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COLORS ON THE ARCHITECTURAL SURFACES OF THE CHURCH AND CASA DA MISERICORDIA/ LAR IMACULADA CONCEIÇÃO IN SÃO CRISTÓVÃO SE/BR

AS CORES NAS SUPERFÍCIES ARQUITETURAIS DA IGREJA E CASA DA MISERICÓRDIA/LAR IMACULADA CONCEIÇÃO EM SÃO CRISTÓVÃO SE/BR

LOS COLORES EN LAS SUPERFICIES ARQUITECTÓNICAS DE LA IGLESIA Y CASA DA MISERICORDIA/ LAR IMACULADA CONCEIÇÃO EN SÃO CRISTÓVÃO SE/BR

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ABSTRACT

This paper aims to publicize the identification, mapping and analysis of the characteristics of pigments and chromaticisms (hue – name of the color; brightness – degree of luminance and saturation – apparent purity of the tone) present in the architectural surfaces in historic buildings, research developed in the Scientific Initiation Project - PIF 10984 (2022-2023) at the Federal University of Sergipe entitled COLORS ON THE ARCHITECTURAL SURFACES OF THE CHURCH AND CASA DA MISERICORDIA/ LAR IMACULADA CONCEIÇÃO IN SÃO CRISTÓVÃO SE/BR; specifically on the panel in the main chapel of the church entitled THE VISITATION OF OUR LADY TO SANTA ISABEL and on the WALL SURFACES OF THE CHAIN CHAPEL, assets inscribed by IPHAN in the books of Fine Arts and History in 1944 and that make up the landscape of the listed São Francisco Square by UNESCO in 2010 as a World Heritage Site. The methodology applied covers the history, theory and culture of color over time, perception of color from the NCS systems (Natural Color System) using the RM200 digital colorimeter, visual observations from the color palettes of the MUNSELL Table (Munsell System), and investigation of pathologies that affect these surfaces. The possibility of investigating color could lead to the discovery of restitution/preservation pigments, or recovery of ancient knowledge, incorporating traditional knowledge with of new technical

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routines, contributing to the conservation of buildings that imply a judgment of heritage value and preservation of national heritage.

Keywords: Architecture. Conservation. Restoration. Technology. Color.

RESUMO
Este estudo tem como intenção divulgar a identificação, mapeamento e análise das características dos pigmentos e cromatismos (matiz – nome da cor; brilho – grau de luminância e saturação – pureza aparente da matiz) presentes nas camadas de superfícies arquitetônicas em edificações históricas; pesquisa desenvolvida no Projeto de Iniciação Científica – PIF 10984 (2022-2023) na Universidade Federal de Sergipe intitulado AS CORES NAS SUPERFICIES ARQUITETURAIS DA IGREJA E CASA DA MISERICÓRDIA/ LAR IMACULADA CONCEIÇÃO EM SÃO CRISTÓVÃO SE/BR; em específico no painel da capela-mor da igreja denominado A VISITAÇÃO DE NOSSA SENHORA À SANTA ISABEL e nas SUPERFÍCIES PARIETAIS DA CAPELA-MOR, bens inscritos pelo IPHAN nos livros de Belas Artes e História em 1944 e que compõem a paisagem da Praça de São Francisco tombada pela UNESCO em 2010 como Patrimônio da Humanidade; a metodologia aplicada perpassa pela história, teoria e cultura da cor através dos tempos, percepção das cores a partir dos sistemas NCS (Natural Color System) utilizando o colorímetro digital RM200, observações visuais a partir das paletas de cores da Tabela MUNSELL (Munsell System) e averiguação das patologias que afetam estas superfícies. A possibilidade da investigação da cor poderá ensejar a descoberta de pigmentos de restituição/preservação, ou recuperar o saber fazer, incorporando o conhecimento tradicional a novas rotinas técnicas, contribuindo para a conservação de edificações portadoras de juízo de valor patrimonial e preservação do patrimônio nacional.

Palavras-chave: Arquitetura. Conservação. Restauro. Tecnologia. Cor.

RESUMEN
Esta comunicación tiene como objetivo la identificación, mapeo y análisis de las características de los pigmentos y cromatismos (matiz – nombre del color; brillo – grado de luminancia y saturación – pureza aparente del tono) presentes en las capas de superficies arquitectónicas en edificios históricos. Investigación desarrollada en el Proyecto de Iniciación Científica – PIF 10984 (2022-2023) de la Universidad Federal de Sergipe, titulado LOS COLORES EN LAS SUPERFICIES ARQUITECTÓNICAS DE LA IGLESIA Y CASA DA MISERICORDIA/LAR IMACULADA CONCEIÇÃO EN SÃO CRISTÓVÃO SE/BR; específicamente en el panel de la capilla mayor de la iglesia titulado LA VISITACIÓN DE NUESTRA SEÑORA A SANTA ISABEL y en las SUPERFICIES LATERALES DE LA CAPILLA MAYOR, bienes inscritos por el IPHAN en los libros de Bellas Artes e Historia en 1944 y que conforman el paisaje de la Plaza de São Francisco, catalogada por la UNESCO en 2010 como Patrimonio de la Humanidad. La metodología aplicada abarca la historia, teoría y cultura del color a lo largo del tiempo, percepción del color a partir de los sistemas NCS (Natural Color System) utilizando el colorímetro digital RM200, observaciones visuales de las paletas de colores de la Mesa MUNSELL (Munsell System) e investigación de las patologías que afectan a estas superficies. La posibilidad de investigar el color podría conducir al descubrimiento de pigmentos de restitución/preservación, o recuperación de conocimientos antiguos, incorporando conocimientos tradicionales con nuevas rutinas técnicas, contribuyendo a la conservación de edificaciones que impliquen un juicio de valor patrimonial y preservación del patrimonio nacional.

Palabras-clave: Arquitectura. Conservación. Restauración. Tecnología. Color.

1 INTRODUCTION

This article presents a study in the area of Conservation and Restoration Technology, characterized by the investigation of the color that covers the layers of the architectural surfaces of historic buildings, understanding that color, as it is also an optical phenomenon, must be analyzed in its pictorial composition along with the degradations (pathologies) that appear coexisting in the coatings of masonry and wood (architectural surfaces) of heritage buildings. Thus, the study of color in architectural surfaces should be associated with: a) Perception of the environment in which the building is inserted; b) Degradation of materials; c) Around the building; d) Shading and coloration caused by the neighborhood or nearby objects; e) Amount of light incident on the surface, on the day and time it is observed; f) Iconographic study; g) Identification and mapping of colors – hue, brightness and saturation; and so on.

To provoke critical reflections on these issues, the research carried out and described in this study seeks to undertake some discussions such as: 1- Evaluation of known historical/theoretical/technical references about the painting of the panel THE VISITATION OF OUR LADY TO SAINT ISABEL and on the PARIETAL SURFACES OF THE CHAPEL-MORR, BOTH IN THE CHURCH AND HOUSE OF MERCY/HOME IMMACULATE CONCEPTION IN THE city of São Cristóvão, interior of Sergipe, Jesuit construction from the early seventeenth century and the painting of the panel and parietal surfaces probably dated between the eighteenth and nineteenth centuries; 2- Acting on an architectural surface that constantly needs prevention/conservation/restoration and that does not have a color evaluation study (old paints), through its characterization and composition related to binders, pigments, dyes and additives, as well as, specifically, the determination of hue, brightness and saturation (chromaticism), from visual observations and *in situ measurement techniques*.

The research carried out demonstrates that the understanding of the preservation of the memory and identity of a society is associated with the conservation and restoration of many heritage categories that, naturally, can exist as part of a set, such as paintings on parietal surfaces, but which have as a common intention the search to "maintain" the object in conditions, so that the genesis and atmosphere of its historicity are demonstrated for the observer to enjoy its essence and not be deceived by the "false historical".

In the case of the conservation and restoration of color in heritage objects, analyses are developed that indicate methodological care that must be taken, such as the psychological variables that interfere in the perception of chromaticism, that is, in *visual observations in situ* and in the laboratory, in which certain interrelated aspects are dealt with, such as color as a result of the combination of the object's absorption and/or reflection

capacity, added to the observer's response, or the tendency of the eye to intensify the difference between colors, when they are placed side by side, especially in the case of complementary colors.

