as it turned out, one would not have been far wrong.

"The past year, as you know, was an incredible one for art shows," Hockney began. "The Pollock in New York, the Monet in London, and the Ingres, also, initially, in London. I spent hours at each, and each seemed to leave me more exhilarated than the one before. Especially the Ingres, which I went back to three

times—the paintings, but, in particular, the drawings. Now, for someone like me, trained in the conventional Carracci tradition—you know, plumb line, the extended thumb, gauging relative proportions, and so forth—those pencil portraits of Ingres's were mind-boggling. For one thing, their size—how small they turn out to be, when you get to see them in person. The images are seldom more than twelve by eight inches, incredibly detailed and incredibly assured. If you draw at all, you know that's very rare and not at all easy.

"I bought the catalogue, brought it back here to L.A., studied it some more, read every word, blew up some of the drawings on the copier over there, and one morning, studying the blowups, I found myself thinking, Wait, I've seen that line before. Where have I seen that line? And suddenly I realized, That's Andy Warhol's line."

Hockney cited a show of Warhol's "Studio Still-Lifes" at Paul Kasmin's gallery, in New York, the year before last. "And Andy's is indeed the same kind of line: clean, fast, completely assured. Now, in Andy's case we know he was using a slide projector—Kasmin even had the original photos from which Andy had traced his images." Hockney reached for the Kasmin catalogue, opened the slim volume to a page featuring Warhol's 1975 arrangement of a bowl, a can opener, and a handheld mixer, and then opened his well-thumbed Ingres volume to the stunning 1816 portrait of Lady William Bentinck.

"Look at that," Hockney said, "and now look at this, especially the clothes, the fall of the draped cloak, the ruffle around the neck, the gathered sleeve, and then her expression, its palpable freshness: the speed of the line, its boldness, its absolute confidence, no awkwardness, no hesitancy. Of course, Ingres wasn't using a slide projector, but he might well have been using a camera, a refracting instrument of some sort."

Hockney reminded me that cameras and lenses long predated the invention of chemically fixed photography. For that matter, the things that happen to light as it passes through a pinhole are natural phenomena—"as omnipresent and wondrous as rainbows," Hockney said, and went on, "People have marvelled over them literally for millennia, tinkering with ways to exploit the effects. And the more I looked at Ingres's drawings the more convinced I became, on the basis of the optical evidence of the images themselves, that Ingres had to be using some sort of device based on those effects."

Hockney recalled how when he was in art school he'd been shown a camera lucida, a device invented in 1807. So now he sent his assistant down to an art-supply shop to see if he could find one. "Turns out they're relatively rare nowadays and quite expensive: the one he found cost over two thousand dollars," Hockney said. "Anyway, I set up a little corner and—come here, I'll show you."

Alongside the drawings wall, Hockney had erected an alcove, cordoned off with

screens and curtains. This cozy little nook contained a comfortable chair propped before a flat drawing table, on which Hockney had installed his camera lucida—a tiny prism (barely wider than an eyeball) suspended, as if free-floating, at the end of a flexible metal rod. He showed me how when you looked down through the prism the image of whatever happened to be before you seemed to be transposed onto the tabletop—or to any blank sheet of paper that you might put there. The effect was illusory: no image was actually being cast on the page, as with a slide projector. But one could deploy the illusion to help capture a likeness.

"Sit there," Hockney commanded, and then spent a few moments adjusting my pose. "Perfect," he said. "stay like that." He fetched a sheet of paper and a canister of pencils, laid the page beneath the prism, and set to work.

The first part of the session lasted about an hour, but Hockney used the camera lucida itself for only two or three minutes—quickly and, yes, with startling assuredness, sketching out the tangle of my hands, legs, and sleeves, and then, turning to my face, laying in the general shape of my head. Muttering, "This is the crucial part," he posited, with the faintest of pencil stabs, the coordinates of my pupils, the corners of my eyes, my nostrils, the lay of my glasses over my ears, the edges of my mouth. After that, he reverted to a more standard posture, gazing past the hovering prism, as if it weren't even there, and probing my face and then the page, back and forth. His own face was becoming increasingly scrunched up with concentration, so much so that at one point his earpiece began to screech (he plucked it out and set it aside). Only once or twice thereafter did he bother to look through the prism, for minor adjustments.

