

Biographical Sketch



Maria Ory was finishing up her third year in Mississippi State University's School of Architecture before her Aydelott Award travels ensued. She is from Destrehan, Louisiana, where her knowledge of painting began. Starting from the age of seven, her weekends and summers were filled with numerous painting classes and art camps, cultivating her love of design. After being president in her high school's art honor society, she found out how to put her skills to use by deciding to go to architecture school. At Mississippi State, Maria learned how to channel her ideas through architectural design. While attending school she was a member of the National Organization of Minority Architecture Students, participating twice in their annual TRASHion show, and is a member of Tau Sigma Delta, the architectural

honor society. The Aydelott Award has sparked her interest in the world of research, and she hopes to continue learning about topics that inspire her, since she immensely enjoyed this experience.

Aside from her schoolwork, Maria enjoys fishing and kayaking back home in Louisiana, watching film noir with her family, and visiting art museums of any kind. She wishes to master oil paints like she has with acrylics and watercolor, and is also an aspiring whittler.

She would like to thank all those who helped her along the way, especially her mentor, Professor Alexis Gregory, and Professor Andrew Tripp, who began her inquiry into color; along with her mother, father, and sister for traveling with her so she could focus on her research; as well as Daniel Ruff, who has helped and supported her through the entire process, from application to final edits.

Student:

Maria Ory

Mentor:

Prof. Alexis Gregory

Buildings:

Chapel of St. Ignatius | Architect: Steven Holl

Seattle, Washington

Cuadra San Cristóbal | Architect: Luis Barragán

Los Clubes, Mexico City, Mexico

Haus Portois & Fix | Architect: Max Fabiani

Vienna, Austria

Casa Batlló | Architect: Antoni Gaudí

Barcelona, Spain

Institution:

Mississippi State University, College of Architecture, Art, and
Design, School of Architecture

Introduction

"When one says painting, inevitably he says color," noted the Swiss architect Le Corbusier. Color is a significant instrument when composing an architectural space, as it adds another dimension to design, causing physical and emotional responses, and enhancing experiences. Le Corbusier's thoughts embody what I set forth to accomplish in my research, using color through painting as an analytical tool to examine architecture. In the following four essays, I will be analyzing four architecturally significant buildings, based on their use of color:

- The Chapel of St. Ignatius by Steven Holl
- The Stables of Cuadra San Cristobal by Luis Barragán
- Haus Portois & Fix by Max Fabiani
- Casa Batlló by Antoni Gaudí.

Each of these buildings demonstrates a different use of color unique to the architect. Holl focuses more on the internal conditions of his space, using the sun as a tool to fill his Chapel with color. Barragán uses color with respect to its spatial aspects, covering his walls with hues to enhance the viewer's procession through the space. Both Gaudí and Fabiani's application of color lies on the surface of their buildings, using color to create compositions across their façades.

The analysis of these buildings is based on color through painting, so a further understanding of certain terms is needed. From

Golden: Color Mixing- Modern Theory, a paint set, is some of the vocabulary in color theory that I use throughout my research. Below is a list of these definitions.

"Hue: In color models it refers to the main groupings of color based on the spectrum, such as yellow, orange, red, violet, blue, etc.. Many artists use Hue simply as another word for Color in general."

"Chroma: Also known as **saturation** or **intensity**. It describes a color's relative purity and how brilliant or subdued it looks."

"Value: Refers to a color's lightness or darkness as compared to white or black."

"Complementary: Complementary colors are two colors that form a neutral gray or black when mixed together."

"Tint: A color mixed with white."

"Shade: A color mixed with black."

Each essay will include analytical paintings created to help me analyze different aspects of the colors used in each building, along with the thoughts I had while composing them. The process began in each city when I documented the colors of the buildings using the Munsell color system, taking note of outside factors such as lighting and time of day. With these observations I composed the paintings, allowing them to guide me through the analysis and research of each building. I hope that through my paintings and analysis, others will learn the importance of color in the domain of architectural design.

Note

1. *Golden: Color Mixing- Modern Theory*. New Berlin: Golden Artists Colors, Inc., 2011.