Thus, in addition to describing the colonial architectural characteristics of the building, this article presents the evaluation of the panel and parietal surfaces, based on a detailed and non-destructive visual measurement with the help of color palettes (MUNSELL; NCS and NCS RM200 digital colorimeter); these results are presented in color mapping and identification sheets (MATIZ; BRIGHTNESS and SATURATION) and identification and mapping of damage, which make up the pictorial chromatic layers. Thus, possibilities of understanding the most "original" painted surfaces (numbers of layers and thicknesses), defects (pathologies), causes and needs for repairs, identification of supports (fabric, wood, mortars), artistic techniques employed and possible authorship or attribution of the work and its authenticity are developed and demonstrated, resulting in the production of information that can be transmitted to other future researchers, causing the multiplier effect, natural to the process of knowledge and the search for knowledge.

2 CHURCH AND HOUSE OF MERCY/IMMACULATE CONCEPTION HOME.

The Church and House of Mercy/Immaculate Conception Home, located in Praça de São Francisco in the municipality of São Cristóvão (Figure 1), is owned by the Archdiocese of Aracaju, inscribed in the Book of Fine Arts - IPHAN, V. I, page 63 of January 14, 1944 and Historical Book, V. I, page 38 of January 14, 1944, make up the landscape of St. Francis Square (listed by UNESCO in 2010 as a World Heritage Site). In Jesuit style, the church tower is one of the most important engineering achievements of the seventeenth century in the Brazilian Northeast, composing the building complex formed by the Seminary and the Church, both in Baroque style. The Church, formerly known as the Chapel and Hospital of Charity Santa Izabel, dates from construction in the first half of the seventeenth century, being one of the oldest buildings in the city of São Cristóvão (National Inventory of Real Estate and Integrated Properties – INBMI; IPHAN, 2001, p. 1).

Figure 1

Church and House of Mercy/Immaculate Conception Home (Church of Santa Isabel) in São Cristóvão SE/BR, in Praça de São Francisco, historic center of the city

Source: PIBIC research group, Sept. 2022.

The lands where the building was erected were donated to the Brotherhood of Mercy in 1608, and it is known that, in 1627, the Church already existed, since, according to the Testament of Baltazar Barbuda, dated March 10 of that year, "20 cruzados, the will of the testator, the desire to be buried in the Church of Santa Misericórdia, in the city of São Cristóvão Del Rei" (National Inventory of Real Estate and Integrated Assets, *op. cit.*, p. 2). The Church and House of Mercy/Home Immaculate Conception was used for religious services and events and as an orphanage, run by the "Missionary Sisters of the Immaculate Conception Mother of God", from 1922 until very recently. Currently, it houses several Municipal Secretariats of the Municipality of São Cristóvão.

The doorway of the chapel (Church) worked in limestone stonework, the windows of the old hospital with a crown also in limestone, the neoclassical high altar contains a panel by José Teófilo de Jesus da Escola Baiana, in oil on canvas, evoking the Visitation (National Inventory of Real Estate and Integrated, *op. cit.*, p. 2), this last statement requires investigations and further investigations, including this painting is not mentioned as by José Teófilo de Jesus in the study by Carlos Ott, one of the great researchers of the "Escola Bahiana de Pintura" (1982, p. 92).

The penetrations of the Jesuits in Brazil through the old classic coastal cities and the interior of the colony, such as São Cristóvão in Sergipe Del Rei in 1590, a city questioned by some historians of Urbanism as the "4th oldest city in Brazil" (Reis, 2000, p. 85), left exceptional monuments, such as the Church and House of Mercy/Immaculate Conception Home, in addition to churches and chapels of extreme importance, such as Santo Antônio (1702) and Comandaroba (1734) in the city of Laranjeiras, also in Sergipe.

There are many documents describing other Jesuit buildings in the "so-called" main colonial capitals, such as the Church of the Cathedral of Olinda (Telles, 2007, p. 23) and in other cities in the interior of Brazil, such as the Seminary of Belém da Cachoeira, in Bahia

(Filho, 1937, p. 101); however, little has been written about the Casa da Misericórdia/Lar Imaculada Conceição de São Cristóvão, which, in common with these other Jesuit buildings, has its effective transformation into a home for needy orphans and mercy, after the expulsion of Jesuit seminarians from Brazil, decreed by the Marquis of Pombal, in 1759 (Filho, *op. cit.*, p. 103).

In relation to its architecture, it is possible to reaffirm the predominance of the same simple way that characterizes the Jesuit churches of colonial Brazil. As Godofredo Filho described, most Jesuit churches are severe and rude constructions (Filho, *op. cit.*, p. 104), a comment that we only disagree with the lack of grace that this author reports, because in the Church of Santa Isabel the limestone doorway with floral elements and cartouche with a human face (mask with acanthus leaves, tulips and volutes), surmounted by a Latin cross and the central band with a mask as if trying to imitate what would be a being that blows garlands and volutes, an allegory similar to the one on the door of the chapel of Comandaroba in the city of Laranjeiras, is extremely beautiful.

The main door is made of wood with diamond-shaped cushions, eight small vertical cushions and two horizontal cushions making up each leaf of the door. The tower, as is common in this typology, is low, however, it fully functions as a transitional element with the old college that became Lar da Misericórdia; Also noteworthy is the arrow shape of the dome, which, due to its monumentality, must have been difficult to build, in all the vertices of the tower and in the vertices of the pediment accompany spires, also in the form of pyramidal arrows with points in circular elements, as if to imitate the shape of the arrow of the tower's dome (Figure 2).

Figure 2

(from left to right) – Limestone doorway; tulips and acanthus leaves on the doorway; mask; diamond-shaped cushions on the main door and tower with spires in the shape of arrows

Source: PIBIC research group, Sept. 2022.

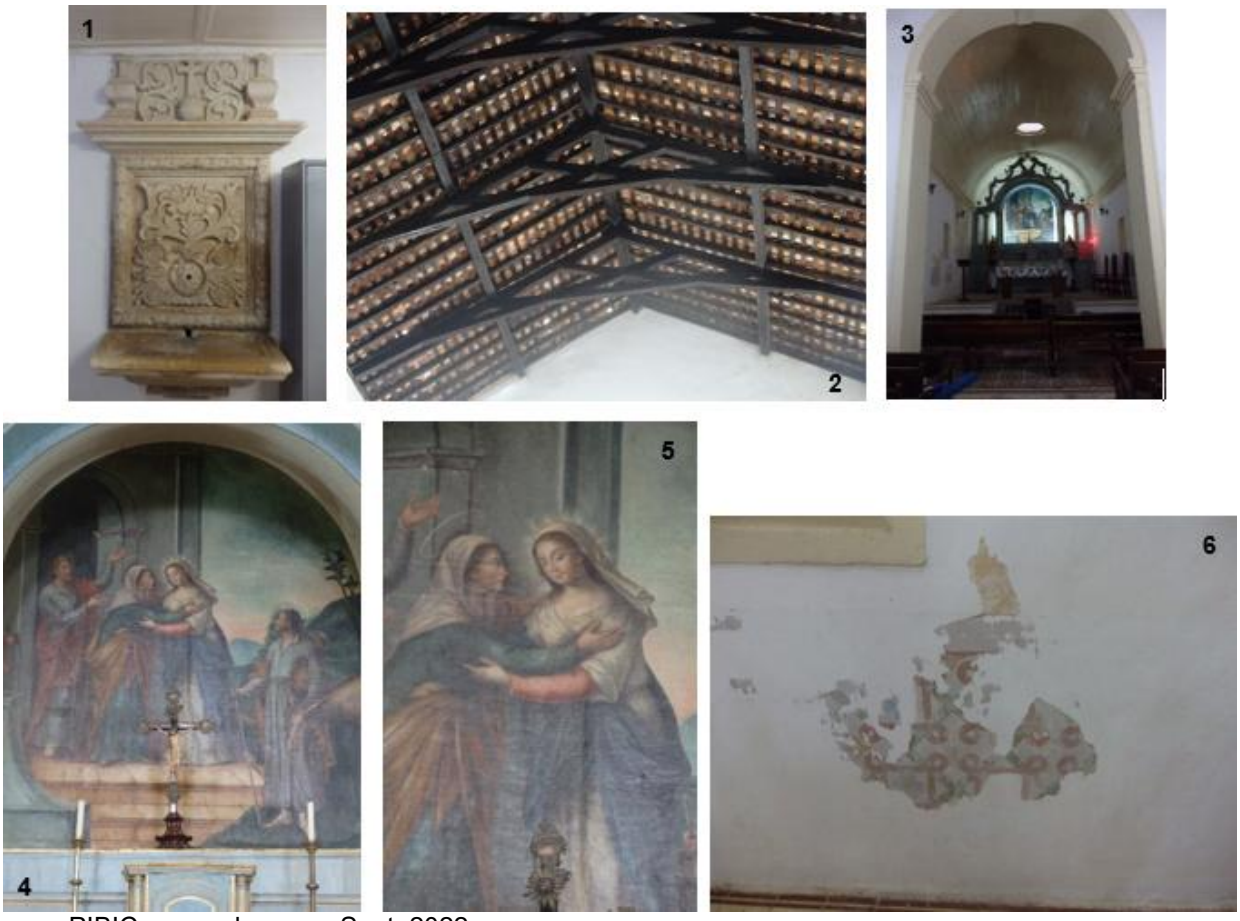
The building of the old seminary maintains, on the outside, the repetitive rhythm of the symmetrical windows vertically and horizontally with sills, jambs and lintels protruding in yellow (whitewashing). The lintels are simple and curved on the ground floor and with bent and more protruding curvatures at the top; internally, this cloister denotes his main task, that is, Jesuit catechesis, in fact, this Jesuit work with the indigenous people in Sergipe would still deserve, on the part of local historians, a chapter of greater depth. It is noted that the masonry of the thick walls is made of limestone based on plaster of mortars, known in the region as salão, with lime, sandy and red clay trampled by slaves, as well as the plaster and paint are based on lime (Nascimento, 1981, p. 47).