At length, we took a break, and Hockney reinserted his earpiece. The gist of the image was already well in hand. "Especially the mouth," Hockney said, tapping the page. "It's always the hardest to get right when you're just eyeballing it. Wasn't it Sargent who said, 'A portrait is a painting with something wrong with the mouth'? And a smile is hardest of all: it's not just the mouth but, rather, the precise fleeting relation of the mouth and the eyes, the crinkles around the eyes. I used to struggle for hours to get a proper likeness, revising and revising so as to transcend the drawing's inherent awkwardness, and, even so, if you look back, say, at those meticulously realistic drawings of mine from the early seventies, you'll notice how the sitters are hardly ever smiling: they're stiff, poised, still—posed."

He reached once more for the Ingres catalogue. "Whereas here, look," he said, turning the page. "And this one here, see: absolutely no awkwardness. Not always; not every time. In some of the studies, especially early ones, he's laid in a traditional grid, and you can see his hand groping. But then you get another of those amazing pencil portraits he was doing in Rome, as a kind of sideline—visiting English gentry on their grand tours, people he was often meeting for the first time. He just dashes the images off, usually in a single sitting, with complete authority."

Hockney rifled among some of the other books and images spread about his table. "The thing is, once I started seeing it in Ingres, I began to notice lens- or

mirror-based imagery, optically rendered imagery, in all sorts of other places, including before Ingres, and in fact well before. Hundreds of years before.

"Look here," he said, grabbing a photocopied image. "Most painters, most artists, are highly secretive about their methods. One of the few who were willing to divulge their secrets was Dürer, in the early sixteenth century. In this woodcut, he's showing how you drew a lute in perspective, without, or maybe before the introduction of, lenses. Very complicated; very cumbersome. Takes two guys, an adjustable sightline, a slidable perpendicular grid, a page mounted on a hinged side panel that keeps getting swung into and out of position to note the precise spot where the moving sightline crosses the imaginary picture plane . . . Must have taken hours. That's—what?—that's 1525. And now look at this." Hockney pulled out a reproduction of Caravaggio's "Boy Playing the Lute." "This is—what?—1595. Not only has Caravaggio rendered a lute in complex perspective, perfectly and seemingly effortlessly, with absolute authority, but he's thrown in a violin lying there on the table for good measure."

Back to Dürer, 1525. Hockney showed me another woodcut, this one portraying an artist using an intervening gridded glass plane to block out a portrait; the artist has to keep his eye steady, peering through an eyehole at the tip of a raised stick, and his subject is forbidden to move. "No wonder," Hockney was saying, "that when you paint like this you end up with faces like this." He showed me a Cranach the Younger rendering of "Christ and the Fallen Woman" from around the same period: stiff, impassive faces, mouths grimly shut, expressions stilled.

"Whereas just a few years later you get faces like these." Hockney began flipping through a nearby Caravaggio catalogue. Almost all the faces were vividly alive, openmouthed ("You try keeping your mouth open like that for more than a few moments, as one would have had to, using Dürer's gridded-glass method"), and characterized above all by fleeting, evanescent expressions—expressions, as Hockney put it, "captured on the fly."

He went on, "Notice the constant sense of assurance. And with no drawings, no sketches! There are no preparatory studies with Caravaggio. At any rate, none have survived. Or, for that matter, with Velázquez. Or Vermeer. Or Hals. Or Chardin. Hardly any." Hockney rustled through one reproduction after another. "Suddenly, they all seem to be able to render the image, just like that, onto the canvas itself. And it's not just the great masters." He showed me Dirck van Baburen's "Concert," of 1623: a lute, a violin, one player grinning anticly, another with his mouth open. Seemingly effortless.

