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THE MASTERLY PROJECTIVE PATTERN ACROSS FORM AND SYMBOLISM IN *LAS MENINAS* BY DIEGO VELAZQUEZ

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Abstract. Aim of this paper is to focus on the intrinsic connection between perspective pattern and symbolism in *Las Meninas*, the enigmatic art masterpiece painted by Diego Rodríguez de Silva y Velázquez in 1656. Most intriguing steps in this work have been the search for information about the not yet existing room depicted, and the geometrical investigation concerning reflection in the mirror. Graphic reconstruction has been based on the modern homological approach.

Keywords: Diego Velázquez, Alcázar de Madrid, Perspective, Geometry and Graphics, Projective and Descriptive Geometry, Homology, Optics and Catoptrics, Painting, Digital Graphics



Figure 1: *Las Meninas*, by Diego Velázquez, 1656. Prado Museum (*source*: web)

1 Introduction

Since it was painted, in 1656, *Las Meninas* by Diego Rodríguez de Silva y Velázquez, has never stopped astonishing those who face it as spectators, scholars, painters, semiologists, either for its fascinating beauty and imposing size (276 × 318 centimeters), or for its enigmatic set (Fig.1).

Quite unusually, we see the painter at work in front of us on a huge canvas, attentively looking into our space and our eyes, together with other depicted characters including the shining Infanta Margarita in between the two Maids of Honor (*Las Meninas*), aging five at

that time, daughter of Felipe IV and Mariana de Austria, the Royal couple appearing reflected in a mirror hung on the rear wall, while the widespread gloom pervading the big space, sometimes ripped by finite irruptions of sharp light further feeds the mysterious atmosphere of the scene, studded by series of big paintings appearing on the high walls and in between the bays.

But what actually is the scene, and what does it mean?

Art critics and the rich international literature available about *Las Meninas* have shown, over time, the many levels of meaning and the sophisticated symbolism of the composition, which will be part of our investigation, driving us at a very point of focus: the perspective structure of the representation as a crucial key in this enigma.

2 Towards projective investigation

Indeed, as the greatest poetry is intrinsically connected with the sublime use of the grammar, so this art masterpiece seems to be built on and substantiated by the masterly and thoughtful use of projective code and pictorial refinement, what makes it at the same time a visual representation and a geometrical demonstration.

Therefore, our work has mainly focused on the perspective reconstruction of the room, on the location of the characters in the stage, and on the mirror reflection, in relation to the decentralized position of the sight point, by using modern homological procedures to show the relationship between the apparent perspective image and the conjectured real spatial set, as well as by combining drawings, digital models and animations as a double check.

To make the enigma even more dense and intriguing, the room we see in the painting, which has been identified as the atelier of the painter located in the Galería de Mediodía of the Alcázar de Madrid, the castle of the King of Spain in Madrid, was burned during a devastating fire occurred in the night of Christmas Eve in 1734 (Fig.2, left).