The church of Santa Isabel consists of a small central nave, choir, pulpit, transition arch and chancel; on the right side of the altar, competing with the tower, there is the sacristy, where the limestone washbasin stands out. The ceiling of the main nave no longer exists and the scissors, technically called Santo André, are apparent; in the chancel, the ceiling in the shape of a barrel vault is more complete, unfortunately without traces of the painting that should exist there; in the center of this vault we have a small skylight for zenith lighting (dome), causing an interesting effect on the main altar and on the altarpiece called *The*

Visitation of Our Lady to Saint Elizabeth, as well as on the side walls of this chapel, where the parietal paintings are located (Figure 3).

Figure 3

1- Original toilet with profusion of ornaments representing nature; 2- Scissors of the Main Nave; 3- Main Chapel; 4- Panel The Visitation - painting on canvas on the main altar ("altarpiece"); 5- Detail of Our Lady embracing Saint Elizabeth; 6- Detail of the paintings that were covered by whitewash on the side walls of the chancel



Source: PIBIC research group, Sept. 2022.

Inside the Church there is a "loss" or non-existence of the semantic apparatus that the Jesuits used to seduce the imagination in sculptures and carvings, in which the exuberance of nature predominated; in fact, from the Jesuits, would the paintings on the parietal surfaces of the chancel remain, in geometric/floral shapes and the panel painted on fabric with the theme of the Visitation of Our Lady to her cousin Saint Elizabeth? Or would these paintings, such as the hydraulic tile floor, have been executed in the middle or end of the nineteenth century? These questions, as well as the identification of colors and pathologies on these parietal surfaces, will be investigated in the next sub-items.

3 THE PANEL THE VISITATION OF OUR LADY TO SAINT ELIZABETH

In Brazil, in the first three hundred years, the vast majority of buildings used lime-based paints, with a predominance of white, however, due to the richness of minerals and clays in various regions and the Portuguese influence on the taste and use of colors, as in the Alentejo "[...] where the pigments were removed directly from the soil by mixing them with water, these colors could also meet hues ranging from blues to yellows [...]" (Aguiar in Ribeiro, 2013, p. 91)element. In the book História da Arte Brasileira there is the following description: "[...] The same could be said about painting. Jesuits who were already practical in the technique of this art came from Portugal, encountering difficulties in finding the materials necessary for the execution of works in the European way. The painting becomes coarse [...]" (Bardi, 1975, p. 27-38).

In religious buildings, the parietal paintings (murals) are composed of symbolic/representative artistic-religious themes of the order, congregation or brotherhood that erected the building; as well as in the main and side altars and, specifically, in the ceiling and wooden altarpieces, they present expressive illusionist artistic works, inspired by treatises such as Andrea Pozzo (Kauffman in O'Malley, 1999, p. 274–76, 300), made with paints and techniques that are very little or almost nothing known today, brought from writings and knowledge from other countries through painters, artists and religious people, and sometimes mixed with the know-how of the local population (Costa, 1995, p. 451).

There are numerous definitions for the word color, which, in Latin (*colore*), means the impression that is produced on the retina after diffusion through the bodies (Pedrosa, 2014, p. 20). This sensation depends on the intensity that the light excites each of the three types of pigments (blue, red and yellowish green – pure colors). However, color is subjective, as it varies from individual to individual and circumstances of observation. Therefore, color is related to a certain quality of the same light that produced it, a quality that can be defined by its spectral composition and the materials of which it is constituted, that is, the color of a material is determined by the average wave frequency that its constituent molecules reflect (Pinhal, 2008, p. 03-04).

In the study of color, one of the first actions is the visual observation of the object under the light within a dominant frequency that is called HUE, which serves to give the color its name, along with the sensation of BRIGHTNESS and SATURATION. Hue gives color its name, brightness corresponds to the degree of luminance of one color in relation to another, and saturation deals with the apparent purity of Hue (Pastoureau, 1997). Related to the heritage study of historic urban ensembles, it can be stated that color is an integral part of a

set of elements that characterize the urban space, making it recognizable and identifiable (Aguiar, 2005, p. 323).

The knowledge of optical phenomena in color studies is of fundamental importance, such as those described by Urland and Borrelli (1999, p. 6) as Metamerism, that is, a situation in which two color samples appear the same under one lighting condition, but different under another, also understood as geometric metamerism and metamerism of the observer. There is also Color Constancy, which tends to make the colors of an object remain the same when lighting conditions are changed (as opposed to metamerism).

For Urland and Borrelli (*op. cit.*, p. 6), in addition to the phenomena mentioned above, there is the Contrast of colors, which deals with the tendency of the eye to intensify the difference between colors, when they are placed side by side, especially in the case of complementary colors; there is Adaptation, which is the adjustment of the visual system to the intensity or quality of the light stimulus, a common phenomenon when entering a dark room; also the Memory of color, which is the perception of color that a familiar object, under normal conditions of lighting, will arouse in the judgment of the observer, as an apple, for example, will always appear red to the inattentive observer.

In the analysis of the PANEL OF THE CHANCEL OF THE CHURCH AND HOUSE OF MERCY entitled THE VISITATION OF OUR LADY TO SAINT ELIZABETH, the National Inventory of Immovable Property of IPHAN observes the following issues:

> Panel in a half-point arch, with a scene on the left plane composed of two female figures embracing each other in profile (Saint Elizabeth and Our Lady), standing, haloed and rayed, and on the right side wears a beige veil and surround, red tunic and blue cloak crossed to Rente, falling in folds (Our Lady); the figure on the left side, has his head wrapped in a beige veil, green tunic and brown cloak, tied at the front, falling in front; has flexed legs (Saint Elizabeth). At the bottom of the left plane, there is a portico in gray tone, in a full arch from which a male figure emerges; standing in front in half profile to the left side, facing the central plane; halolus, his arms are raised diagonally to the left side, with his hands open; wears a bluish gray tunic, with a folded "V" collar, red mantle, crosses at the front falling over the left shoulder, forming folds - Left leg flexed at the front. On the lower right plane a male figure in half profile; on the right side, standing, haloed, with his head turned to the female figures, he wears a hat on his back; has arms flexed downwards; right with hand holding pole, wears bluish gray tunic with a collar folded in a "V", falling in pleats, legs parallel with feet at an angle, shod by strappy sandals. Central plan with ochre-colored staircase composed of two steps, on the left side curved base, supporting a vase with flowers, on the right side on a weave. Donkey head, in the background bushes (National Inventory of Real Estate and Integrated Properties – INBMI; IPHAN, 2001, p. 26).