Chapel of St. Ignatius

Background: Steven Holl

Steven Holl is an architect pioneering different uses of color in architecture, employing hue into the earliest phase of design through his initial watercolor concept paintings. After attending the University of Washington and then studying in Rome, he established his career in New York. His design approach is quite unique compared to his contemporaries because while those architects use graphite, layers of tracing paper, and vellum pads, Holl uses watercolor. Initially he was tentative about using watercolor because of his respect for the colors themselves and used only graphite to display light and shadow with grays. However, he later found watercolors to be the perfect media for him to express space because they allowed him to expand his design limits, seeing as the medium is much more flexible and expressive with the addition of color and less detail-oriented than graphite. This helped Holl to quickly express ideas in an efficient manner, allowing him to portray a design consisting of overlapping volumes with depth and shadows in a few quick strokes of a brush as seen in some of his design ideas in Fig.1-2. After this transition he used watercolor almost exclusively, creating paintings to investigate light and volumes without any constraints such as scale. Holl then takes these abstract forms and turns them into architecture.¹



Fig. 1. Example of Holl's painting, Steven Holl, *Written in Water*, pg. 36



Fig. 2. Example of Holl's painting, Steven Holl, *Written in Water*, pg. 56

Holl used color not only in an abstract and idealistic manner when designing, but he also used it for organization in some of his larger scale planning projects. An example would be the Linked Hybrid in Beijing, where Holl categorized different colors for different spatial functions, such as work, recreation, and commercial spaces. The master plan of the residential complex was then laid out in accordance to these colors, creating cohesion and order throughout the area.

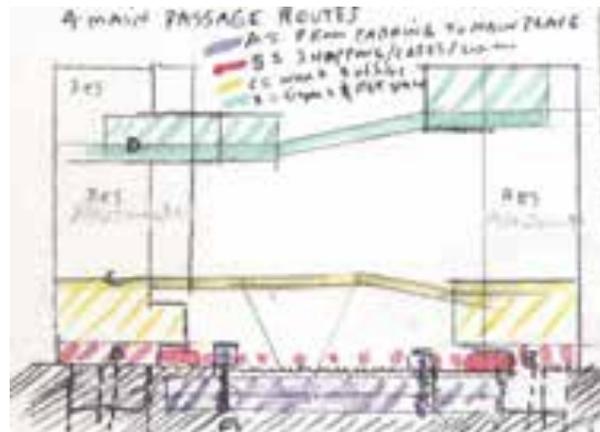


Fig. 3. Linked Hybrid Sketch, Steven Holl, 2009

His other architectural designs are an array of many project types, including private residences, housing complexes, university buildings, museums, theaters, and city planning, where he still implements the use of watercolors for initial concept ideas. One

project in particular challenged Holl to take a new approach to architecture because of the religious nature of the project, pushing him to conceive of architectural notions on the basis of the Catholic faith. He sought to connect the observer, the building, and spirituality all within the project - the Chapel of St. Ignatius on the campus of Seattle University.

After submitting a proposal for the building's commission, he was awarded the project not due to typical architectural representations, but because of a lecture on phenomenology to the commissioners from the university. He discussed the link between architecture and forming a religious space, and this idealized way of thinking sparked the interest of the intellectual Jesuits who ran the competition. He could not, however, design as he pleased. With a religious space, especially a Catholic one, many restrictions are placed upon the architect. The building must fulfill certain requirements that qualify it as a "holy space." This presented a certain challenge to Holl because he had never designed a religious building before. He learned about the Catholic faith in order to do justice to the Jesuits and the university itself, giving form to their beliefs.

