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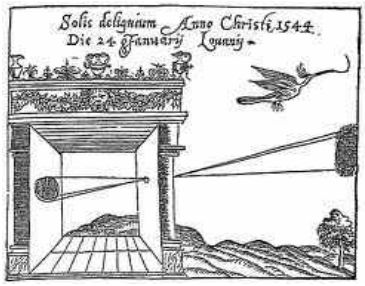
OPTICAL DEVICES, THE HOCKNEY-FALCO THESIS, & TIM'S VERMEER

Students often ask me about optical devices, as discussed in the book "Secret Knowledge" and the film "Tim's Vermeer", so I wrote a handout on the topic. Comments are welcome.

Durer's depiction of his drawing aid

In his 2001 book "Secret Knowledge" artist David Hockney (assisted by physicist Charles M. Falco) theorized that optical devices are the long-lost secret to old master painting; only optics could explain such remarkable draftsmanship. Hockney's theory intrigued and excited the art world (and also offended some traditional painters who believe the masters relied on skill alone). In the 2013 film "Tim's Vermeer", inventor Tim Jenison used an updated camera obscura to make a copy of a painting by Johannes Vermeer.[1] An Internet search of the movie leads to dozens of posts extoling Tim's success at recreating a Vermeer, and speculating that he, along with Hockney, had finally solved the secret of old master painting.[2]



1544 Illustration of a Camera Obscura

To many who have studied traditional painting, it is not news that artists of the past used optical devices and drawing aids. Durer invented an apparatus known as "the draughtsman's net" (illustrated in his 1525 book, "The Painter's Manual"). Holbein probably employed a system for drawing on glass to note contours and spatial relationships. The evidence is strong that Vermeer used a camera obscura; Canaletto and subsequent painters did for certain. Ingres referenced to daguerreotypes. Degas, Manet and many others used photographs. Norman Rockwell was rigorously trained at the Art Student's League and began his career as a consummate draftsman who worked only from life. In the late 1930s he switched to photographs, tracing them occasionally once he realized the time saved by this method.[3]

Most painters, especially the great ones, develop a working method that is as individual as the artist. Throughout history some artists have availed themselves of technology to the extent their era made such devices available and a device suited a painter's nature and goals. Contrary to old master mythology, most were not "purists", adverse to anything that strayed from their forefathers' studios. On the contrary, most were practical craftsmen and creative thinkers who welcomed innovations that assisted them in the difficult task of making masterpieces, including (but not limited to): new supports, grounds, and pigments; improved mediums and varnishes; and yes, optical devices.

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[1] Most reviewers were so taken with Jenison's answer to great art that they did not critically assess the theory itself. For a nuanced review, read the 1/28/14 OnArtBlog by Jonathon Jones, art critic for The Guardian of London. As Jones notes, "Tim Jenison tried for a whole year to recreate a Vermeer painting – and all he got was a pedantic imitation."

[2] An in-depth analysis of "Secret Knowledge" and "Tim's Vermeer", both of which I have studied attentively, could fill a small book, which is beyond the scope of a handout. Instead, here is a much-abbreviated critique. There are dozens of relevant questions and counter arguments left unaddressed by Hockney and Jenison, and both men present many straightforward inaccuracies. One example: Hockney describes the chandelier in Jan Van Eyck's *The Arnolfini Marriage* as "seen head-on", indicating to Hockney that Van Eyck switched perspectives in the painting, which might suggest an optical device was used. In fact an enlargement of the chandelier (conveniently provided by Hockney) shows the ellipses of which the chandelier is composed, indicating that the chandelier is actually seen from below (accordingly to elemental rules of perspective). This may seem a trivial complaint, but it is revealing, and there are *many* such errors, large and small, throughout book and film. Nonetheless, I agree with Hockney and Jenison that some old masters used optical devices. This is neither a new thought, nor convincing evidence that optical devices explain great art. A simple test: if such devices are the secret to old master painting, why hasn't either Hockney or Jenison created an *original* "old master" painting? What book and film demonstrate is that an optical device can help transfer an image (either good or bad) onto a canvas. Is it really a surprise that if one copies the exact elements of a Vermeer painting, the resulting painting looks like a Vermeer? (Or, switching to music, when a score by Beethoven is played, that the resulting music sounds like Beethoven?) When a well-intentioned but nonetheless untrained, glib, gadget inventor (Jenison) convinces many people that he can paint like Vermeer, it shows how poorly understood painters and the craft of painting are in the 21st century – which is perhaps not a surprise, given the appearance of much 21st century art. Also not surprisingly, Jenison's film was produced and directed by two comedic magicians, Penn and Teller.

