This plate from George Adams II's *An Essay on Vision* illustrates his camera obscura model of vision, as well as several optical experiments proposed in the book. The figures are described below:

**Fig. 1.** (right-hand corner): a cross-section of the eye.

**Fig. 2.** (upper right): an illustration of an experiment which shows how the eye may perceive objects at the bottom of a basin filled with water.

**Fig. 3.** (upper middle): an illustration of how a convex lens can bend vision.

**Fig. 4.** (upper right-hand corner): an illustration of how light "emits" from an object (Adams describes the object as the origin of the light, rather than a reflective surface).

**Fig. 5.** (center): an image of a darkened room that operates as a camera obscura and thus, like the eye itself.

**Fig. 6.** (upper left-hand corner): the mechanism of the eye, likened to a camera obscura.

**Fig. 7.** (lower left-hand corner): an artificial eye designed by George Adams as a model of how the human eye functions.

**Fig. 8:** (middle right): a pair of optical lenses designed by George Adams and intended, for occasional use, to magnify vision; they include two lenses like spectacles which are held up like a magnifying glass.

This gallery will focus on Fig. 7. The artificial eye appears to the modern viewer as a combination of a mounted telescope and set of binoculars, with a large drooping eye in the center of the larger lens. It is detailed and carefully shaded and modeled.

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**Primary Works:**
George Adams's *An Essay on Vision* (London, 1789)
Adams wrote *An Essay on Vision* “primarily because many people were using spectacles who did not really need them,” and he consequently “dissociate[s] himself from pedlars and hawkers who sold unsuitable glasses with little regard for the harm they might do” (Millburn 224-25). Adams begins by briefly explaining (according to the most widely accepted knowledge of the time) how the eye works, partly through an explication of the artificial eye; he then describes the ways in which vision may be altered or damaged. He also proposes several experiments that can be used pedagogically to demonstrate the eye’s mechanism. The book closes with a catalogue of instruments for sale.

Within the text, Adams provides an explanation for the representation of the artificial eye on the plate, including its purpose:

At the end E there is a piece of glass placed, on which the form of the eye is painted, a part being left transparent, to represent the pupil; within the globe are inserted three lenses, of different convexities, either of which may be brought opposite to the hole, or pupil; one of these is to answer for the natural state of the eye; the other, being less convex, is to shew the state of the eye when flattened by age; the third, more convex than the first, to represent the condition of the short-sighted; at the opposite end A of the globe is a greyed of semi-transparent piece of glass, to represent the retina.

At the front are two lenses, fitted into frames, and moveable by the handle B, one concave, C, the other convex, D, which may be occasionally placed before the eye, to shew how the imperfect states of it are remedied.

If the artificial eye be turned towards any bright object, at a moderate distance, and the lens for the natural sight be brought before the pupil, a lively and distinct, though inverted, picture of the object will be exhibited on the greyed glass.

If either of the lenses be placed opposite the pupil, the picture becomes confused; but it is again rendered distinct, by placing the corresponding lens before it. (Adams 50-51)

**Accession Number:**
RE 26 06 A33 E87 1789a

**Height (in centimeters):**
7

**Width (in centimeters):**
29

**Marks Description**
The bottom of the print reads: “London. Printed for & Published by George Adams No. 60 Fleet Street, as the act directs, July 31, 1789.” The left-hand corner is inscribed with “T. Mline, del.” and the right-hand corner reads “J. Lodge, sc.”

**Printing Context**
This fold-out plate is affixed to the beginning of George Adams, *An Essay on Vision,* “printed for the Author, by R. Hindmarsh, printer to his Royal Highness the Prince of Wales, No. 32 Clerkenwell-Close. And Sold by the Author, at his Shop, No. 60, Fleet-Street. M.DCC.LXXXIX” (1789). The text was reprinted in *The Classics of Ophthalmology* series (Birmingham, AL: The Classics of Ophthalmology Library, 1988).

**Associated Places**
*Fleet Street, London*

Fleet Street was a “favourite location for opticians and instrument makers in the eighteenth century,” as well as for members of the press (Millburn 14). George Adams Sr. first opened his business in 1734. Although the exact addresses and locations on the street changed, the Adams family maintained the Fleet Street business for three generations.

**Associated Texts**
René Descartes’s *La dioptrique* (1637)

Descartes’s text offers a theory of the eye as a camera obscura, illustrated through an experiment with a dissected eye. Descarte’s explanation and theory, which “considered the eye a scientific experiment,” provided the basis for the production of the “new optical device known as the artificial eye” in the eighteenth century (Terpak 143). For a historical and theoretical examination of the significance of camera obscura models of vision as it gave way to subjective models of vision, see Jonathan Crary, *Techniques of the Observer.*

*George Adams Junior’s Last Catalogue, 1795*

Adams’s last instrument catalogue lists “[a]n artificial eye for illustrating the principles of vision” at £5 5s (Millburn 370).

**Subject**
This plate from George Adams II’s *An Essay on Vision* depicts his camera obscura model of vision, as well as several optical experiments proposed in the book. Of particular interest to this gallery is Fig. 7 in the lower left-hand of the print, which is a depiction of one of Adams’s optical instruments—the artificial eye. The artificial eye was designed for instructional purposes, to show how the mechanism of the eye was understood to function and how and why vision can become distorted or poor.

**Theme**

**Significance**
Adams’s artificial eye followed the dominant theories of the seventeenth and eighteenth centuries, for which “the camera obscura was without question the most widely used model for explaining human vision, and for representing the relation of a perceiver and the position of a knowing subject to an external world” (Crary 27). In these theories, the eye was, like the camera obscura, a tool that responded automatically and predictably to stimuli. More than a metaphor, the camera obscura and eye were seen as near-identical structures.

In *La dioptrique,* Descartes advises his reader to demonstrate this similarity through the use of a real disembodied eye which will project an upside-down image onto a piece of paper when light is directed through
Adams's artificial eye demonstrates the same process, but through an optical instrument rather than a dissected eye. Interestingly, it stands in at once for the "real" eye and the camera obscura, as well as for a whole range of analogous optical instruments. The proliferation of metaphors in Adams's text, reflected in the expansive catalogue of instruments at the conclusion, creates a theory of vision in which the subject is always affixed to various but interchangeable devices. For Adams, the bodily eye is "an instrument most admirably contrived," not unlike his own telescopes and microscopes:

A man cannot see the satellites of Jupiter, unless assisted by a telescope: does he therefore conclude from this, that it is the telescope that sees those satellites? By no means; the conclusion would be absurd: nor would it be less absurd, to conclude that it is the eye that sees: the eye is a natural organ of sight, but the natural organ sees as little as the artificial. (Adams 52, emphasis added).

Adams's mechanic version of the workings of the eye, as in the above quote, also serves to distinguish the interpretative powers of the mind as definitively non-mechanical: "the instrument neither perceives, compares, nor judges; these are powers peculiar to that psychological unity which we call the MIND" (Adams 52). As in Riskin's theory of automata in the period, the artificial object here works both to simulate the body and its processes, and call attention to the limits of simulation and mechanization (Riskin). The artificial eye stands in for and is interchangeable with the bodily eye; it does not, however, replicate sight.

Adams's struggle and ultimate failure to explain how these two entities—mechanical eye and subjective mind—are connected, perhaps also gestures to the very limits of his theory. If Crary's thesis is correct, the early nineteenth century would complicate and collapse these processes, much in the way that industrialization would alter theories of the body and the machine.

Function
Both this print and the object it depicts are intended as instructional tools for understanding the operation of vision.

Bibliography