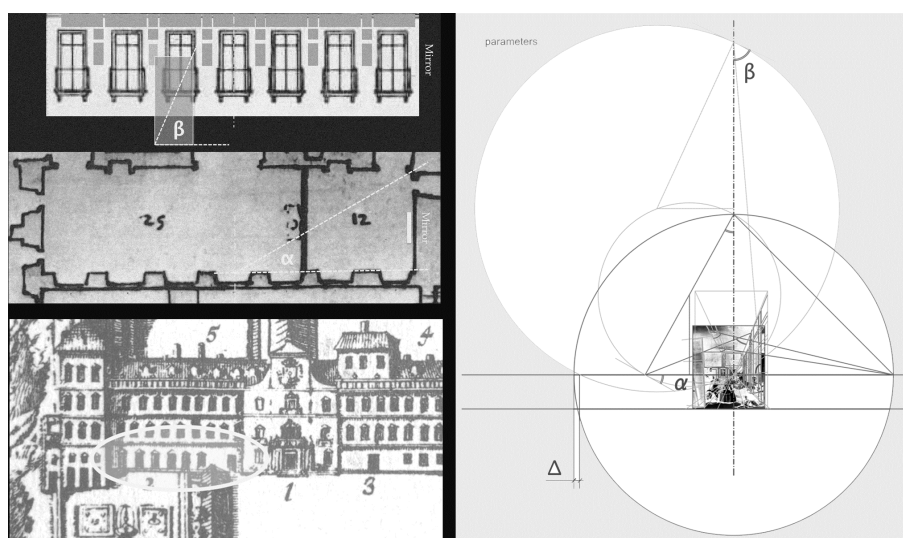


Figure 2: in search of metrical parameters, and their use in setting perspective reconstruction; left: a recent reconstruction of the façade of the room by Barbeito (above), detail of the view by Meunier, 1666 (below), in the middle, plan of the room by Gomez de Mora (1626); right: setting geometric orientations (source of images: [1]; drawing and diagrams by author)

Therefore, in order to start with the geometrical reconstruction of the room, it has been necessary to infer basic metrical information from original iconographic sources, especially

from the plan by Juan Gomez de Mora, and from some other graphic views and images. Unfortunately sources date back to different periods, but the accurate reconstruction of the history of the castle provided by José Manuel Barbeito [1] helped us very much in using the available graphic materials with critical awareness. Another important source was the *Inventory* of the paintings appearing on the walls in *Las Meninas*, recorded in 1686 and giving detailed info about location and dimension of each frame, as mentioned by Jonathan Brown [2]. Metrical units were *pie castellano* (about 27.86cm), together with others, like *vara*, *tercia*, *cuarta*.

3 Reconstruction: real vs virtual

Once identified the required metrical parameters of the real room, namely two angles and a length, we started with the inverse perspective construction. In spite of the strong perspectival effect, the perspective geometrical pattern is quite 'hidden' in this painting. No tiles show on the ground, the baseline of the right wall is largely covered by the figures of the portrayed people, the left wall is not visible at all. Consequently, it was necessary to graphically highlight some key hidden lines in order to visualize the whole perspective pattern.

Keeping the de Mora's map as a reference, the diagonal from the mid point of the right wall to the opposite corner of the rear wall was drawn on the ceiling in order to visualize the image of the angle α , the only strictly necessary in case of a central perspective. As a double check, the image of one more angle, we called β , was also visualized, by marking the diagonals of the lower series of paintings hanging on the wall in between the balconies. The corresponding circles passing through the related vanishing points according to the true angles we had from the map and from the inventory, allowed us to find the viewpoint (Fig.2, right). As the true linear information, we took the width of the room, and, again as a double check, the sides of the big painting at right on the rear wall, nowadays at the Prado Museum.

Finally, we were ready for the graphic reconstruction of the room, therefore plan, ceiling and a side view were graphically outlined by using homological procedures, so showing them on the picture plane (Fig.3). At this point, the reconstructed plan and the historical plan were overlapped to prove the exactness of the Velazquez's construction, which was confirmed, in spite of some details, like the chamfers among the bays, appearing different from one another in the de Moura's plan.

More astonishing was the work on the image reflected in the mirror, showing the King Felipe IV and his wife the Queen Mariana de Austria. By effect of reflection their busts are half size compared with that of the man on the staircase, who is José Nieto Velázquez, the attendant of the Queen (not a relative of the painter). But where are they?

They are the only persons not directly portrayed. Many hypotheses have been proposed, including that mirror shows what Diego Velazquez was painting on the canvas, that is, exactly the portrait of King Felipe and Queen Mariana. This is also our hypothesis, which we tried to demonstrate completing the perspective reconstruction taking into account the catoptric figures immortalized in the painting. Thus, the inclination of the plane of canvas to ground and zenith was graphically determined, and the virtual image appearing in the mirror inversely projected on that plane, finally its true-to-size outline rotated on the picture plane. Projective reconstruction proved our hypothesis (Fig.4). What does it mean?

