

## Leonardo Da Vinci's Glasses Sketch

**Miguelangel Salazar Vilanova\***

*Optometrist, Specialist in Contact Lenses and Custom Glasses, Caracas, Venezuela*

**\*Corresponding Author:** Miguelangel Salazar Vilanova, Optometrist, Specialist in Contact Lenses and Custom Glasses, Caracas, Venezuela.

**Received:** December 06, 2021; **Published:** January 31, 2022

Unveiling Leonardo Da Vinci's glasses. Thus begins this article that tries to decipher or unveil one of the most illustrative sketches in the visual field that the master Leonardo Da Vinci left us.

Who was Leonardo Da Vinci? It is important to go through his biography in broad strokes. Leonardo Di Ser Piero Da Vinci or, better known as Leonardo Da Vinci, was born in Vinci, Italy on April 15, 1452 and died in Amboise, France on May 2, 1519, was a Florentine polymath of the Italian Renaissance: painter, anatomist, architect, paleontologist, artist, botanist, scientist, writer, sculptor, philosopher, engineer, inventor, musician, poet and urban planner.

As a scientist, Leonardo Da Vinci made substantial discoveries in the areas of anatomy, civil engineering, optics and hydrodynamics, but he never published his findings and, they had little influence on science. However, through his sketches, he left us a significant compendium of information for the future, possibly encrypted, in the best Leonardo style.

We must remember that for the time (Renaissance), it was considered that the lens was located in the center of the eye and was responsible for vision and it was Leonardo Da Vinci who, promoted the development of the camera obscura (principle based on the entry of light in a straight and unidirectional way to a dark space or enclosure through a hole or hole), using it to deepen the functioning of vision, the behavior of light and the laws of geometric perspective, all related to the practices of painting.

The sketch of Leonardo Da Vinci's glasses.

In this regard, little has been written, and it is, because little is known. It is this particular sketch of the legacy of the artist Leonardo Da Vinci, which has inspired me in the field of visual health, however, even though it was created by the artist, few historians and scientists, have achieved a truthful explanation for this sketch.

The sketch highlights to the naked eye, the use of a glasses in a single eye and subject in a stable way. Now, what was its functionality? Why and why did Leonardo draw it for?

At present, many vision specialists consider it an optical device, as some scientists have suggested that Leonardo Da Vinci may have suffered from a type of divergent strabismus, which is why, Leonardo could be considered to be attempting to correct his own optical defect.

Another interpretation in this same sense, is the one that has suggested that, the device used by the artist, represents the binocular vision, which is responsible for generating an in-depth vision. This last interpretation is logical, since the genius Da Vinci highlights in his sketch a building with an interesting characteristic: the three-dimensionality of it. Likewise, another point of observation in the sketch is,

a subject with his own head sideways, and this is suggesting a two-dimensional plane.

But, the main motivation of this study that I have done in depth, to decipher what this device is about in full, is the one I wonder below: Leonardo Da Vinci could have created a special device to correct an atypical visual defect?

The question posed, necessarily, forces us to go much further, because thinking about this possibility, automatically leads us to the future, that is, Leonardo Da Vinci, ahead of his time, represented a type of lens or glasses with high technological level, since this polymath, has never ceased to surprise us to date and I will explain it throughout this work.

Undoubtedly, Leonardo left the foundations laid for multiple inventions that contributed to the modern world, he was the precursor for example, of a diving suit that was tested, proving that it is fully functional in shallow water.

Now, back to our in-depth study of Leonardo's sketch, which shows an optical device, I think it could be a special device to correct an atypical visual defect, although the first impression it gives, is that it is a monocle or also, has the appearance of a swimming lens in the right eye, for its grip and structure, but, neither, it is, because although it has a rest over the big nose, it would make no sense to dive underwater to get vision in only one eye.

So, what is this mysterious device protagonist of Leonardo Da Vinci's sketch about? The answer is quite interesting and complex at the same time, while still being sophisticated, majestic and cool as we would all expect. In my opinion this is, a MULTIFUNCTIONAL OCCUPATIONAL GLASSES.

I will begin to explain in detail each of its functions and you can conclude that, we are in the presence of a Multifunctional Occupational Glasses.

### Eye occlusion

It turns out that Leonardo Da Vinci, who was a master of painting, taught to paint by covering one eye and so, has been sufficiently recorded throughout history. He used to cover one eye, as part of the steps of his technique for painting and thus have a two-dimensional perception on the canvas. What was not described is, what was the way to occlude an eye and this occluder monocle would explain everything.

Now, we will go into detail, why this design.

