



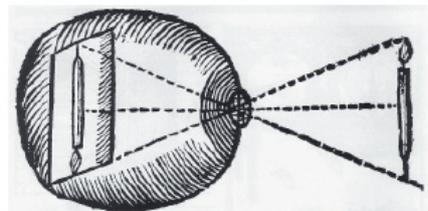
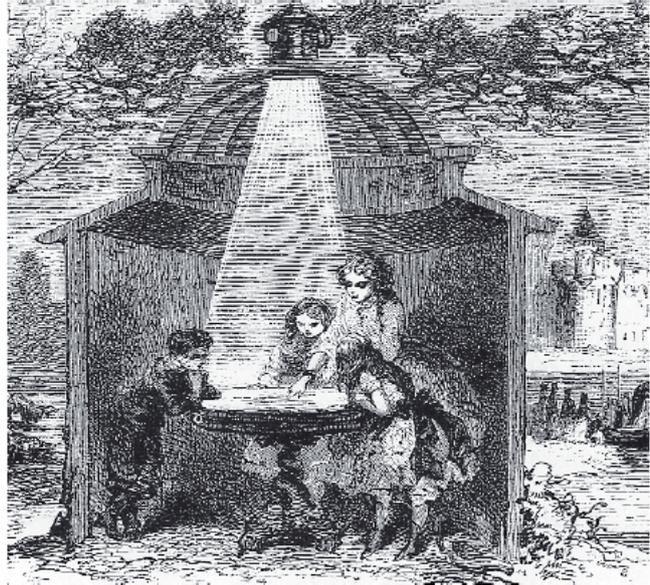
## Short story about the Camera Obscura

The camera obscura is an optical instrument able to “draw” with the sunlight, on a paper, not only the different light and shade nuances but also the different nuances of the colours.

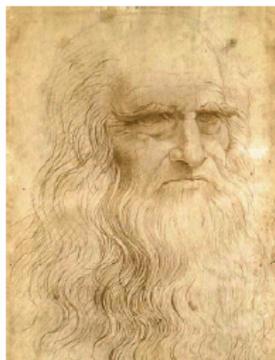
At the end of the Xth (tenth) century, we already knew about the camera obscura, because the arab science, and more precisely Abu Ali ibn al HASan (known in tehe West as Alhazen, 965-1038) described this phenomenon perfectly: he used the principle of the camera obscura in order to explain how the image gets formed in the eye.

Before, we also had had evidence of the observation of the phenomenons and the effects of the sunlight produced by the Camera Obscura: since the fifth century in a few texts written by chinese philosophers and, in the fourth century in a referente by Aristotle. However, Hill Alhazen its relation with the formation of the optical image was not introduced.

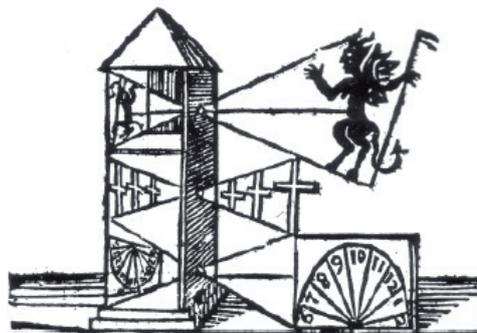
During the Middle Age, Roger Bacon continued with Alhazen´s Works about the refraction and the reflection of the Light, but he didn´t succeed in describing a camera obscura even if he knew about its existence.



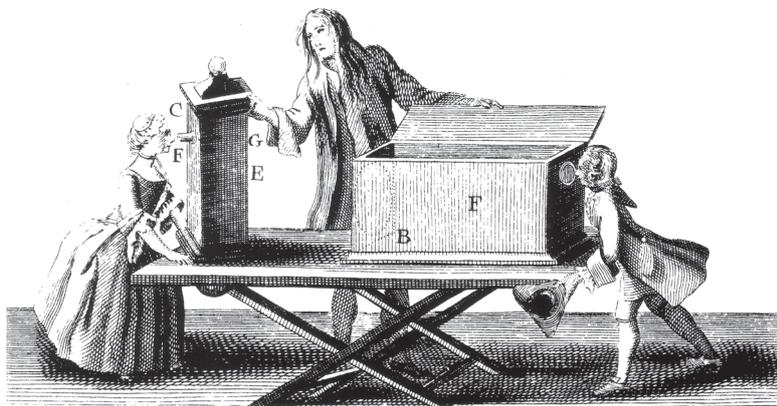
La cámara oscura y el ojo humano (da Vinci)



Leonardo da Vinci



Dibujo del principio físico de una cámara oscura de R. Bacon



During the Renaissance, Leonardo da Vinci gave an impulse to the development of the camera obscura, using it to study in depth how the vision works, how the Light reacts and the laws of geometric perspective: he related all that to the painting techniques. Leonardo da Vinci was very curious and also fascinated by the phenomenon of the camera obscura which is able to make the sun's rays pass through a small hole without mixing up one with another.

