

# The Mechanics of the Gaze

*By Carl Havelange*

---

**What if the expression “visual culture” were to be taken literally? By retracing two centuries of optical inventions and reflections on the eye as a machine, this richly illustrated anthology shows how Western moderns learned to see.**

---

**Reviewed:** Delphine Gleizes and Denis Reynaud (eds), *Machines à voir: pour une histoire du regard instrumenté (XVIIe-XIXe siècles)*, Lyon, Presses universitaires de Lyon, 2017, 404 p., 26 €.

There is no pure gaze, but only embodied modalities of presence. Sensory perception is the common function of the living. Humans do not see as flies do; neither do dogs, trouts, or eagles. The world is the edifice of perceptions which varies according to its occupants. And, among humans, who came late on the scene, a new principle of variety: that of histories, periods, narratives, cultures. After the long conditions of the species, there is—for humans especially, if not only for humans—the historical variety of forms of sensory perception.

What is seeing? A history of the gaze is a history of the answers given to that question, but also of the experiences that they reflect or render possible. One does not see things in exactly the same way, depending on the society where one has, from a tender age, learned to see.

## **An Instrumented Gaze**

How did we learn to see? The very beautiful anthology published by Delphine Gleizes and Denis Reynaud at the *Presses universitaires de Lyon* provides valuable and richly illustrated answers: It includes no less than 180 authors and more than 200 excerpts arranged and commented on based on a very solid and delightfully applied erudition. The texts of this anthology, which essentially belong to the French repertoire, have the advantage of being drawn from highly varied forms of discourse, the mere signifying power of which is each time considered, beyond the hierarchy of knowledge or expression—literary, philosophical, or scholarly texts, popularization books, pedagogical treatises, newspaper articles, advertisements,

etc. One sees the “bric-a-brac” of optical machines that have so profoundly marked our visual cultures from the seventeenth century to (as far as the present volume is concerned) the end of the nineteenth century. Whether real or imaginary, “seeing machines” are also and perhaps mainly—in the eyes of the authors of this anthology who both teach literature—“literary objects,” and thus fully meet the goal of a true cultural history. In this sense, whatever its interest regarding this question, *Machines à voir* (“Seeing Machines”) contributes not so much to a history of optical machines as “to a history of the gaze, or, more precisely, to a history of the *instrumented gaze*” (p. 6).

From the early-seventeenth-century invention of the telescope to the late-nineteenth-century discovery of the Röntgen rays, the authors draw up the rigorous inventory of a vertiginous collection of machines, which sometimes sprang solely from the imagination of writers, and reveal their singular poetry: telescope, microscope, magic lantern, *camera obscura*, phantasmagorias, divinatory mirrors, ocular harpsichord, phenakistiscope, praxinoscope, shadow theatre, pleasure glasses, panorama, diorama, daguerreotype, historioscope, optograms, zoetrope, telephote, or this extraordinary and highly ironic *téléchromophotophonotétroscope*, which appeared in the late nineteenth century in an anticipation novel by the mysterious Count Didier de Chousy... Visual aids, spectacle or recording devices, dreams or realities always more or less conceived through each other, technical, literary, moral, philosophical, or political uses: Everyone can shop at the “seeing machine” store. Its shelves are rather freely arranged, and thus establish contiguities of meaning, intention, and usage which, beyond the simple chronology and genres or functions of discourse, ideally account for all the powers and imaginaries of instrumented vision in our cultures. *Machines à voir* is a vast kaleidoscope in which the spectacle of machines organizes and constantly reorganizes itself in the smooth succession of paragraphs and chapters: The anthology is itself a “seeing machine”!

## What Is Seeing?

And what this anthology makes almost visible, beyond itself, in the profusion and the very relative disorder of machines, are the very conditions of the gaze as they were invented and gradually instituted by our first modernity—conditions whose effects we have never ceased to experience, diversify, modify, or modulate. Indeed, if we were to briefly characterize the model of the gaze of which our societies are the most direct heirs, we could safely use that expression: *seeing machine*. This is because from the fifteenth to the seventeenth century, from the invention of perspective to that of the retinal image, the eye was culturally instituted on the model of a machine: Brunelleschi’s *tavoletta*, the painter’s brush, the anatomist’s scalpel, the astronomer’s telescope, and, finally, the *camera obscura*, which, in Kepler’s extraordinary synthesis, invented the eye as a seeing machine. From then on, from the anamorphoses of Father Nicéron to the late-nineteenth-century photographs of the invisible, the uses of the eye were continuously signified, deployed, instrumented, displaced, and dreamed up—whether it be to celebrate its power or to mock its claims; and whether it be to set its limits or to try and signify differently the sensible presence of humans in the world.