Of course, optics don't make paintings; artists do. As Hockney put it, "The lens can't draw a line, only the hand can do that, the artist's hand and eye in coordination with his heart. And, in any case, such optical devices are quite hard to use. You have to be a good draftsman to be able to take advantage of them at all. It took me a good several months to learn how to use that camera lucida. You

look at somebody like Ingres, and it would be absurd to think that such an insight about his method undercuts the sheer marvel of what he achieves. Nobody can do it as well as he can—the subtlety of characterization, the inner life of the drawings—and the more I study him my admiration just goes up and up and up. This whole insight about optical aids doesn't diminish anything; it merely suggests a different story, a more accurate one, perhaps—certainly a more interesting one."

With growing excitement, Hockney proceeded to lay out the broad contours of that story as he was beginning to understand it. Coming out of the Middle Ages, most painting, most rendering, he suggested, was a matter of "eyeballing," of "awkward, groping approximation," but the early Renaissance, especially in Italy, saw the rise of various mathematical systems of perspective and proportion—the transition, say, from Giotto to Piero della Francesca and Uccello, and then on through the glories of the High Renaissance, to Michelangelo and Titian. These systems of perspective were grounded in ever more elaborate intellectual superstructures, a virtual science of vision: tapering grids projected onto empty space, and then filled, according to rigorous rules, with the artist's idealized renditions of reality.

Hockney was becoming convinced, however, that during the sixteenth century, in different places and at different rates, an alternative way of proceeding started to emerge—one based on mirrors and lenses. It had been widely known since antiquity (Aristotle and Euclid both make much of the fact) that when light passes through a small hole into a darkened enclosure a vivid if inverted image of the external world may appear on the far wall. The effect was much discussed, in tones of hushed and pious marvel, during the Middle Ages, and went on to become a central motif—the metaphor, that is, of the eye itself, and, for that matter, the mind, as a room receiving, through a pinhole and onto a blank wall, sense impressions from the outside world—in the epistemologies of thinkers ranging from Kepler and Newton through Descartes, Leibniz, Locke, and beyond. With the passage of time, the effect was deployed in a series of ever more sophisticated boxes—cameras obscura (literally, "darkened rooms")—with lenses to sharpen the projection and mirrors to reverse the inversion. Inevitably, such boxes drew the attention of artists; by the middle of the seventeenth century and into the eighteenth, the devices were in common evidence. Canaletto, for example, used them in his depictions of Venice.

But Hockney was increasingly certain that versions of lens-and-mirror technology (perhaps without the rigid confines of the camera obscura itself) were being used by artists long before that—initially, perhaps, in Northern Europe (with Van Eyck and subsequently the Dutch landscape artists), but rather quickly spreading into northern Italy (and especially Caravaggio's Lombardy) as well.

The transition to lens-assisted artistic production was not without its controversies. Caravaggio, for instance, was regularly attacked by his more conventionally perspectival academic contemporaries, but, as Hockney now pointed out, "the attacks themselves were quite revealing." He reached for Howard Hibbard's 1983 monograph on the artist, which includes a generous sampling of such criticism.

For instance, he cited Giovanni Pietro Bellori's slamming of Caravaggio for making "no attempt to improve on the creations of nature" and for lacking "invenzione, decorum, disegno or any knowledge of the science of painting." Bellori speaks of Caravaggio's need for models, "without which he did not know how to paint," and notes how older painters accused him of being able to paint only in cellars—which is to say, dark spaces—"with a single source of light and on one plane without any diminution." Nonetheless, Bellori goes on, "many artists were taken by his style and gladly embraced it, since without any kind of effort it opened the way to easy copying, imitating common forms lacking beauty."

"Well, maybe not that easy," Hockney concluded, putting the book aside. "I mean, few artists could do it as well as Caravaggio. But, still, it's clear from attacks like these that they must be talking about optical devices of some sort—devices whose use is further confirmed by the evidence of the paintings themselves. I mean, for instance, compare the mathematical foreshortening involved in one of the slain battle figures in a picture of Uccello's with the uncanny rendering of the Apostle Peter's outstretched arms in Caravaggio's 'Supper at Emmaus,' with the near and far hands almost the same size—precisely the effect you'd get, incidentally, with certain kinds of telephoto lens."