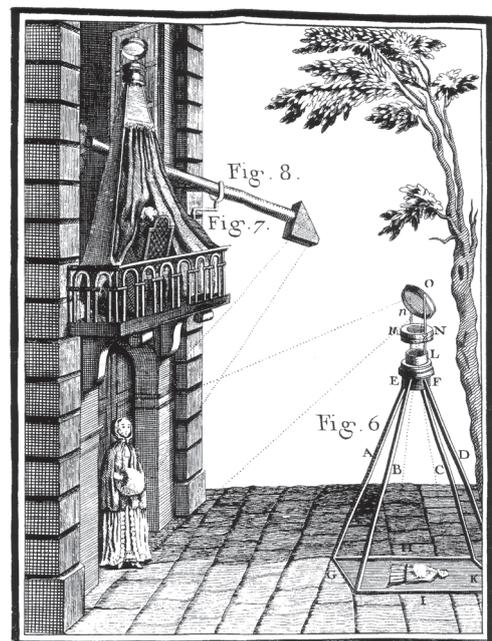
As far as Leonardo's role about the camera obscura is concerned, we can conclude that he was the first one who added a lens to the hole through which comes the Light in, in order to obtain sharper images.

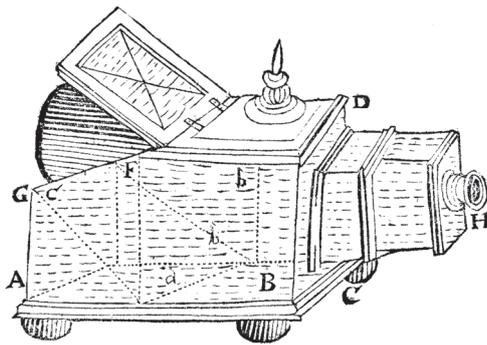
The first written reference to the lenses was made by the mathematician Girolamo Cardano (1501-1576) in 1550, but the scientist Giovanni Della Porta was the one who, eight years later, spread this piece of news all over the World???. Della Porta's book was written in a simple and popular style, so its publication was very successful and was translated into Arabic and several European languages. This phenomenon explains why its author was, on several occasions, considered as the creator of the camera obscura.

In the XVIIth century, Robert Hooke (1653-1703) built cameras obscuras, and tried to reproduce the curved shape of the retina, with concave screens of projection situated at the bottom of the camera. The intention was to demonstrate the mechanism of the human vision. He also built different types of portable cameras obscuras, used to make illustrations in the travel guides and for topography.

During that century, the camera was also used as a diversion (entertainment)?? To make the princes' parties pleasanter and to satisfy the courtiers' curiosity. The playful possibilities of the camera were used to the maximum thanks to creativeness inventions, like Pierre Herigone's one in 1642, a mathematician who discovered a camera obscura built into a glass: it was possible then to see when it was full of white wine.

In 1685, Zahn published a book in which he collected this kind of cameras obscuras and explained the model which didn't change until the invention of photography in the XIXth century. With that model, an inclined mirror reflects the image projecting it on to a paper situated on the glass situated on the top of the camera. The lens was situated at the end of a tube which slides into another one in order to focus at different distances.





Modelo explicado en la obra de Zahn

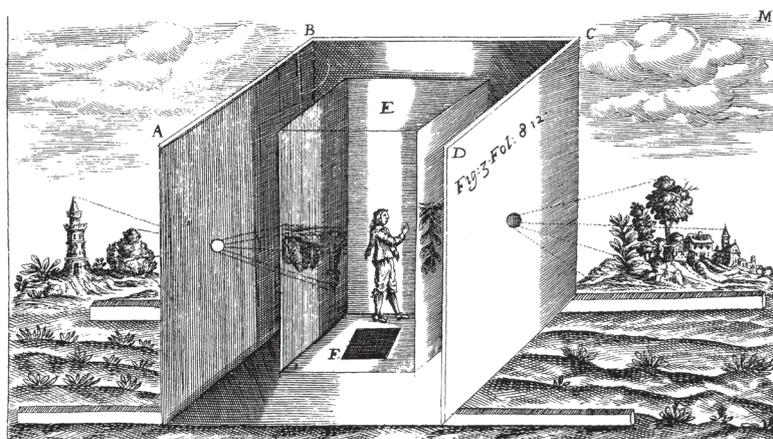
As far as the art in the XVIIth century is concerned, we can find several studies which try to involve the use of the camera obscura in the dutch painting, due to its "appearance of reality". More precisely, they tried to demonstrate how Vermeer used the camera obscura. They looked for phenomena which were difficult to see with the normal vision, but which did occur in the camera obscura.