The building possesses a certain ambiguity, where each observer gains a different meaning from the space. Holl enjoyed the challenge of creating a space not just for Catholics, or even other religions, but for a person to enter and to attach their own beliefs and emotions. Throughout the process he met with the Chapel Committee, campus ministry, students, and administrators to give him direction as

to what they wanted, as well as him presenting his design ideas to the committee. One thing they all agreed upon was his idea of this "gathering of lights," or "seven bottles in a stone box," having color integrated with the light.²

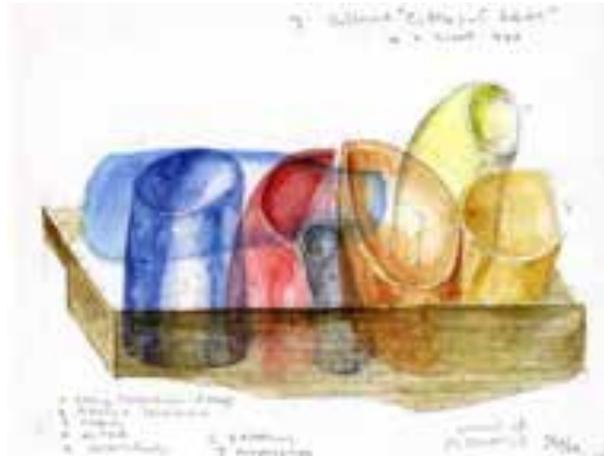


Fig. 4. Chapel of St. Ignatius concept painting, Steven Holl, 1999

These descriptions call to mind essential ideals within the church. Light is an important symbol in Catholicism, representing faith, truth and wisdom. The fact that Holl tries to capture that significance is important. Stained glass is another important aspect to Catholic churches, given that churches back in the Gothic period would often use stained glass as a way to make the interior of churches appear "heavenly". Holl took this idea and applied modern techniques to it, using stained glass and back-painted baffles to create a spiritual experience for all who enter.

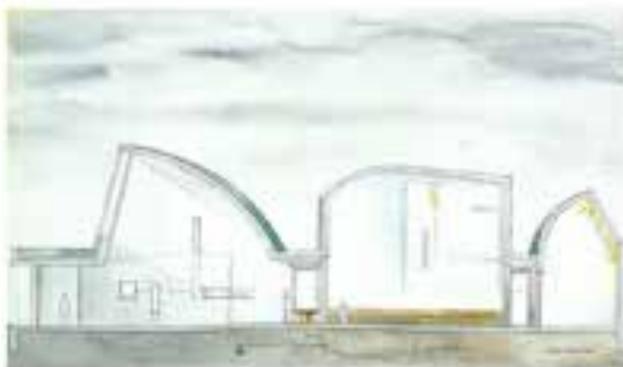


Fig. 5. Steven Holl, section facing western wall of Chapel, Chapel of St. Ignatius, Seattle, 1997.



Fig. 6. Steven Holl, section facing eastern wall of Chapel, Chapel of St. Ignatius, Seattle, 1997.