In *the visual in situ observation* of the Panel, this information is fully recognized, however, it is necessary to observe the optical phenomena described above and that may

cause different understandings from those described in the IPHAN file, such as the example of the "red tunic and blue mantle crossed" in Our Lady, the supertunic would be beige? Was the tunic really red? In blue, what would be the brightness and saturation? Would the veil on the head of Saint Elizabeth and Our Lady be beige or would they have different hues? Would there be this bluish-gray hue described in the character seen to the left of Santa Isabel (Zechariah)? And is Zechariah's cloak really red as described by the IPHAN file? Would St. Joseph's tunic be bluish gray? And in the other colors, ochre predominates? It is necessary to verify the phenomena that occur in the visual enjoyment of the Panel, as in the quote that the veils and tunics are really all beige/blue/red and if the observer, at that moment, would not be suffering the effect of metarism and the incidence of luminosity at the time and angle which he reported on the Panel.

THE VISITATION OF OUR LADY TO SAINT ELIZABETH is described in St. Luke: "As soon as the Archangel Gabriel announced to Mary that she would be the Mother of the Savior, [...] and Mary hurriedly goes to pay a visit to her elderly cousin Elizabeth to help her with the household chores." The Virgin walks about 200 km, passes through Samaria and arrives in Judea, goes to the city of Ain-Karin, high in the mountains of Judea where the priest Zechariah lived, "[...] Upon arriving at Elizabeth's house, he greets her: "Shalom!" John the Baptist trembles in Elizabeth's bosom, and she is filled with the Holy Spirit"; St. Luke says: "Blessed are you among women, and blessed is the fruit of your womb", [...] "Whence comes this honour to me that the mother of my Lord comes to me? For as soon as the voice of your greeting reached my ears, the child trembled for joy in my bosom"; And he continues: "[...] Blessed are you who believed, for the things spoken to you by the Lord will be fulfilled." (Clarentian Edition, Holy Bible, 1996, Lk 1:40-45, p. 1346).

For the identification and mapping of colors in the panel *The Visitation* and on the wall surfaces of the chancel, the methodology applied was based on work already carried out at the CTPR (Center for Conservation and Restoration Technology) of the Department of Architecture and Urbanism of the Federal University of Sergipe and practices learned at the University of Lisbon in 2014 in a postdoctoral course funded by CAPES with professors José Aguiar, João Nuno Pernão and Maria João Durão (LAB•COR).

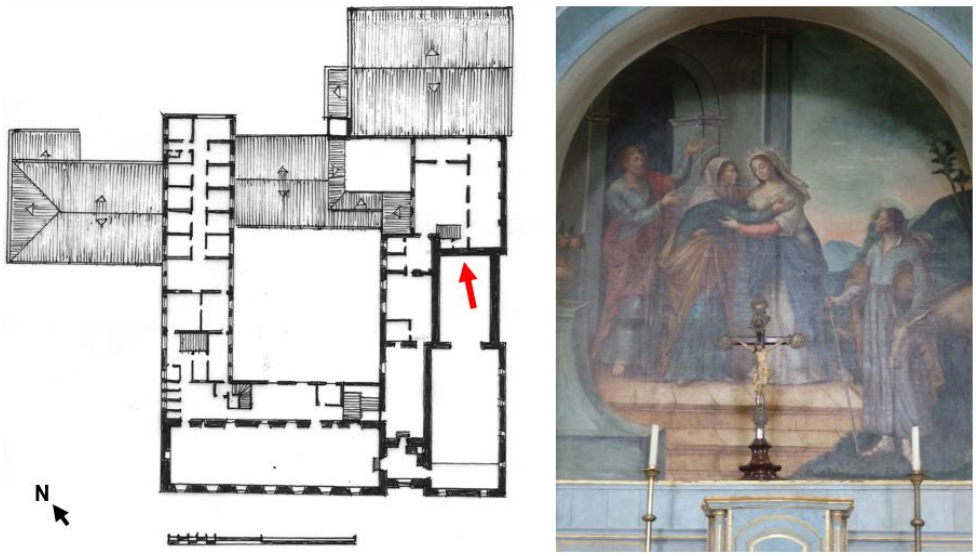
The methodology applied is also based on research experiences carried out in projects approved by PIBIC/UFS and published in annals and magazines, such as: The urban heritage color: identification and mapping of the historical architectural surfaces of the right street of Laranjeiras SE/BR (Paulo; Silva, 2023); The Last Supper of Sergipe Del Rei: identification and mapping of colors on architectural surfaces (Nogueira *et al.*, 2019); Color in heritage architectural surfaces: the mural paintings of the former city hall of São Cristóvão SE/BR

(Silva *et al.*, 2019); Color in school buildings and its interference in teaching and learning (Silva *et al.*, 2020); Identification and mapping of the colors of the ceiling of the sacristy of Carmo Pequeno de São Cristóvão SE/BR (Silva *et al.*, 2021); Study of the paintings of the ceilings and altarpiece of the Mother Church of the Sacred Heart of Jesus in Laranjeiras, Sergipe, Brazil (Silva *et al.*, 2023); Color in heritage architectural surfaces: The case of the Church of N. Sa da Conceição dos Pardos de Laranjeiras SE/BR (Silva *et al.*, 2020); Identification and mapping of colors on architectural surfaces: the case of Solar dos Rollemberg in Aracaju/SE (Silva *et al.*, 2020).

The panel *The Visitation* is located on the main altar of the chancel of the Church of Santa Isabel, the first impression one has is that it is a painting made on wood (plank), this impression stems from the location and distance of the observation; from the penumbra or point of transition from light to shadow (phenomenon of adaptation) and the effect of memory provoked under the judgment of the observer of altarpieces from the colonial period being painted on supports (Figure 4).

Figure 4

(left) – Upper floor plan of the Church and House of Mercy/Immaculate Conception Home with location of the Panel, research group drawing based on the floor plan in the annexes of the National Inventory of Real Estate and Integrated Properties – INBMI; IPHAN, 2001. (right) – Panel "The visitation of Our Lady to Saint Elizabeth", unknown author, probably executed at the end of the nineteenth century or until the first half of the twentieth century



Source: PIBIC research group, Nov. 2022.

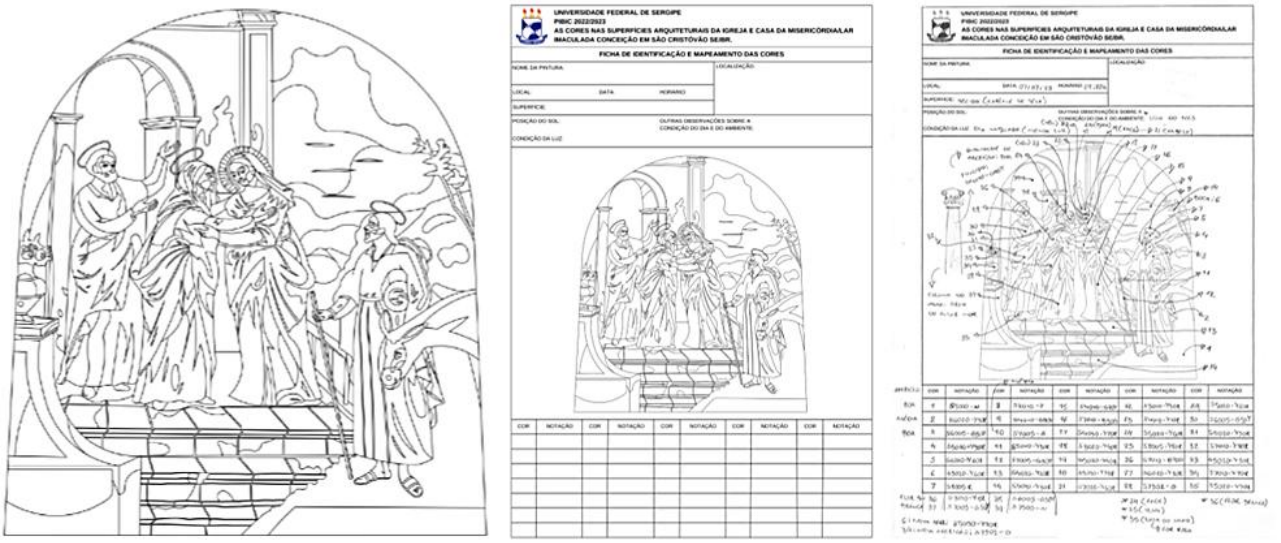
The in situ *visual observation* took place on November 29, 2022 (cloudy day around 9 am) – it was decided not to perform the color identification; January 31, 2023 (sunny day), first visual analysis contact; April 11, 2023 (rainy day) the visual evaluation was not carried

out; April 25, 2023 (sunny day – 9 am to 2 pm), an evaluation was carried out (NCS and MUNSELL); July 7, 2023 (sunny day - 9 am to 2 pm) NCS and MUNSELL assessment carried out); July 10, 2023 (sunny day - 9 am to 2 pm), carried out evaluation (NCS and MUNSELL); July 11, 2023 (sunny day - 9 am to 2 pm), carried out evaluation (NCS and MUNSELL).