Leonardo Da Vinci, obviously, was a great connoisseur of the visual organ, and it is logical that, knowing that there is a response of pupillary contraction and simultaneous bilateral accommodation with the luminous responses, he decided, not only, Occlude the non-dominant eye to these iris responses, but also ensure that the eye was completely covered.

For this reason, he developed a device with a system similar to the swimming style, highlighting the adhesion of the same to the surroundings of the eye, where it seems that he approached the use of a suction cup, to create a totally dark chamber in front of that eye, which would be the recessive, and the tubular cylindrical part mounted in front of that monocle for the right eye, would come to be the rod, which well, could be a mechanism for other additional functions, which I will explain below.

### Clamping valve

There is the possibility of considering that, the cylindrical shape of the rod or belt, is a low pressure clamping valve, since Leonardo was an expert in this field, developing hydraulic valves, as well as, in the field of anatomy, he described the aortic valve of the heart, confirming today that, the description he made of its function was totally correct.

Now, why would Leonardo use a clamping valve for an eye occluder? He did it to ensure that there was no entry of light into the eye and as a result, there could be an accommodation of the connection by the optical straps. By the above, I mean the neurological connection of bilateral pupillary accommodation, and that works simultaneously.

In this way, Leonardo made sure that the eye that was doing the painting work, was and behaved like a cyclops, thus his response to light, while doing his job. artistic, was totally two-dimensional. Being this technique professed by him and that would improve the perception to represent a painting. In this regard, the TREATISE ON PAINTING BY LEONARDO DA VINCI can be revised, and it is enough to take for granted, the need for ocular occlusion.

### Hinge to unfold crystals of the visual field, with respect to the right eye

The phoropter, are the equipment used in eye exams, which have mechanisms to move or interpose crystals, Leonardo Da Vinci, could have implemented it for numerous areas he played masterfully.

This idea may sound very bold, however, by observing with more magnification the right eye in the sketch, we can notice on the nose, what looks like a kind of rivet and, on the left eyebrow, we will notice that, there is a small lens that is out of the visual field. Then, that lens unfolds up and down, depending on your visual requirement.

On the other hand, it is remarkable from the sketch to note that, it is Leonardo of older adult, and it could be assured that he had presbyopia or tired eyesight.

Another function that I can attribute to it is as a hinge to unfold crystals, it could have been for painting, since in Leonardo's Treatise on Painting, it also mentions the use of lenses. convergent.

The possibility that this monocle used it with an opaque or frosted glass to generate an effect on the shadows, as well as, with corrective variants, can also become, likewise, from the Treatise on Painting, where Leonardo himself expresses the implementation of crystals and filters, to provide variants of sizes in the visual perspective; great tool for the creator of the vanishing technique.

Finally, another particularity of the sketch, are the multiple lines perfectly drawn on it, ranging from horizontal to vertical planes, even outside a visual angle with respect to the face. And it is the same manifestation of light rays or light beams, which Leonardo Da Vinci precisely thought of occluding them.

Now, on the basis that these lines coincide on the cylindrical structure above the right eye, I will quote an excerpt from Leonardo Da Vinci's treatise on painting, point 32: XXXII. How to copy an object accurately.

"A crystal of the size of half a brand sheet will be taken, which will be placed firmly and vertically between the view and the object to be copied. Then moving away like a thing from a rod and directing the view to it, the head will be affirmed with some instrument, so that it cannot be moved anywhere. Then closing one eye, the object that is to the other part as it represents them will be pointed out on the glass, and passing the drawing to the paper on which it has been to be executed, it will be concluded. Observing the rules of aerial perspective well".

From the above, it could be concluded that, we would be in the presence of an anchoring or coupling mechanism on that eyeglass and when referring to the left eye, it could well be a sight to determine grids. Hence, Da Vinci's search for sacred geometry may come from.

Concluding in this work, I can assume that, the character in that sketch, seems to be Leonardo Da Vinci himself, it is enough to look at his most qualified self-portrait to compare his similarity and, his left eye seems to be his dominant eye. The above finds its justification, in that the left eye does not have an optical device of complete and wide structure, compared to the right eye.

This work of deductive analysis of the sketch, tries to demonstrate in a logical way through the description of man, his environment, with his multiple inventions and skills, the most outstanding function of a device he used as a 'MULTIFUNCTIONAL OCCUPATIONAL GLASSES', designed for a main function in painting.