These sorts of optical techniques became increasingly dominant and virtually ubiquitous in the seventeenth and eighteenth centuries and clear through the first half of the nineteenth century, at which point, according to Hockney, "suddenly something happens. And that, of course, is the invention of photography—or, to be more precise, the invention of various methods for chemically fixing the sort of lens-cast image that up till then had required the interposition of a human hand."

Hockney pointed out that photography grew directly out of the camera lucida.

Rummaging around in his pile, he read from William Henry Fox Talbot's account of how, in 1833, by the shores of Lake Como, he'd been attempting to sketch with a camera lucida, though "with the smallest possible amount of success." For, Talbot went on, "when the eye was removed from the prism—in which all looked beautiful—I found that the faithless pencil had only left traces on the paper melancholy to behold. . . . The idea occurred to me . . . how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper!" By 1835, Talbot was experimenting with papers soaked in silver chloride, and by 1839 he was able to publicize his method; by 1841, he was using negatives to make multiple positives, a marked improvement on Louis Daguerre's method, developed around the same time, which could produce only a single image.

On first encountering a daguerreotype, Ingres's great rival, Paul Delaroche, declared, "From today, painting is dead." But what really happened, Hockney now argued, is that chemical photography provoked a decisive rupture in the blending of painting and the sort of lens-based way of seeing that had dominated it for more

than three hundred years. "By 1870, the photograph had pretty much established itself as a cheap form of portraiture, and artists, for their part, started to fall away," he said. "Cézanne, for instance, starts to look at the cup before him with both eyes, opening one and then the other, and painting his doubts. Awkwardness returns to European painting, for the first time, really, since Giotto. Surely this is part of why the artists of Europe suddenly start turning toward Japan, and China, where the lens-based methodologies had never held sway.

"Soon Cubism arises and, in this context, can be seen as an ongoing critique of monocular photography and, by extension, I suppose, of the entire lens-based tradition that preceded it. Painting would now endeavor to capture all the things a photograph or a single-lensed vantage could not: for example, time, duration, multiple vantages, the sense of subjectively lived reality. As the years passed, that rupture between painting and lens-based opticality widened, though at first, I'm convinced, it was a choice. Cézanne and his contemporaries knew about the various lens-based devices and chose not to use them. But within a generation or two the knowledge had been lost. And eventually you get to a generation like mine, going to school and looking back at Caravaggio and Velázquez and Ingres, and we honestly can't imagine how they were able to do it. The question itself doesn't even occur to us. They loom there like giants, preternaturally gifted, demigods, almost another species."

I was reminded of the way the peasants, deep in the Middle Ages, had gazed upon such antique relics as the Pont du Gard, the soaring Roman aqueduct outside Nîmes, stumped as to how fellow-humans could have built such things, and convinced that a species of giant must once have strode the earth.

"Well, maybe we should finish that portrait," Hockney now said, smiling, as he straightened his books and pages. He escorted me back to the alcove and set to work. Over the next forty-five minutes, Hockney peered through his camera lucida another three or four times. The rest was steady gazing: my face and the sheet before him.

The likeness, once he'd concluded, was indeed striking, and the speed with which he'd rendered it even more so. Oddest of all, though, was a strange distortion: my front arm seemed to bulge, as if in a convex mirror—much like that in Parmigianino's famous "Self-Portrait in a Convex Mirror" (from 1524).

"Precisely," Hockney said. "But look at the size of the image"—about twenty inches high. "If an artist wanted to avoid such distortions, he'd have had to have his subject stand further back, and the resultant image, in turn, would have been much smaller. Which, for that matter, is probably why those Ingres drawings are so small."

I'd noticed John Walsh's visage up on Hockney's portrait wall, not terribly well rendered (the face was still fairly stiff) but unmistakable nonetheless. Walsh, the

director of the Getty Museum, is a longtime admirer of Hockney's, and I decided to ask him what he made of all this; in another guise, Walsh is an art historian, especially steeped in Dutch art of the seventeenth century.