These visits included detailed photographic surveys, preceded by an extensive bibliographic review, as important contributions by Fragata (2005, p. B6), on the authorship of the Panel, and by Campos (2010, p. 25), on the Bahian School of Painting. After the photographic survey, the representative images were digitized, generating a model of identification cards and color mapping based on the work of Tinoco (2009, p. 15, 16 and 17) at the Center for Integrated Conservation Studies in Olinda – CECI, (Figures 5 and 6).

Figure 5

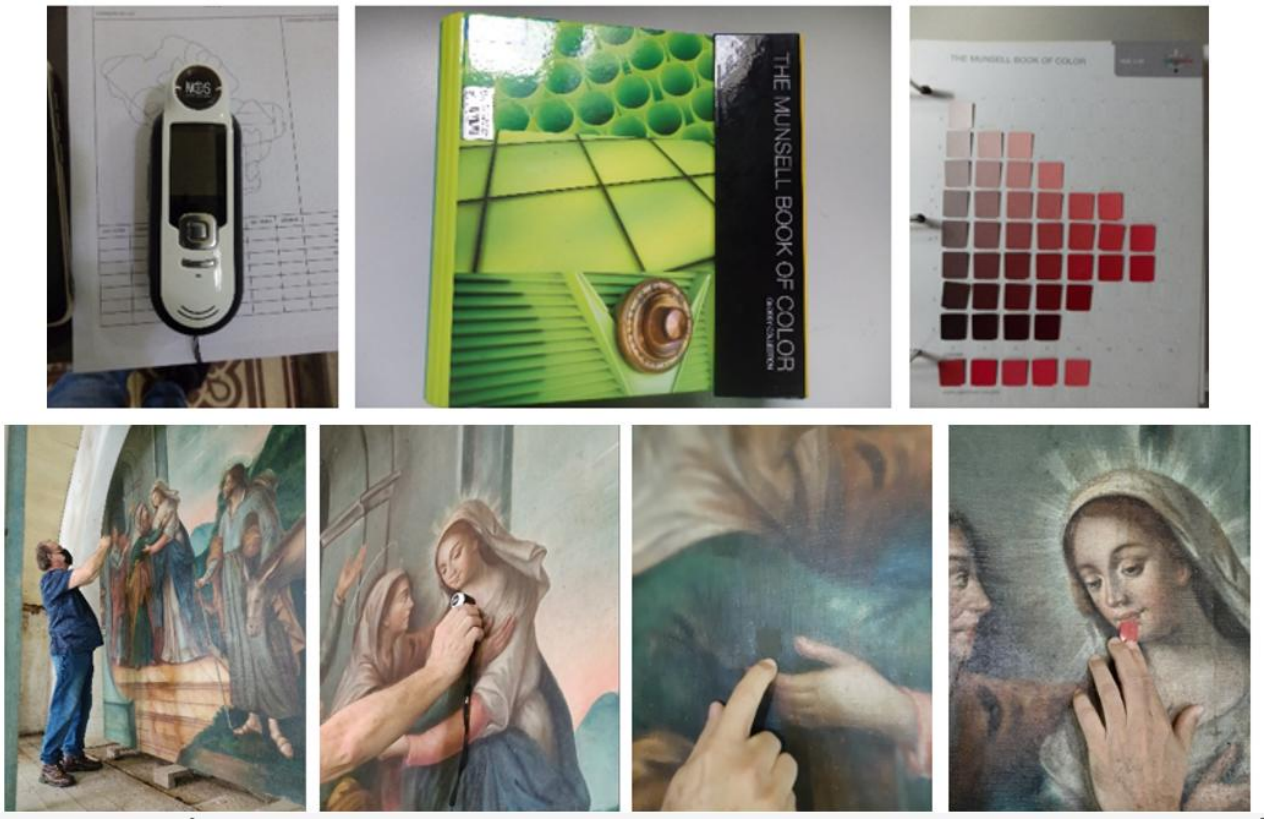
(left) Detail of the Scanning of the Visitation Panel - AutoCad version 2022. (center) – Model of identification sheet and color mapping without filling, based on the work of Tinoco (2009, p. 15, 16 and 17). (right) – Detail of the identification and damage mapping form filled out in situ



Source: PIBIC research group, Jan. 2023.

Figure 6

(above) – NCS RM200 digital colorimeter and MUNSELL Color Charts. (below) – Color gauging by the NCS digital colorimeter system and color gauging by the MUNSELL color palettes system.



Source: PIBIC research group, Jan. 2023.

In the panel *The Visitation*, 39 colors were recorded from the NCS method and NCS RM200 colorimeter – such as the color of Our Lady's face, being **S4020-Y40R**, that is, 40% brightness, 20% saturation in a yellow with 40% red (hue); 13 colors were recorded from visual observation, with the Munsell table that, in the same position as Our Lady's face, it measured a **5R 4/8** (color section 5 red hue, luminosity 4 and saturation 8).

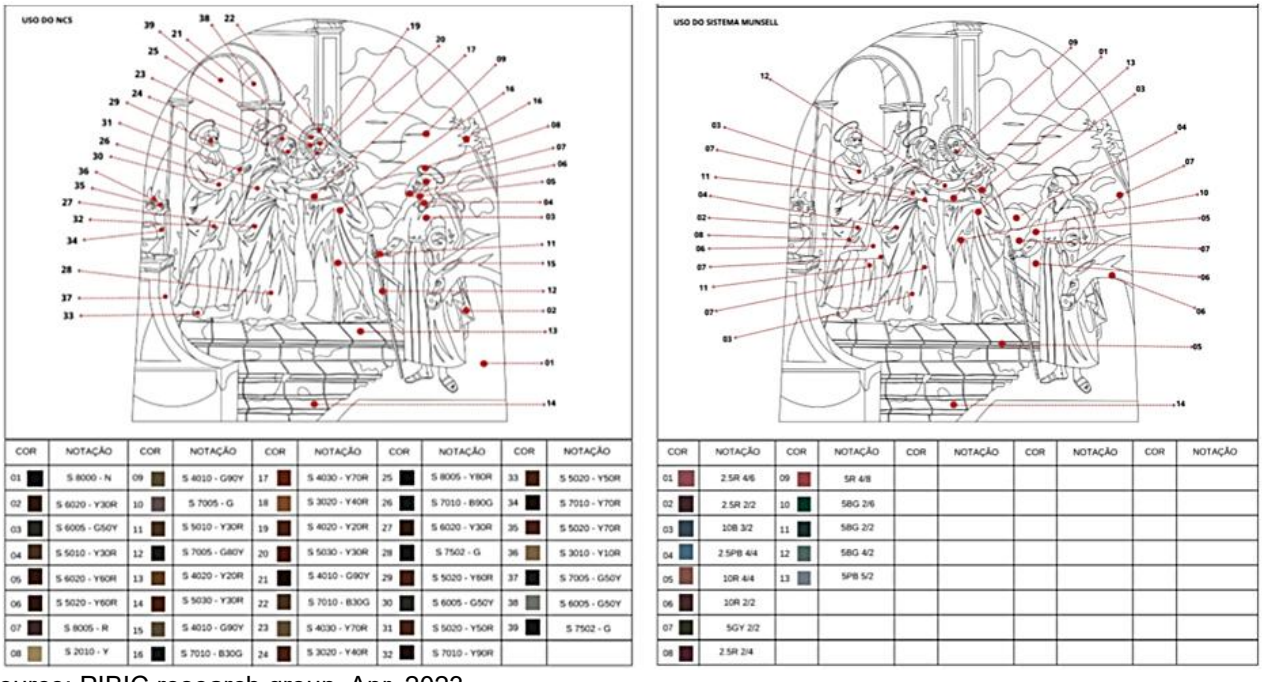
From the comparison with the determination of the colors presented in the IPHAN Real Estate and Integrated Property Inventory form with the NCS measurement, we can make the following reflections: a) on the tunic (arm) identified with the color red, in the measurement with the NCS system resulted in an **S 4030-Y70R** 40% brightness, 30% saturation of yellow with 70% of red, that is, yes it can be considered a red; b) The surtunic and veils measured as beige by the IPHAN file are, in fact, an **S 7010-B30G**, that is, 70% of Brightness, 10% of saturation and a blue hue with 30% of green, that is, a cyan that would resemble the light color of water; the tunic of Santa Isabel, which is inventoried as green by the IPHAN registry, was measured by the NCS system as an **S 7010-B50G**, a blue with 50% green; Zacarias' tunic registered by IPHAN as bluish gray, in the NCS measurement with the colorimeter

resulted in **S 6005-G50Y,** it is a green with 50% yellow; the brown tones that were identified as ochres by the IPHAN inventory present in a large part of the panel and specifically in the representations of wood and in the tunic of the Saint Isabel are actually an **S 6020-Y30R**, that is, a yellow one with 30% red.