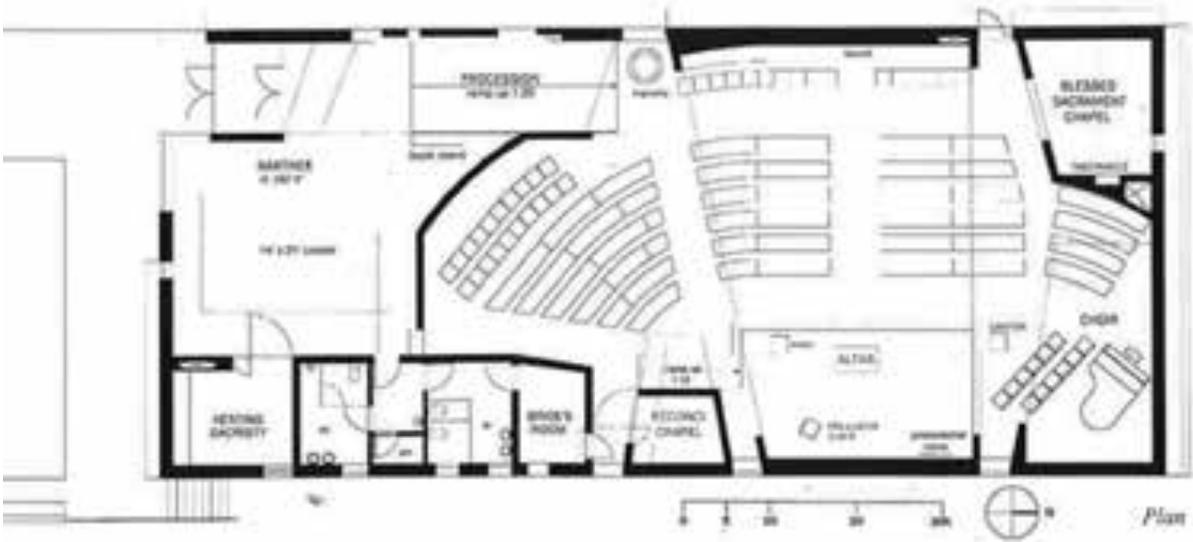


Fig. 7. Steven Holl, plan of Chapel, Chapel of St. Ignatius, Seattle, 1997.

The Chapel

The entrance to the chapel is the first bottle of light and is filled with a cool, soft wash of white light from the outside through the translucent windows Holl created on the western wall, while the light fixtures, also designed by Holl, lining the opposite wall wash the space with warm light from the incandescent bulbs. Looking downwards, the glossy black expanse of the floor spreads across the space, creating a contrast to the white textured walls. The floor creates a heaviness that is balanced with the lightness of the airy, sculpted ceilings and walls.

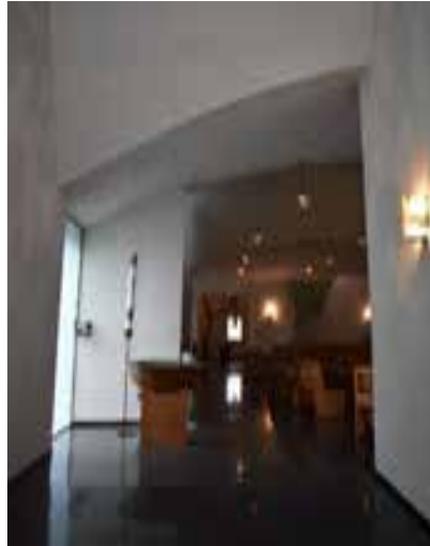


Fig. 8. Steven Holl, entry hall of Chapel, Chapel of St. Ignatius, Seattle, 1997.

After the whiteness of the entrance space comes the second bottle of light, the narthex. This space is to the right of the processional area. Facing this space from the entrance, natural light pours in from the southern wall through a large transparent glass window. Natural light also comes down from above, where Holl has placed a hidden clerestory window. This pocket of light consists of a red back-painted baffle and a green stained-glass window amidst other translucent panes. The natural light from outside shines through the translucent glass, bouncing off the baffle, reflecting red light into the space. The light from the green window has the same effect, projecting green light.

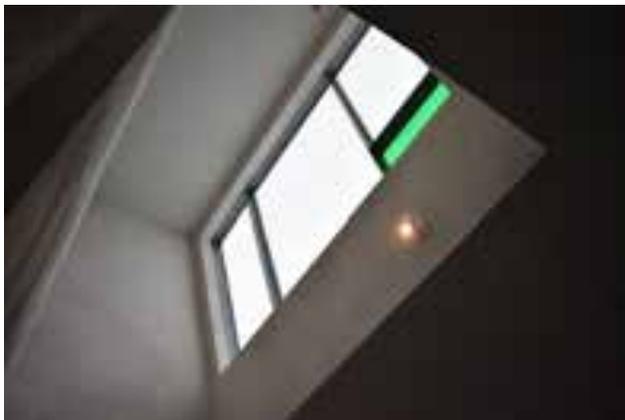


Fig. 9-10. Steven Holl, Narthex bottle of light, Chapel of St. Ignatius, Seattle, 1997.