"Well, I mean, it's quite remarkable, isn't it?" Walsh said, laughing, when I reached him by phone. "The sheer intensity of David's passion these days. David will often take a sound general observation—and not infrequently, like this, a surprising one, one that's long gone unnoticed—and then push and push it, way, way out to the very limit and beyond. Which is fine: it's what makes him an artist, that divine confidence of his. But in this latest discourse, marvellously suggestive as several of his notions are, I fear that David may well find himself sailing against the wind. For before the seventeenth century, where's the evidence? Where's the testimony of sitters or other contemporaries, or the treatises of the artists themselves? We have vast inventories, often compiled for inheritance purposes at the time of artists' deaths, every single brush accounted for—and where are all the lenses and other devices you'd expect to find listed, if David were right? It's pretty dicey."

In New York, I looked up Gary Tinterow, a senior curator of paintings at the Metropolitan Museum and one of the principal organizers of the Ingres show, which was at the Met last fall. He had been through the exhibit several times with Hockney, and had even slotted the artist for an appearance at an all-day Ingres symposium scheduled for a few weeks hence.

We met in the galleries, and I found him a bit more receptive than Walsh. "Hockney's insights are potentially very important," Tinterow told me, "not only with regard to Ingres but maybe even more so with regard to some of the others, especially those painters for whom, as he notes, we don't have any preliminary sketches. But it will all depend on fact finding: our work as historians is now cut out for us, to find corroborating evidence. I mean, I think one can already say that Ingres's drawing style does undergo a noticeable shift after 1807, the year the camera lucida would have become available to him; and when I'm with David I can in fact see what he means by the Andy Warhol line, especially as it courses from one distinct garment, say, over onto another and then back again, seemingly oblivious of the separate volumes. Other times, though, by myself, I'm not so sure; that kind of skating over distinct volumes doesn't seem as evident to me.

"And the very same qualities, for that matter, could result from other factors. Perhaps Ingres is consciously quoting from earlier sources, and that's why you get these effects. Then again, maybe those earlier sources—Bronzino, Jacques-Louis David—were using optical devices of their own. As for the relative smallness of the drawings, perhaps, as David suggests, they result from Ingres's use of a camera lucida. On the other hand, Ingres's father was also a painter and, in particular, a miniaturist, and maybe it has something to do with that. Then again, as a miniaturist, maybe his father was likewise using lenses. It would be nice if we could find an account from one of Ingres's sitters—and there are many who left such accounts, who mention his easels and brushes and canvases—a sitter who

described Ingres's use of such optical devices. On the other hand, who's to say we won't yet come upon just such an account, especially now that we know what to look for?"

Such comments were typical of the hesitations raised by several (though not all) of the art historians I spoke with in the ensuing weeks—and several were far more bluntly dubious. Hockney was unfazed. "For one thing," he told me when I telephoned, "the paintings themselves are the evidence, if you know how to look at them—if you look at them, that is, as an artist would look at them. Many art historians regard themselves as too lofty—too concerned with the history of ideas, of iconography and so forth—to bother with questions about the mere craft of a painting's making. I must say, frankly, that I'm not all that interested in what sometimes passes for 'art history,' though I am intensely interested in the history of paintings.

"As for evidence," he went on, "if anything, it's the other way around: the burden is on them. If you say I'm wrong about the proliferation of lenses and optical devices, then you've got to explain how you could get Caravaggio's lutes just a few short decades after Dürer; how come those skills seem to rise up out of nowhere, spread everywhere, and then disappear just as quickly with the advent of the chemical process, some three hundred years later? How come awkwardness seems to disappear completely from Western European art for three hundred years and then just as quickly reappear? It all just happens by itself? That would be the loopy theory."

But what about the apparent lack of testimony on the part of the artists or their sitters? Hockney replied, "Artists are notoriously secretive about the specifics of their technique, always have been, and this would have been especially so in the early modern period, when the projection of such illusion was almost deemed a magical gift—though in many ways it's no less so today. Does anybody know exactly how Roy Lichtenstein created his effects? Or Morris Louis? Were they telling?" Hockney similarly dismissed the lack of testimony by sitters: Who's to say that they would have known what to be looking for?

I could see why Hockney drove some art historians crazy. "He's a nimble thinker" is how John Walsh had parsed matters for me, his voice brimming with wry affection. "He's seldom at a loss for answers, even if those answers might seem to overlap in sometimes wildly contradictory ways."