As a comparative methodology, the same measurements of the IPHAN Inventory for the Munsell system showed a **5BG 2/2 for the Santa Isabel tunic**, that is, a section of the color 5 blue/green hue with luminosity 2 and saturation 2, in the inventory it is as green; the Zacarias tunic is inventoried by IPHAN as bluish gray and in the Munsell system in visual observation we found **10B 3/2**, that is, a section of color 10, blue hue with luminosity 3 and saturation 2; the tunic of Our Lady, by IPHAN, is presented as blue (mantle), in the Munsell system measured **10B 3/2**, that is, it checks, because it is a 10 blue hue session with 3 of luminosity and 2 of saturation (Figure 7).

Figure 7

(left) – Identification and color mapping with the NCS RM200 digital colorimeter system. (right) – Identification and mapping of colors by the MUNSELL system – color palettes



Source: PIBIC research group, Apr. 2023.

According to Tavares (2009), the anomalies that can be found in the paintings involve yellowing, tanning, dirt, discoloration, detachment, blistering, stickiness, powderiness, saponification, loss of brightness, fading, fogging, washing, sagging, color fluctuation, opalescence and darkening. Among the causes are solar radiation, irregular absorption of paint, irregularity and porosity of support materials and the chemical reactions of the elements present in paints, as well as humidity. With regard to the painting *The Visitation*, the state of

conservation is good and there are no significant signs of pathologies or alterations in its pictorial layer. From what was possible to observe, the work was carried out on a fabric screen with a wooden support that, at the moment, is attached by a steel cable, without contact with the wall. Among the superficial modifications found, it was observed that there is small wear in the vertical direction, located in the center of the work. From what was observed *in situ*, the screen is divided into two parts and its attachment to the wooden support was done inadequately, preventing the screen fabric from being completely extended, cracks, fading and fading were also verified in the screen (Figure 8).

Figure 8

(left) – Cracks in Our Lady's hand. (center) – White oozing (fading) and fading in the region of the face of São José. (right) – White dripping and fading from the lower left side of the screen

Source: PIBIC research group, jul. 2023.

4 PARIETAL SURFACES OF THE CHANCEL

In the case of the use of pigments on the architectural surfaces of buildings in Brazil, it is worth identifying the great influence of Portugal, whose painting techniques and the manufacture of ancient paints, from the end of the Middle Ages to the middle of the nineteenth century, were, in some way, present in the Colony. Cruz (2009, p. 385-405) reports that, for the preparation of the paints, the pigments were purchased elsewhere and ground in the painters' workshops in Lisbon. The paints generally had oil as a binder and, despite the existence of stores for the sale of these products, the druggists were the main traders of these pigments and additives in Portugal. Cruz also writes that the pigments sold outside Lisbon were of low quality.

In the eighteenth century, the fact is that most pigments were manufactured in Italy and Holland and sold to Portugal, therefore, these pigments and materials should rarely arrive in Brazil, and the hypothesis of production of local paints is pertinent, from additives based on lime and minerals from the regions, together with the lessons of religious masters and/or artists who came to this land with the know-how of the natives, becoming the main constituent

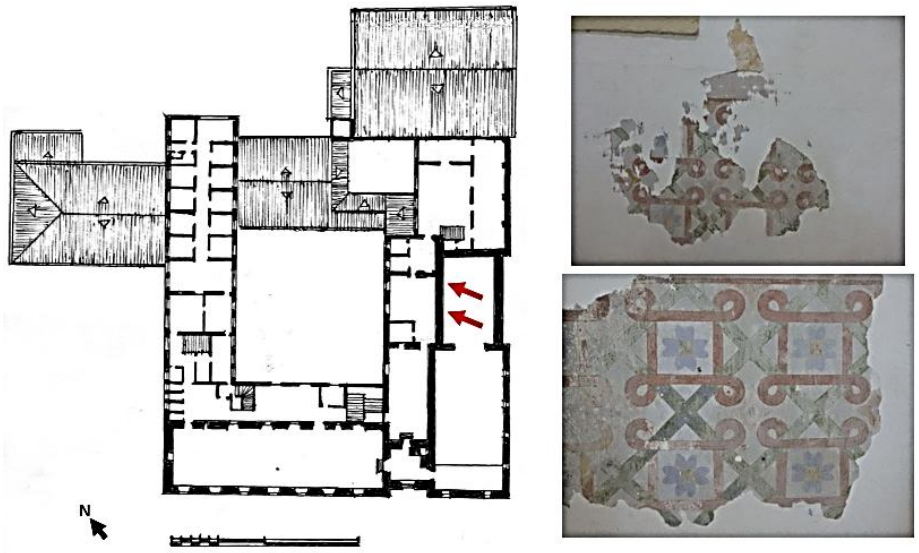
elements of the artisanal production of paints that would cover architectural surfaces in Brazil, until the mid-nineteenth century.

These practices and uses of lime-based paints in Brazil were replaced, from the end of the nineteenth century and the beginning of the twentieth, by the use of synthetic paints, however, this statement requires certain care and deepening of research, since the local know-how and much of the old techniques could still be used by painters in the First Republic.

The study of the paintings of the parietal surfaces of the chancel in the Church and House of Mercy/Immaculate Conception Home (Figure 9) provides the opportunity to raise the following questions: Would this parietal painting covered with white whitewashing, which arose due to the detachment of the coating caused by humidity, be representative of the Jesuits and made in the seventeenth or eighteenth century? Or would they have been made in the nineteenth or early twentieth century, from a rereading of the symbologies present in the Jesuit Order, possible to be compared to the ornaments on the authentic objects still present in the Church, such as the limestone washbasin and the shutter with floral diamond cushions?

Figure 9

(left) – Floor plan of the upper floor of the Church and House of Mercy/Home Immaculate Conception, position paintings, drawing research group based on the floor plan in the annexes of the National Inventory of Real Estate and Integrated Property – INBMI; IPHAN, 2001. (right) – Paintings on the wall surfaces of the seventeenth, eighteenth or nineteenth century (?).



Source: PIBIC research group, Nov. 2022.

For possible answers about the authenticity of these works, the investigation cannot be based only on the imaginary (Vinãs, 2010, p. 83), as well as it must respect

recommendations such as those observed by Tirello (1997, p. 72), that mural painting "[...] it is an integral part of the building that houses it and, naturally, from the perspective of conservation and restoration, the complex relationship that is established between its support (wall) and the pictorial film must be taken into account".

The paintings on the side walls of the chancel represent spiral geometric designs (loops) with floral themes in the center framed by "diamond" shapes (diagonal squares); These geometric motifs have green and red colors, and the flowers with four light yellow petals and a bluish center are reminiscent of lilies and those with four bipartite bluish petals with a yellow center represent four-leaf clovers. The first (the lilies) representing purity and the second (four-leaf clovers) the symbolic representation of luck (Chevalier; Gheerbrant, 2021, p. 622 and p. 985).

The mural paintings of the Church are, for the most part, covered with white paint and only appeared due to the detachment of the surface film caused by the attack by descending humidity (Obeso *et al.*, 2020); red, yellow, green and blue hues predominate; It is interesting that there is no record of these parietal paintings by the institutions responsible for their protection, and no historical and artistic record about them, and it is urgent that such a record and analysis of these architectural surfaces be made.