“Our eyes are in effect only natural glasses,” wrote Malebranche in *The Search After Truth* (p. 33); “The humors of the eye are the lens of the *camera obscura*; the *retina* is its screen. The *black membrane* that lines the interior of the globe serves as the shutter that shuts out the daylight,” wrote Charles Bonnet a century later (p. 54); and, in 1877, an enthusiast of

optograms, that once fashionable photographic technique whereby the eye of corpses was anatomized with the aim of revealing, on the retina, the last scene viewed by the subject:

The fundus of the eye and the retina form a complete photographic studio. (p. 79)

One could reproduce the illustration infinitely, and this until the present time, in contrasting cultural contexts, in everyday language as much as in scientific language. One could also consider, from the outset, the abundant cultural uses of the model of the eye as a seeing machine—namely, its moral, philosophical, narrative, poetic, or religious uses. These, it seems to me, immediately exceed the mere domain of metaphor. By this I mean that they are not really or not only secondary, but instantly—and forcefully—inscribed in the renewed experience of seeing in which our modernity tests itself, and, for better or worse, perpetuates itself between presence and loss, between criticism and melancholy. Literary inspiration makes perceptible its truth, embodied and localized in the experience of every person according to the order of periods and places. Does it suffice, then, to read and to find something common in the diversity of figures suggested by the vast kaleidoscope of *Machines à voir*? Might this be the idea that we only learn to see with the instruments of experience and language that were secretly passed on to us by successive generations?

## Seeing, Describing

Could it be that in the act of seeing or describing, we each time reproduce, displace, reinvent the inaugural gestures thanks to which the world was gradually made visible to us? I cannot detach my gaze from this magnificent text by Victor Hugo, in the early pages of *Machines à voir*. It was in 1834. Hugo was at the Paris Observatory, with François Arago, who was introducing him to telescopic observation. Hugo looked into the telescope, and observed what he already knew to be a lunar sunrise, with the light gradually gaining on the masses of shadows and darkness:

This is a chain of lunar Alps, Arago said to me. However, the circles expanded, became larger and larger, merged at the edges, stretched until they all fused together; valleys grew deeper, precipices opened up, hiatuses parted their lips, overflowed by a froth of shade, spirals descended with a plunge that frightened the eyes, immense shafts of darkness took form, shadows moved, beams of rays landed like architraves on piton after piton, crater knots formed ridges around summits, all types of furnaces emerged pell-mell, some as smoke, others as light; capes, promontories, gorges, passes, plateaus, vast sloping planes, escarpments, and rifts intertwined, mixing their curves and angles; one could see the outline of mountains. All this existed magnificently. Here, too, the great words had just been spoken: *fiat lux*. Thanks to the light, this suddenly alive shade had become something of a mask morphing into a face. Everywhere, scarlet gold, avalanches of rubies, a stream of flame. It was as if dawn had suddenly set fire to this world of darkness. (p. 21)

Hugo's visual experience, which should be commented on at length, reveals, I believe, something essential: the paths of the instrumented gaze and their necessary passage through words. There is no pure gaze, but the sovereign mediation of histories, sensory perceptions, and words. What did Hugo see in the twilight of the Observatory, alongside Arago, his eyes glued to the large telescope whose virtues the scientist was lauding? In the undecided brightness of a rising world, he saw cracks of shadow and light, and then mountains, valleys,

and lakes; he anticipated gazes, cities, beings, questions; he saw himself seeing and imagined that he was being seen by those he perceived in the distance. These words, and especially the paths traveled by Hugo, were not rootless. They were heirs, perhaps unknowingly, at least directly, to the description of a first lunar sunrise offered by Galileo more than two centuries earlier—in 1610—in the *Sidereus Nuncius*.

This was in the early days of optical machines and of the immense cultural significance they were to be given. How to account for appearances? Nothing was given, everything had to be constructed. How could one learn to see, if not by connecting the experience of the known to the anticipation of the unknown, the near to the distant, the visible to the invisible? Galileo was the first to see through the indivisible trial of eyes and words. What were those blackish spots, which could be discerned on the illuminated side of the moon, at the edge of the shadow, in the unreality of telescopic vision, those spots “on the side opposite the Sun [that] are crowned with brighter borders like shining ridges”? What were they, if not precisely the visual analog of what is seen on earth when the sun rises, “when the valleys are not yet bathed in light, but the surrounding mountains facing the Sun are already seen with shining light”?<sup>1</sup> Through the mediation of words, Galileo invented for the telescope the pictorial experience of perspectival landscapes achieved by mastering the play of shadow and light. And for the seeing eye, he crafted that extraordinary quality of being a machine—a quality whose mechanism was detailed almost at the same time by Kepler, and whose vertiginous power was explored by Descartes. This was the beginning, or the great turning point, of a history in which seeing machines, above all the eye, would never cease to deploy its effects, between the visible and the invisible, between reality and illusion, between conquest and desertion. Delphine Gleizes and Denis Reynaud’s anthology makes a major and profoundly original contribution to the understanding of this long-standing history.

First published in *laviedesidees.fr*, 29 September 2017. Translated from the French by Arianne Dorval with the support of the Florence Gould Foundation.

Published in *Books & Ideas*, 23 April 2018.

---

<sup>1</sup> Galileo Galilei, *Siderus Nuncius, or the Sidereal Messenger*, Chicago, University of Chicago Press, 2015, p. 43.