"And anyway," Hockney was now saying, "who says there isn't already plenty of evidence of precisely the sort they seem to be demanding?" He noted how he'd recently begun a fax correspondence with Martin Kemp, the eminent art historian at Oxford University, whose massive 1990 study, "The Science of Art: Optical Themes in Western Art from Brunelleschi to Seurat," was studded with suggestive leads. "And my friend David Graves, in London, has been spending time in the British Library, digging up all sorts of things. For instance, here"—I could hear him shuffling papers. "Right. This: from Giovanni Battista della Porta's 1558 four-volume treatise on 'Magiae Naturalis'—'Natural Magic'—by which was

meant seemingly supernatural phenomena that could be explained scientifically. And here he's revealing what he calls the 'carefully guarded secret' of receiving images on a concave mirror. 'If you cannot paint,' he advises, 'you can by this arrangement draw (the outline of images) with a pencil. You have then only to lay on the colours. This is done by reflecting the image downwards onto a drawing board with paper. And for a person who is skillful, this is a very easy matter.' And so forth. So I really don't know what these historians are talking about: no evidence."

I began getting faxes on an almost nightly basis—part of a stream of such inspiration that Hockney seemed to be sending out to an ever-widening group of correspondents (Martin Kemp, David Graves, Gary Tinterow, and so on). The notes were invariably handwritten. Hockney—this great student of technical wizardry—has never learned to type, and hence shies away from E-mail. For that matter, the fax allows him to send reproductions of imagery, too.

One morning, I found a single sheet upon which Hockney had included, side by side, a reproduction of Vermeer's "The Art of Painting" (the artist in his silly dark pantaloons, seen from behind, seated at his easel, his model poised gracefully before him) and one of Norman Rockwell's witty "Triple Self-Portrait" (the artist, likewise seen from behind, leaning over to peer, bespectacled, into a mirror as he completes the prettified self-image, without glasses, on the canvas before him). As Hockney subsequently remarked, both images were manifest fictions in terms of their own creative process; neither artist was in fact eyeballing the painting we see before us. Rockwell famously used photographs to develop his imagery, and Vermeer has been shown by the National Gallery's Arthur Wheelock, among others, to have blocked out his canvases with the aid of a camera obscura.

Another morning, I woke to find yet another impromptu treatise on Caravaggio's method. "The more one looks into Caravaggio," Hockney wrote, the more "one can figure out his tool, which had to be a sophisticated lens." He went on to note that, as he'd suspected, there were contemporary written references to Caravaggio's "glass" ("I mention this for the historian of pictures who wants everything in writing so he doesn't have to look very hard at the pictures and deduce methods"), after which he set out, precisely, to deduce Caravaggio's possible technique:

Good night indeed: I noticed that the fax had been sent at two-thirty in the morning his time.

I subsequently spoke with Gary Tinterow about this particular piece of Hockneyan speculation. We happened to be looking at one of the Met's own Caravaggios; he crouched at the side of the canvas and urged me to look up with him. "It's interesting about Caravaggio," Tinterow said. "Because the fact is that, when you look at his paintings in a raking light like this, you can indeed still make out the marks made upon the canvas by the blunt end of the brush or a stylus as it traced

out the contours of the various forms."

About a week after I'd got Hockney's Caravaggio treatise, my phone rang me awake way before seven: there was a whistling on the line. "Oh dear." Hockney's voice came rising through the whistle. "what time is it?" It turned out that he was calling from Canberra, Australia, where he'd gone to deliver an early version of these ideas as a lecture. Frank Stella, another Caravaggio enthusiast, was in attendance and, according to Hockney, he'd said to him afterward, "I'm sure you're right." Hockney apologized for waking me, but went on, "Listen, love, there's a book you have got to get. The Taschen book of 'The Portrait.' Norbert Schneider. I picked up a copy this afternoon at the museum here, and it's incredible. The first page, in the introduction, Schneider writes—he's talking about the late fifteenth century—'It remains a source of continual astonishment that so infinitely complex a genre should develop in so brief a space of time, indeed within only a few decades.' Continual astonishment: he's talking about the arrival of the lens, and he doesn't even know it. But I'm absolutely convinced of it. The plates are amazing. Get the book and we'll talk later."