Patriota (2021, p. 9) lists 23 Jesuit brothers who developed their pictorial art in schools in Pernambuco, Bahia, Santos, São Paulo, Espírito Santo, Maranhão, Pará and Rio de Janeiro, there is no mention of any activity carried out in Sergipe Del Rei, between 1554 and 1760, however, we believe it is possible that some of these artists passed through São Cristóvão, in these wanderings between Olinda and Salvador and, who knows, having painted the parietal surfaces of the Lar Imaculada Conceição (Santa Isabel Church), however, such a statement requires further historiographical, documentary and comparative research with the paintings made in these other Jesuit schools.

Seeking initial answers to the question about the date on which these paintings were made, the relationship between the design on the walls and the ornamental elements that make up the integrated assets of the church (Lorêdo, 2002) was observed, such as the stone washbasin, the cushions of the main door and the upper carving of the entrance door (Figure 10); another relevant issue is the pigments used, that is, all based on natural materials, since the colors that were observed do not have brightness (Pascual; Patinõ, 2003, p. 48), however,

the analysis of the pigments in these mural paintings requires further scientific investigations, such as those carried out in the city of Évora, in Portugal (Ramos, 2014, p. 54).

Figure 10

(above left to right) – Floral elements in the center of the toilet (clovers); Diamond main door; upper carving of the doorway (Tulips or lilies? Pine cones and acanthus leaves); Detail of the ornament on the side of the main doorway (Tulip? Lily? Volute). (below) – Paintings on the parietal surfaces of the chancel of the Church of Santa Isabel

Source: PIBIC research group, Jan. 2023.

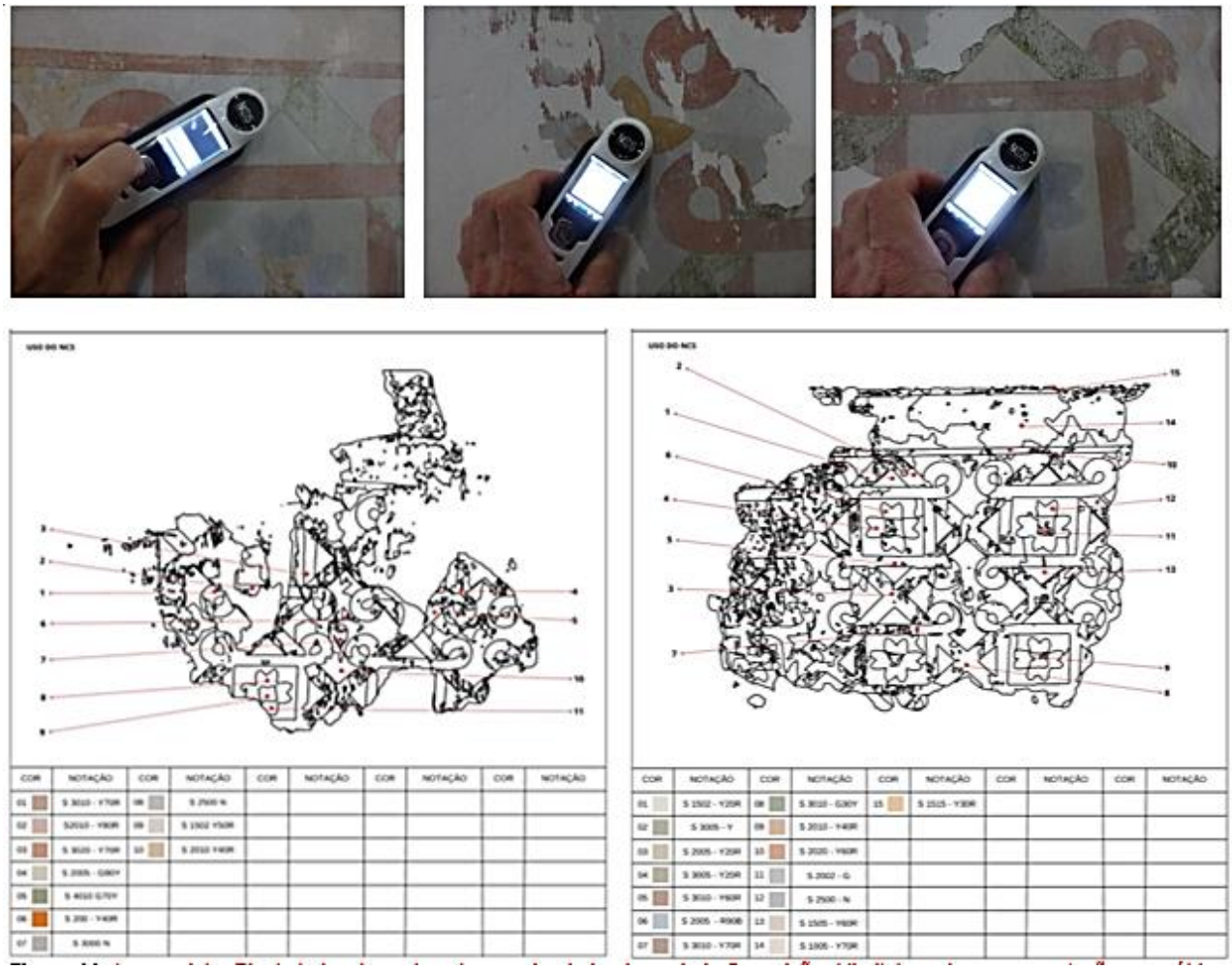
The identification and mapping of colors on the parietal surfaces followed the same criteria that were applied to the analyzes carried out on the panel *The Visitation*, were carried out on April 24, 2023, in the afternoon at 2:30 pm on a cloudy day, and on the parietal surfaces, the analyzes divided into several locations measured 30 colors, from the NCS method and 5 colors from the observations by the Munsell process, such as the color of the flower in the center of the loops which, by the NCS technique registered **S 3005-Y20R** (hue – yellow with 20% red; 30% luminosity or brightness and 05% saturation), the same color in this same position by the Munsell system measured **7.5 YR 6/4** (reddish yellow tint with luminosity 6 and saturation 4).

The colors of the flowers varied between yellow and red, probably due to issues of degradation that these surfaces are facing due to humidity; in the bands that form the diagonal rhombuses (squares), the color **S 3010-G30Y** was measured, that is, 30% brightness, 10% saturation in a green with 30% yellow; inside the rhombuses (diagonal squares) we found, for the NCS system, an **S 1520-Y20R**, or yellow with 20% red, brightness

(luminosity) 15% and saturation 20%; in volutes (loops), an NCS **S 3010-Y70R**, a yellow with 70% red, 30% brightness and 10% saturation (Figure 11).

Figure 11

(above) – Measurement of the paintings on the walls of the chancel NCS system (digital colorimeter RM200). (below) – Identification and mapping of colors on the parietal surfaces of the chancel (NCS)