[3] Art historians find it hard to differentiate between Rockwell's paintings created from life versus from photographs.

The theory that technology explains great art – that it is the long lost secret of old master painting - is feeble. Neither a 1st c. Fayum portrait painter nor Giotto living in the 1300s had optical devices, yet both created masterpieces. Conversely we live in an age replete with visual aids (copy machines, digital cameras, computers, Photoshop) and yet there are few "Old Master" masterpieces being produced, despite plenty of artists who would love to do so.

Hockney's and Jenison's theories neglect to note that much more than optics changed during the 1500s. The 14th century painter Cennino Cennini said that the purpose of art was to paint the other world, not this one. His eyes looked heavenward. Beginning with the Renaissance, artists (and the culture in general) increasingly turned their gaze toward the material world. Is it mere coincidence that a mathematical system for representing three-dimensional space (linear perspective) was clarified at this same time? That Renaissance painters transitioned from thin, ethereal egg tempera to the more physical, realistic medium of oil (which, in fact, had been around for centuries but was not widely taken up *until* the Renaissance)? Or that 15th century painters began dissecting cadavers to understand human anatomy in depth? They also rendered more volumetric forms and painted increasingly naturalistic light effects. Was a medieval artist incapable of naturalistic depictions, or just not interested? Could he have developed those capabilities if he'd wanted to? After all, despite their reputation as naïfs who could render only "unreal", child-like imagery, medieval craftsmen built Gothic cathedrals – sophisticated, technological marvels that modern man cannot replicate (particularly if compelled to work with 12th century technology!).[4] In other words, did optical devices cause revolutionary changes in 15th century painting (as Hockney proposes), or did optics merely develop out of and facilitate a much larger change in how humans saw the world and their place within it, which was then reflected in the arts, sciences and every other aspect of the Renaissance world?

Regardless of whether increased realism in art was achieved through optical devices, or a new way of seeing the world, or a combination of the two, why does Hockney equate greater photographic accuracy with "the secret" of old master painting? Does ever more realistic rendering create better art?

"…we have come to think of drawing as a mere matter of accurate observation…painting is an art, not a science… The primary business of painting is to create a beautiful surface, beautifully divided into interesting shapes, enlivened with noble lines, varied with lovely and harmonious colors. Its secondary business is to remind the spectator of things he has seen…and to create the illusion of [material] truth. The amount of actual [material] truth…will vary with the purpose and the situation…". Kenyon Cox (1856-1919), The Classic Point of View

I don't disagree that optical devices were to greater and lesser extents used by many artists. They were a means to an end – one way to get an image on a surface. But neither the devices nor the realism they facilitated were ends in themselves. The idea that any single, magical material or working method explains old master painting misses the forest for the trees.

There is a tendency in our age to look to technology and materialism to explain everything. If only we had the old masters' tools and techniques, their hand ground pigments, secret mediums and camera obscuras, we might paint as they did. Materials and working methods inevitably changed from one era to the next. The one constant in great painting is an *unchanging* visual language organized through good design to create a beautiful image. That - along with the artistic gifts, hard work, skill, and intentions of the artist - is perhaps the real "secret" to great painting.

[4] In Jenny Graham's book "Inventing Van Eyck", she notes that Van Eyck's "realism became the marker of the modern within a construct that understood the Middle Ages as spiritually pure but technically inept". A new attentiveness to realism did emerge during the Renaissance, but the medieval artist's inattention to "realism" does not necessarily mean he was inept - he may have been merely uninterested. Modern age *materialism* (in both the literal and philosophical senses) is apparent in art history's (as well as Hockney's and Jenison's) understanding of why and how painting changed, from the Renaissance up through today.