I did—it is a beauty—and that evening the phone rang again; it was Hockney, almost breathless with excitement. "You have the book?" he asked. "Good. Because I think Schneider's right. It happens before Dürer. Dürer is showing a mold way in those woodcuts." He instructed me to turn to a page that featured a small color reproduction of Giovanni Bellini's portrait of the Doge of Venice, circa 1500—an extraordinary painting. Then he told me to turn to the opposite page, which was filled with a detail of the Doge's face in black-and-white or, rather, sepia. "And there you can really see it," Hockney said. "Something about the sepia tonalities, perhaps, but the image looks for all the world like some antique 1870 photograph of an Indian raja. Look at the detail of the tight embroidering around the Doge's cap," he went on, "how precisely the pattern follows the contours of the cap—your eye thinks it's lying there perfectly. No way, absolutely no way that could have been eyeballed, no way mathematical perspective could account for such precision."

Hockney then had me turn to a reproduction of Holbein the Younger's 1532 portrait of Georg Gisze. He pointed out the highlights on Gisze's sleeve, and how precisely the geometric pattern follows the rug as it falls over the edge of the tabletop. The glass vase, the pestle, both perfect, rest perfectly on the tabletop. "Your eye knows they're right," Hockney insisted, now guiding my attention to "that curious cylindrical brass cannister on the table between them. Because something's wrong: I mean, itself it looks right, but something's wrong with how it's resting on the tabletop. It's as if it had been added as an afterthought, a separate projection, which didn't align quite right. Right?"

Hockney was warming to his theme. I realized that it must be six in the morning for him, and I wondered whether he'd slept at all. He directed me to turn to a

Raphael painting, from 1518, of Pope Leo X. "Look at the thick brocade of his sleeve: perfect," Hockney said. "I was talking with a historian the other day about this picture, and he stopped me cold. What was I talking about? There couldn't possibly have been any lenses in 1518. Galileo doesn't happen till 1609, Leeuwenhoek is more like 1660. 'Oh yeah,' I countered. 'What do you think that is in the Pope's hand?' " Sure enough, Pope Leo was holding a magnifying glass. "And, of course," Hockney said, "it stands to reason that lenses would first have been prized by popes and kings, the wielders of power, and, in turn, their court painters—accurate portraiture being such an important aspect of their rule—and only later, maybe even much later, by scientists and academics and their lowly like."

He paused for air, but not for long. "And, by the way, look at which hand the Pope's holding his lens in." The left. "I was talking with another historian the other day, and he assured me that no left-handed person would ever have been allowed to become pope in those days: the left was the devil's hand. Sinistra. But that's the effect you would get, in the early days of lens projection, if you hadn't yet learned to compensate for the reversal caused by the lens. For that matter, look through the rest of the book: Lorenzo Lotto's 'Man with a Golden Paw'; he, too, appears to be holding the object in his left hand. Doesn't it seem to you there are an inordinate number of left-handed people in this book?" He paused again before positively exulting, "I'm right. I'm right. I'm more certain of it every day." Whereupon he rang off.

A few weeks after that, Hockney was back in New York, addressing the Ingres symposium at the Met. His presentation was the last of the day, following public talks by such art historians as Thomas Crow (on Ingres and David), Jack Flam (on Ingres and Matisse), and Robert Rosenblum (on Ingres's progeny, from Gérôme to Picasso).

During his slide show, Hockney went over much of the material he'd been rehearsing with me and others over the previous several weeks—Ingres, Warhol, Caravaggio, Bellini, Raphael—but he added some newer material as well. For instance, he devoted more time to Velázquez, Van Dyck, and Rubens (an oddly anomalous eyeballer). He'd developed a charming riff on early modern Spanish still-lives, especially the work of Juan Sánchez Cotán (1561-1627), a master of sliced melons ("the lutes of the vegetable world") and cabbage heads. How long do you think a cabbage like that one would have lasted in those days, prior to refrigeration, in a strong light like that?" Hockney challenged his audience.