It means, we suppose that King and Queen were at the same viewpoint we are when we look at the painting, under the attentive gaze of the painting portraying them. Being in the painting only as a reflected image, more than representing their human royal role, they symbolize the pure principle of Kingdom inspiring their darling daughter, surrounded by

the closest members of the Court, the Infanta Margarita, or, the future of the Spanish Kingdom [6].

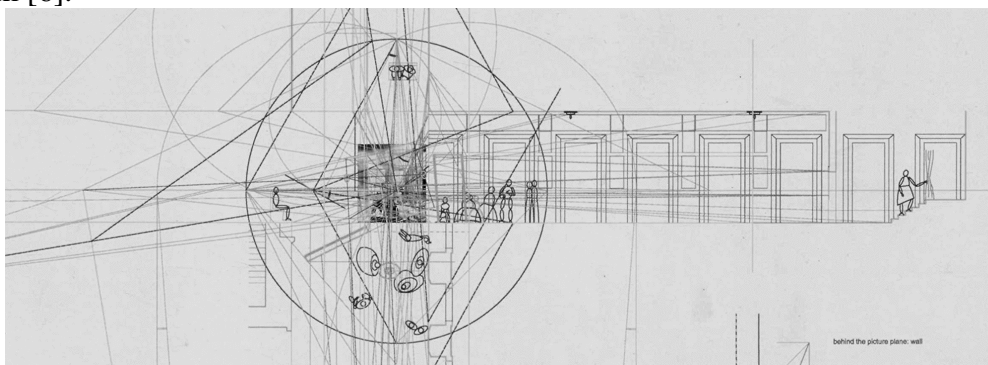


Figure 3: Detail of the homological reconstruction of room and scene (drawn by author)

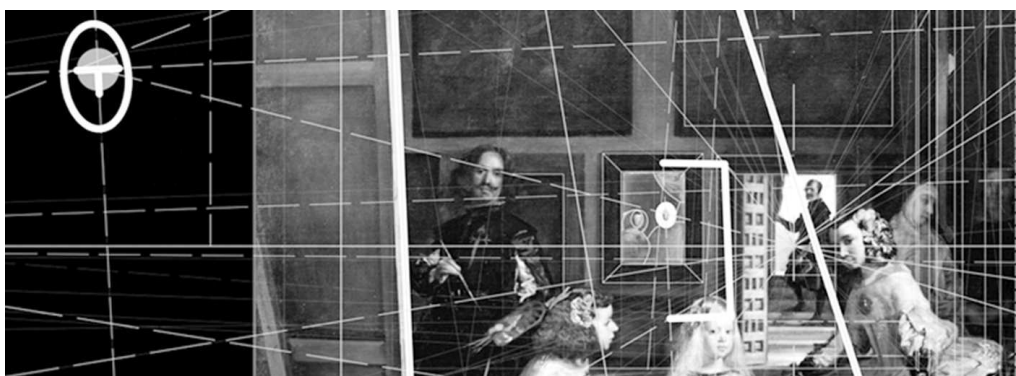


Figure 4: Detail of the reconstruction of the reflection set (drawn by author)

4 Conclusion

Compared with the early Renaissance paintings, it is clear that *Las Meninas* is definitely flooring in a modern style, aiming at sublimating techniques in favor of a more dense expressiveness and symbolism, glorifying also painting itself by this way. What is also testified by the mythological scenes hanging all around in the room, as divine approvals, and reminding us that Diego Velázquez has been defined the leading artist of the *Siglo de Oro*, or, the Golden Age of Spanish Art.

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WYRAŻONE POPRZEZ FORMĘ I SYMBOLIKĘ W OBRAZIE
LAS MENINAS DIEGO VELÁZQUEZ'A**

W niniejszej pracy pokazano ścisły związek pomiędzy zasadami perspektywy a symboliką przedstawioną w *Las Meninas*, enigmatycznym dziele autorstwa Diego Rodríguez de Silva y Velázquez powstałym w 1656 roku. Szczegółowa analiza geometryczna dotyczyła informacji niesionej przez treść obrazu w pokoju i odbicia w lustrze. W rekonstrukcji graficznej wykorzystano geometryczną zasadę homologii.

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