Although we don't have forceful evidence to prove the systematic use of the camera obscura by the famous artists, we can perfectly give proof of its use by travellers and drawers all the XVIIth and the XIXth centuries long till the time of the photography.

During all the XIXth century, the importance of the landscape's "genre" had repercussions on the academical teaching system, in which the use of the camera obscura succeeded in being a fundamental subject in the fine arts career.

Some scientists will also find thanks to the camera obscura the solution to their necessities of technical resources in order to realise good illustrations when they published their researches.

The XVIIth, previous to the invention of photography, is the most important in the history of the camera obscura: there were several technical improvements, new types of cameras were built, and lots of publications contributed to its spreading. During the second half of the century, the "Encyclopédie" by Diderot and d'Alambert represents in two leaves for the entry "dessin" two types of cameras obscuras used and known in that century.



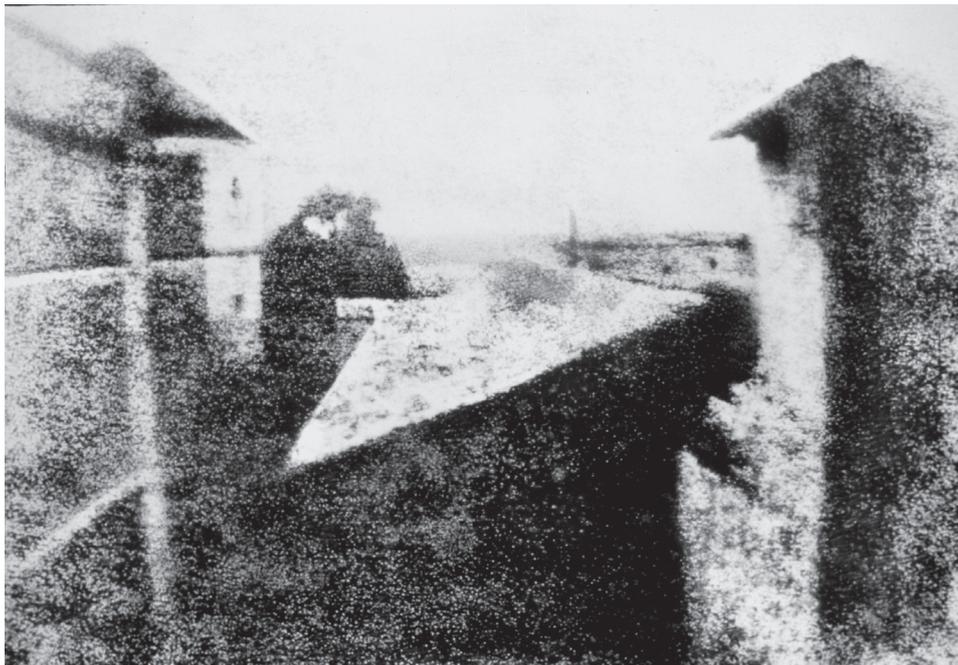
The construction of cameras obscuras became general in the XIXth century: they were the tecnologic contribution for the creation of photography. What´s more, it is known that the creador of the photography, Nicéphore Niepce (1765-1833) had bought in 1826 a canera obscura with a lense of meniscos to the engeineers Chevalier´s Optician´s shop in Paris.

As an important fact of the relation between the camera obscura and photography, the historic and tradicional asosiation between Niece and Daguerre the creator of the Daguerrotype (a camera obscura used to makie fotografics draws) icomes to a reality due to Daguirre who was not only an habitual client of Chevaliér´s Optician´s shop but also a friend of them. At last, it was the Chevaliéri who got in touch to both of them.

Niepce was the first to suceed in "fixing" an image.

It happened in 1827 when he suceeded in fixing a permanent image of the courtyard of his house. To realise that photography he used a sheet made of pewter and covered with asphalt : he exposed the sheet to the sunlight, so as the image became invisible. Depending on how much sunlight was received , the parts of the varnish exposed to the Light became soluble or insoluble.

Alter the exposition of the sheet, it was plated with essential oil of lavender and white oil: then, the parts of varnish which had not been exposed to the light got disintegrated. It was washed with water and it was possible to see the image made of a coat of asphalt for the clear colours and for the shadows , of the surface of the silver sheet.



**View from the window of Gras. The first picture created by Nicephore Niepce**

In the association "Niepce Daguerre", an improvement of the camera obscura was reached, adding fixing elements of the image ion to the screen. We also have five cameras obscuras made of walnut in which were put a glass diaphragm,, bellows and a system of scales.