Later, someone asked the historians what they made of Hockney's theory, a question that drew a long, somewhat embarrassed silence, though whether the embarrassment was for themselves (at never having noticed such a thing before) or for Hockney (how could anyone publicly champion such ridiculously grandiose claims?) was not immediately apparent. One of the historians hazarded the

predictable "But there are no documents." To which Hockney responded with his growing arsenal of ripostes, culminating in the faux-modest "I mean, I'm only speaking from my experience as an artist, though surely that must count for something"—which brought down the house.

Hockney returned to Los Angeles, and his fax and phone updates resumed apace. "Heresy," he announced one evening over the phone. "It turns out that della Porta got himself arrested, playing with these effects. Earlier, in the thirteenth century, when Roger Bacon wrote to the Pope about lenses, he was told to shut up and get himself back to Oxford. And, of course, Galileo. The Inquisition. Lenses were still dangerous things, highly suspect at the dawning of the scientific age. No wonder they aroused so much secrecy. No wonder there's so relatively little written evidence about them."

"America!" he announced on another occasion. "Doubtless it won't have been lost on you that the lens begins to proliferate across Europe almost simultaneously with the discovery of the New World, a discovery that, in turn, required its own breakthroughs in lenses and optical measuring and navigational devices of all sorts." And the transition to optical techniques had other revolutionary implications. "In Caravaggio and early Velázquez, the street urchin down the lane becomes a god, an angel, an apostle," Hockney said, "because he's the only one with the time and willingness to pose. Or, anyway, the only one the painter can afford to pay."

Then, just the other day: "But of course it's all coming back together again nowadays. I mean, the rupture between photography and modernist painting. What else is one to make of the news these days? All the revelations about the ease with which journalistic photo editors are regularly altering their digitally based images. The computer changes everything: pixels rather than negatives, the hand back inside the camera! That's what the Guardian's picture editor must have meant when he got found out in one of those mini-tempests: 'Ah,' he said, 'we've been caught with our fingers in the electronic paint box.' From this day forward, one might want to say, paraphrasing Delaroche, chemical photography is over! The monocular claim to univalent objective reality is falling away once and for all, and we are being thrust back on ourselves, forced to take responsibility for the way we make and shape our realities, with eye and hand and heart. Who knows where it all will lead? But it's a very exciting time."

It had been an exciting couple of months for me, at any rate, trying to keep up with the pace of Hockney's rampaging discoveries. Sometimes I wasn't sure. Some of his arguments verged on the tautological: if the rendering was assured, the methodology had to have been lens-based; if it was groping or awkward, it couldn't possibly have been lens-based; therefore, assured rendering proved the presence of lenses. Weren't his claims perhaps too broad? I mean, all art over a three-hundred-year swath founded on lens-based techniques? Might it not, rather, have been a case of perceptual hegemony—that a sort of lens-based look came to be deemed real, and that artists, through a variety of techniques, were now

required to hew to that standard? And what of virtuosity? Mightn't certain artists who began by using lenses eventually have graduated beyond them, having got the proportions and the vantages into their very bones, so to speak? And couldn't one imagine visual prodigies, individuals who might never have required such aids? One speaks of a musician having perfect pitch. Might not it be possible for an artist (say, Velázquez) to have had a photographic eye, as it were, for everything he saw?

At other times, however, such hesitations seemed like quibbles. It was as if Hockney had laid a camera lucida across five hundred years of art history, projecting the entire expanse in vividly novel detail. And who cared, finally, if Hockney's version of history was to actual history what Hockney's version of a pool is to an actual pool? Which would one rather look at?

One day, I asked John Walsh what he made of the general arc of Hockney's theory. "Oh, I don't know about vast historical arcs," he said. "Maybe there is such a thing. But it seems to me history is far more circuitous, filled with starts, stops, backsliding, lurches forward. In the end, though, none of that really matters, because in the end nobody is expecting a killer theoretical tome from Hockney. What one awaits, with ever mounting anticipation and excitement, is how he's going to interweave all these fresh insights into his own ongoing work—what fresh new art all this is going to provoke." ♦