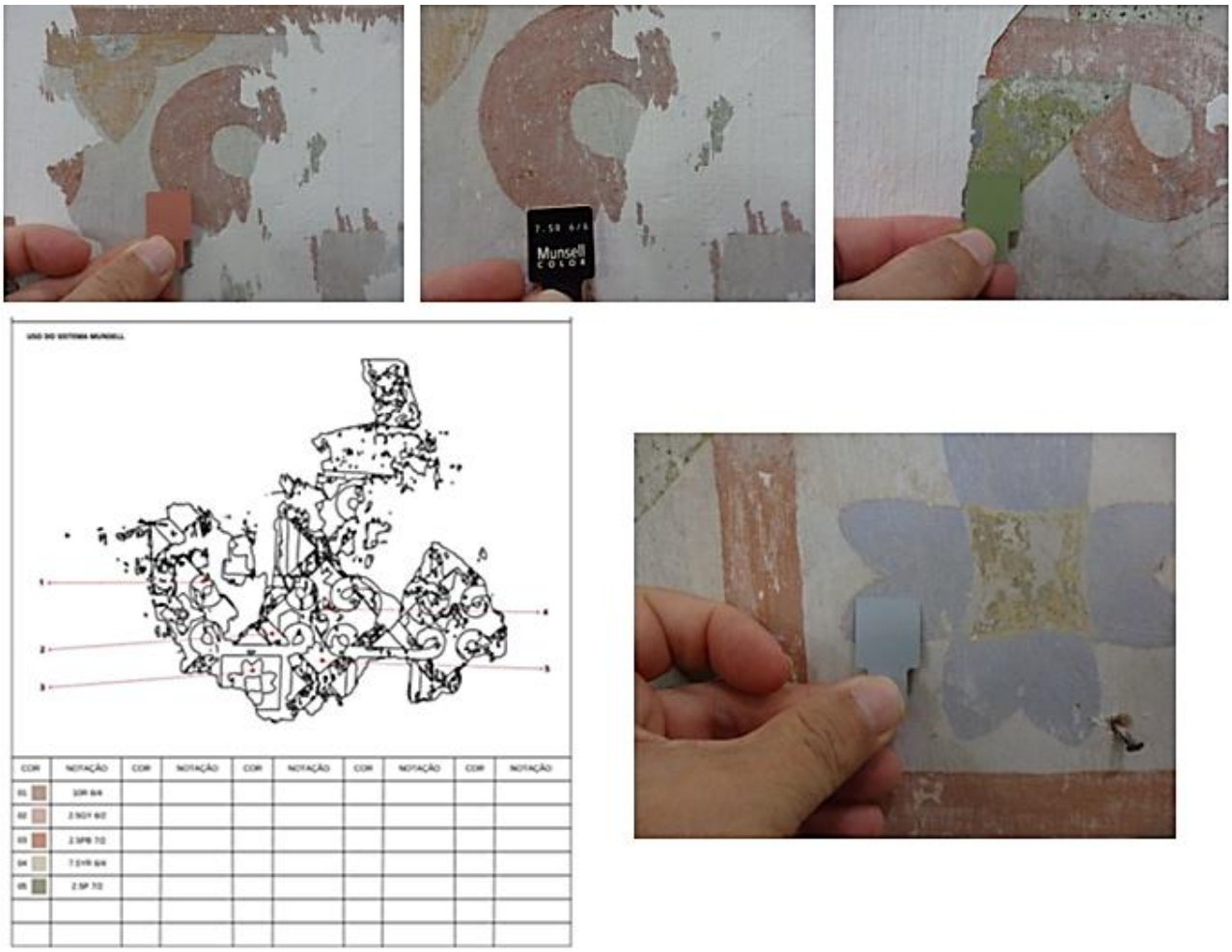
Source: PIBIC research group, Apr. 2023.

In the measurement by the Munsell system, the positions sought to be performed in the same places (approximately) as the measurements performed by the digital colorimeter in the NCS system. Thus, the color found in the volute (loop) was a **10R 6/4**, i.e., a section of color 10 red hue with luminosity (brightness) 6 and saturation 4; inside the rhombus (diagonal square) it was recorded by the Munsell **2.5P 7/2 system** (this measurement requires a new evaluation); in the range that makes up the rhombus, the measurement was **2.5GY 6/2**, that

is, a section of the color 2.5 green/yellow hue with luminosity 6 and saturation 2; all the checks showed a brightness (luminosity) of medium degree (Figure 12).

Figure 12

(above and right side) – Measurement of the paintings on the walls of the MUNSELL chancel system (visual observations and color palettes). (bottom left) – Identification and mapping of colors on the parietal surfaces of the chancel using the MUNSELL system



Source: PIBIC research group, Apr. 2023.

It is important to emphasize/reaffirm that the parietal paintings of the chancel are, for the most part, covered by a layer of whitewash paint based on lime, and these color identification checks took place in the gaps where the detachment of this film occurred; it is recommended that, before starting future interventions, deepen the verification of how the cohesion of these paintings to the plaster is found, due to the strong presence of humidity and that the removal of lime paint and cleaning of the surface are done carefully, paying attention to the fixation of places that have little adhesion (Obeso *et al.*, 2020, p. 25-26).

In relation to the pathologies, most of them associated with the issue of attack by humidity, no cracks, cracks and fissures were verified; in some places the presence of saline

efflorescence with whitish spots was visible; there was also a loss of color with high intensity and, in certain places, totally non-existent; also a certain degree of sabonification, because the paint is coming off easily and, in some places, it is already totally non-existent; undoubtedly, there is a large accumulation of dust and dirt, with the presence of small black spots due to the carbon dioxide expelled by cars, since the place is on one of the main roads for vehicle circulation in the city (Figure 13). As for treatment recommendations, it is indicated that the rainwater infiltration resulting from a problem in the roof structure be remedied and that the cleaning and consolidation of the parietal paintings be carried out, as well as their more complete registration, the cleaning must be careful not to damage the colors that are already faded, as well as the removal of the layer of white paint that covers the paintings must be done with surgical stylets, with the least possible loss of the existing pictorial extracts.

Figure 13

(left) – Intense attack by humidity causing fading, yellowing and detachment of the paint. (center) – Detail of the disappearance of the green color of the diagonal diamond bands (squares) and the presence of whitishing (sabonification) in the red loops due to attack by soluble salts. (right) – Presence of water on the floor of the chancel that runs from the walls

Source: PIBIC research group, jul. 2023.

5 CRITICAL REFLECTIONS ON THE PAINTINGS IN THE CHANCEL

Any investigation, although it does not aim to exhaust and answer all the questions formulated, presents, in its very nature, the constant unfolding of factors that arise with new discoveries during its development. In the case of the study THE COLORS ON THE ARCHITECTURAL SURFACES OF THE CHURCH AND HOUSE OF MERCY/HOME IMMACULATE CONCEPTION IN SÃO CRISTÓVÃO SE/BR, IT is understood that the greatest contribution is the understanding of the need to build a database and records/inventories of the colors present on the surfaces of movable and immovable property. This record can, of course, mix visual observation with scientific technical measurements, such as the use of the NCS and MUNSELL systems applied here, which would bring relevant gains to the

understanding and disposition of intervention, conservation, restoration and prevention actions of heritage assets of material cultural value.

The identification and mapping of the colors of the architectural surfaces of the chancel of the Santa Isabel Church revealed more than the measurement of Hues, Luminosity and Saturation, they led to a learning of observation, because the traditional form of teaching, especially architecture, has played a leading role in the study of form, by adding the observation of colors, it is possible to perceive other nuances of study and provoke other detailed questions, such as a brighter coloring, resulting from the use of oil-based or synthetic paints and, therefore, perhaps, more modern, as in the case of the panel *The Visitation* and a coloring based on elements of nature, with little or less amount of brightness and saturation, as in the case of the parietal surfaces of the chancel, as well as perceiving elements of the surroundings, shadow and light and the heritage ambience of the object itself.

The historical analysis of the authorship and authenticity of the objects studied (panel and parietal surfaces of the chancel) requires further research, since, as stated in the previous paragraphs, the production of a technical database (identification and mapping of colors and drawings) would bring the possibility of a comparative methodology between paintings proven to have been executed by well-known painters (as in the case of José Teófilo de Jesus, endorsed by the common sense of the residents of São Cristóvão as the author of the Panel) and those with little or no historiographical documentation, such as the case of the painted walls of the chancel.

Relevant is the comparative methodology of historical documents evaluated with the identification and mapping of colors in the objects studied, such as the Panel that, according to historiographical studies presented (bibliographic references), point out that this Panel would have been executed at the end of the nineteenth century, that is, the observation of colors (chromaticism and pigments) and the support of the painting (fabric) corroborate this statement that it is a much more recent good than the painted ones by José Teófilo de Jesus in the early nineteenth century, in the province of Sergipe Del Rei.

In the case of the parietal paintings of the chancel, historiographical accounts, such as a documented list of the non-presence of Jesuit painters in Sergipe between 1554 and 1760 and an intervention (reform) also documented pointing to demolitions of the walls of the chancel and high altar around 1870, direct to the determination of these parietal paintings as also being from the end of the nineteenth century, however, when observing the colors present there, from NCS and MUNSELL measurements carried out, the surfaces present natural paints (especially lime-based) with coloring with little Brightness and Saturation, predominance of the colors red, green, blue and yellow, that is, a basic palette of colors used

in the seventeenth and eighteenth centuries, which puts in doubt whether these paintings are from the 19th century or if they can be related to Jesuit Art, thus requiring further research.

Understanding that, in a scientific work, many possibilities are still to be presented and answered, the practical/technical/perceptive exercises carried out in this research and the information collected/produced generated a record that could be transmitted to other future researchers, causing the natural multiplier effect to the process of knowledge and, specifically, the search for traditional knowledge and preservation of the cultural identity of the historical and artistic heritage national.

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