Returning to the processional area, to the north is the nave. As the observer approaches the area, the threshold between spaces compresses due to the ceiling. Then stepping into the space, the ceiling opens and arches upwards, creating an airiness. The space is split into two sources of light, but are in the same third bottle, creating the west nave and the east nave. The west nave runs along the western wall of the chapel. This wall contains a blue back-painted baffle in front of translucent panes with a singular yellow stained-glass pane. The east nave is along the eastern wall of the chapel, behind the altar area. It contains a yellow back-painted baffle in front of panes with a blue stained-glass pane. All of the pews for assembly face towards the east nave, the attention turned towards the crucifix that is mounted on the east wall and the altar before it.



Fig. 11. Steven Holl, opening up of threshold into assembly area, Chapel of St. Ignatius, Seattle, 1997.



Fig. 12. Steven Holl, close-up of blue baffle, Chapel of St. Ignatius, Seattle, 1997.



Fig. 13. Steven Holl, western wall, Chapel of St. Ignatius, Seattle, 1997.



Fig. 14-15. Steven Holl, eastern wall behind altar, Chapel of St. Ignatius, Seattle, 1997.

Within the altar space rests the fourth bottle of light, along the east wall in the southern corner. This bottle is the Reconciliation Chapel, which is closed off from the nave by a walls and a giant wooden pivoting door. Upon entering the walls are washed with light directly from above. The light source is from a clerestory with a purple back-painted baffle and an orange stained-glass window.

The colored light bouncing around the room gives off both warm and cool temperatures due to the compact nature of the space.



Fig. 16-17. Steven Holl, Reconciliation chapel, Chapel of St. Ignatius, Seattle, 1997.

In axis with the processional area is the fifth bottle of light, the Blessed Sacrament Chapel. This room is to the north of the nave. Walking towards it the threshold is compressed again, creating an intimate environment within the space. The texture of the interior walls differ, for it is lined with beeswax, providing a slight sheen. This sheen lets the light of the fixtures designed by Holl bounce off the walls even more so, making it appear warm. In addition to the warmth from the light fixtures, the room possesses an orange back-painted baffle and a purple stained-glass window on the northern wall. The orange light coming off of the baffle makes the space glow with visual balminess.

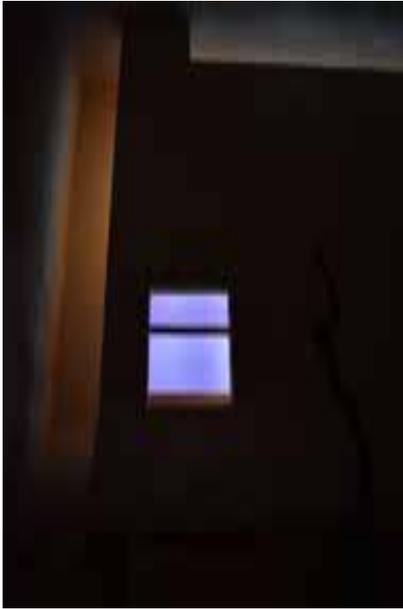


Fig. 18. (top left) Steven Holl, Blessed Sacrament Chapel stained glass and baffle light, Chapel of St. Ignatius, Seattle, 1997.

Fig. 19. (top right) Steven Holl, Blessed Sacrament Chapel threshold, Chapel of St. Ignatius, Seattle, 1997.

Fig. 20. (bottom left) Steven Holl, close-up of baffle in Blessed Sacrament Chapel, Chapel of St. Ignatius, Seattle, 1997.



Fig. 21. (bottom right) Steven Holl, stained glass window of Blessed Sacrament Chapel at night, Chapel of St. Ignatius, Seattle, 1997.

Directly to the east of the Blessed Sacrament Chapel is the choir area, the sixth bottle of light. The light source in this space comes from the upper left corner. In this corner is a green back-painted baffle and a red stained-glass window. Although the green light is the main color washing over the space, sourced from the light coming through the translucent panes, the red window causes the most brilliant effect of all the bottles' stained-glass. This window is located in a corner, allowing the light to then shine straight onto the northern wall's surface, instead of having no direct surface to rest upon like the others. For this reason, depending on the intensity

of the sun on a given day, the window creates a red streak across the wall. This is a rare occurrence, given the chapel's location in Seattle has few sunny days throughout the year. This calls to question Holl's intent with these colors, for he knew that the colors would not be fully vibrant for the majority of the year due to the sun's intensity in this region. Perhaps the chapel would embody a completely different ambiance if it were in a sunnier climate, maybe southern California.