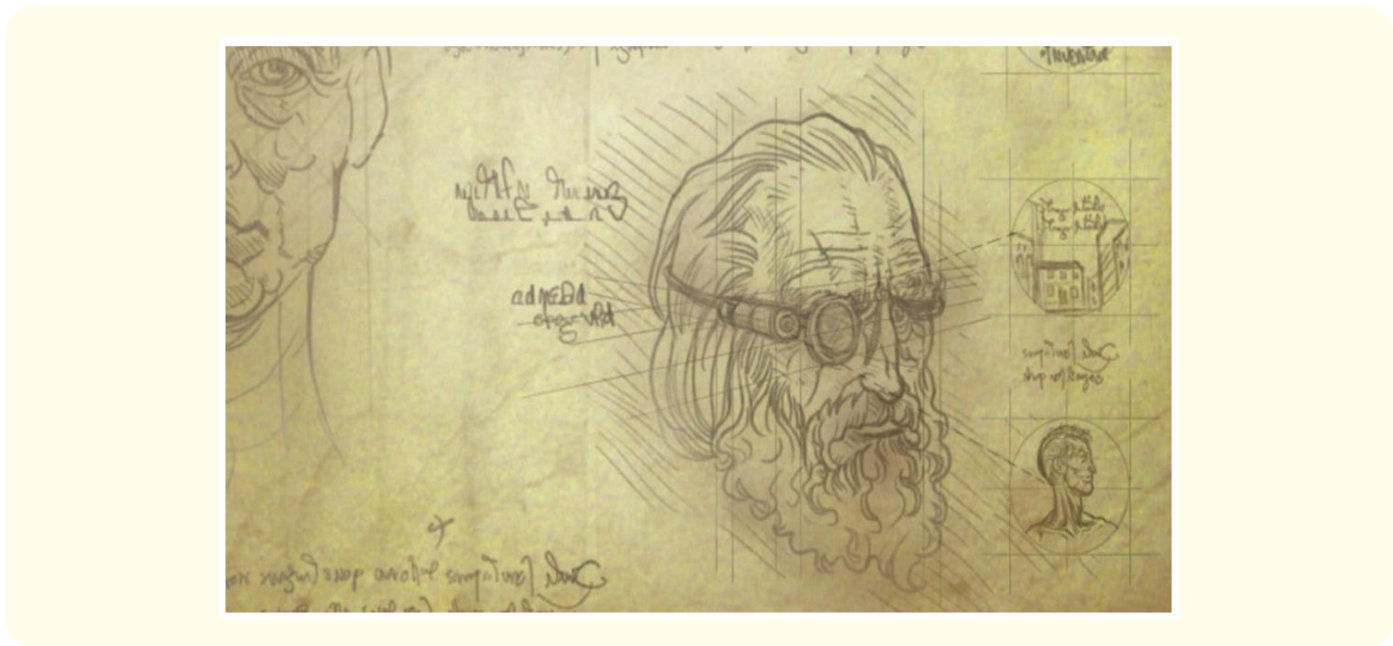
In this sense and, before concluding, I want to mention another concept of the Renaissance era, its meaning and use, the term "Speculation", since it will close the work of interpretation of the sketch, providing a broader vision, the philosophical (mother of all sciences).

The word "speculation" means to observe (in Latin). So we also have, the Greek term "theoría", which means vision and which, when translated into Latin is: "speculati", and meant "contemplatio" or contemplate. Likewise, we can mention St. Augustine who interpreted it as: "speculum" or mirror. Likewise, I will quote point number 16 of the Treatise on Painting, Leonardo Da Vinci:

"Way to stoke ingenuity to invent.

I want to insert among the precepts that I am giving a new invention of speculation, that although it seems of little moment and almost worthy of laughter, that does not stop being very useful to stoke the ingenuity to the fecund invention: and is that when you see some wall stained in many parts or some marbled stones, you can, looking at them carefully and carefully, to warn of the invention and likeness of some countries, battles, prompt attitudes of figures, strange physiognomies, particular clothes and other infinite things; for it is from such confusions that ingenuity draws new inventions".

In conclusion, the master Leonardo, through the use of observation, developed his own theory of vision, until creating a device that would help him to see more, to observe more. beyond what we see with the naked eye, and that's how, this sketch by Leonardo Da Vinci, is another work of art a personalized eyeglass, as an occupational, multifunctional visual tool, and precise. Undoubtedly, this sketch is an expression of his extraordinary drawn mentality [1].



## Bibliography

1. Treatise on Painting by Leonardo Da Vinci. Sketch: III number 3. The Building. IV. 4. News of the young man who has a disposition for painting. XVI number 16. XXXII number 32. XCIX number 99 section C.

Volume 13 Issue 2 February 2022

©All rights reserved by Miguelangel Salazar Vilanova.