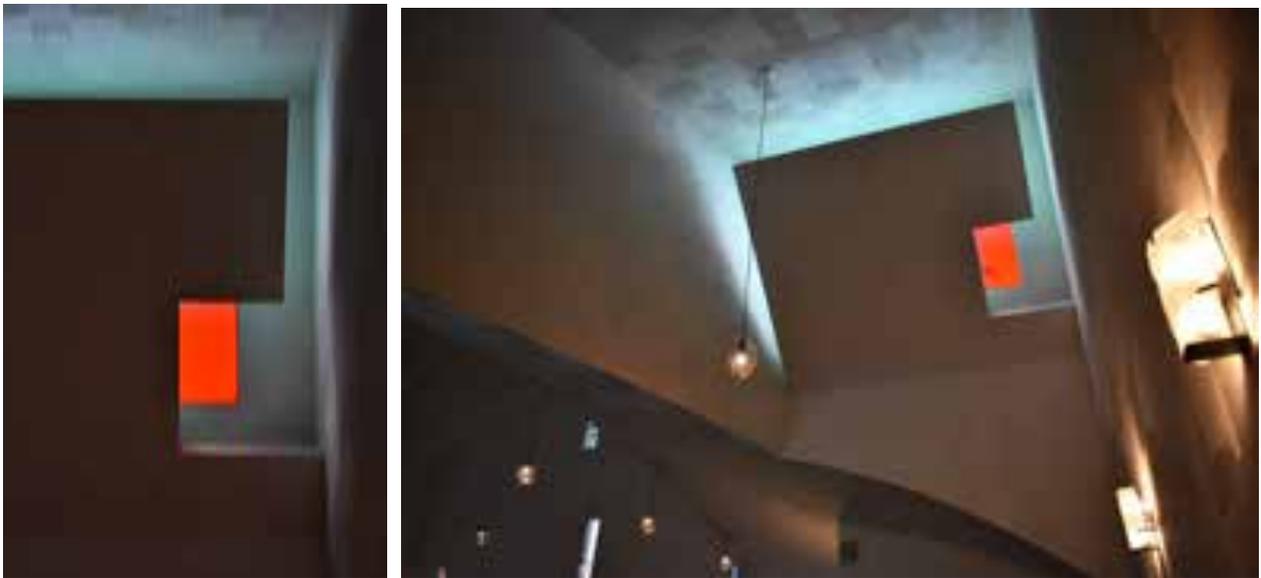


Fig. 22-23. Steven Holl, choir bottle of light, Chapel of St. Ignatius, Seattle, 1997.

The last bottle of light, the seventh, is the bell tower and reflection pool. This is located outside the chapel on the southern end. The colors of both the processional area and the bell tower and reflection pool are considered to be "white."



Fig. 24. Steven Holl, Bell tower and reflecting pool at night, Chapel of St. Ignatius, Seattle, 1997.

Color in Relation to Catholicism

In the Chapel there are six main hues present - purple, orange, red, green, yellow, blue, and white. Each of these colors bears significance in the Catholic Church, which relies heavily on symbolism as a part of their faith. Holl learned about the religion in order to design the building, by request of the commissioners, the Jesuits. The color in a given space of the chapel relates to the symbolic meaning of that color.

Purple is the color of royalty and sovereignty of Christ. Purple is used in the tabernacle area and the Confessional. Both are places where Christ is thought to reside in the Catholic Church. He resides in the tabernacle by way of the bread and wine, and resides in the confessional by way of the priest during the sacrament of Penance. The compliment of purple in the chapel is orange, which symbolizes fire, therefore representing the Holy Spirit within the Catholic faith. The Holy Spirit dwells in these places along with purple, seeing as Christ

and the Holy Spirit are the same. Red is representative of blood, blood of martyrs, and the blood of Christ. Red also symbolizes fire, which is associated with the Holy Spirit. The placement of red in the choir relates to remembering those who came before us, the communion of saints in the Catholic faith, and spreading the word through the Holy Spirit. In this sense, they are spreading their message through song.

On the recipient's end is the narthex. In older, traditional churches, the narthex was intended for those who were not members of the church to come and watch, but not participate in the mass. This restriction no longer is practiced, however, and the idea still relates to the colors chosen. The space is across from the choir, the assembly space in between. They are on the receiving end of the message sung by the choir, reaching out to the non-members, trying to spread their word. The compliment color chosen is green, which represents fertility, hope, and bounty. The symbolism of this color ties into the symbolism of the red, with the hope that their message will reach those in the narthex and proliferate amongst them. Yellow is the color of light and purity, often associated with gold and white in the Catholic Church. Yellow is used for the nave and altar area of the Chapel, where the mass takes place. The color suits the space, given that Christ is associated with light, and throughout the mass he is said to "shine upon" the assembly. The compliment color used in these spaces is blue, which typically is used in reference to Mary, the Mother of Jesus, but also relates to the sky and "life-giving" air. Using blue within this space can associate its meaning to the

assembly receiving the "breath of life", a phrase commonly used in the Catholic faith, calling to mind how God breathed life into Adam in the Creation story.³ The light behind the altar is predominantly yellow, illuminating the focal point of the chapel with light that appears more joyful, while the predominantly blue light in the back of the assembly gives off a more solemn feeling, creating a balance of both community with the assembly and self-reflection.

Complementary Colors

Colors are typically complementary when their pigments are mixed together, they create a neutral gray-black. The standard complementary sets are yellow and purple, red and green, and orange and blue.⁴ Holl does not use these sets for all of his hue pairs, but still considers them complementary. He pairs together orange and purple, blue and yellow instead. This choice in pairing was done because of the meanings and feelings attached to the colors. The nave space would not have been the same had he used orange instead of yellow behind the altar. The yellow light shines the perfect tint of color across the wall and crucifix, creating a certain awe to the viewer. If it were orange the value and intensity would be lower, creating an almost menacing appearance. Vice versa if purple had been used on the western wall, the ambience would be different. No longer would there be the calm brightness of the blue, but the purple would have lower value and give off a sadness that would have been unnecessary. The same can be said for the Blessed Sacrament Chapel. If the stained window was blue

instead of purple, it would be too bright for the solemnity of the room and its importance to the Church. The purple gives off the right color for the environment Holl was trying to create. Along with that, had the baffle been painted yellow to complement the purple pane, it would be much too joyous for the space. This is why Holl shifted his spectrum of complements. He wished to create strong contrasts to optically galvanize the observer while still maintaining the atmosphere and reverence the spaces deserve.

Painting Analysis

The mediums used for my paintings on the Chapel are watercolor, influenced by Holl, gesso, and acrylic on watercolor paper. Watercolors are used to represent the light reflected off the baffle. The properties of the watercolor paint allowed me to capture the delicacy and subtlety of the colored light pouring over the walls and ceiling planes. Acrylic over gesso is used to represent the stained glass. The acrylics allowed me to acquire the sharpness and intensity needed for the stained-glass window panes, for their chroma is extremely vibrant.

I began by visualizing each bottle as its own composition, with the exception of splitting the nave into two, each including its own baffle light and stained-glass light. In order to properly compare the bottles, I chose equal sizes for all compositions, however the subject size varies according to each bottle. For the composition of each painting, I envisioned the back-painted baffle's light to be a wash of that particular hue in watercolor, with the stained-glass pane as a

rectangle painted on that field of color in acrylic. The size and orientation of the rectangle is determined by the relative size and orientation of the colored window on the wall in relation to the chapel. The "shadow" created by each rectangle represents the contrast ratio between the two colors and is sized according to that fraction. A larger shadow represents the greater intensity between contrasting colors. The hue of the shadow is the overlaying of the rectangle's hue on the back wash hue using watercolor.



Fig. 25. Maria Ory, acrylic on watercolor painting of narthex bottle of light, 2018

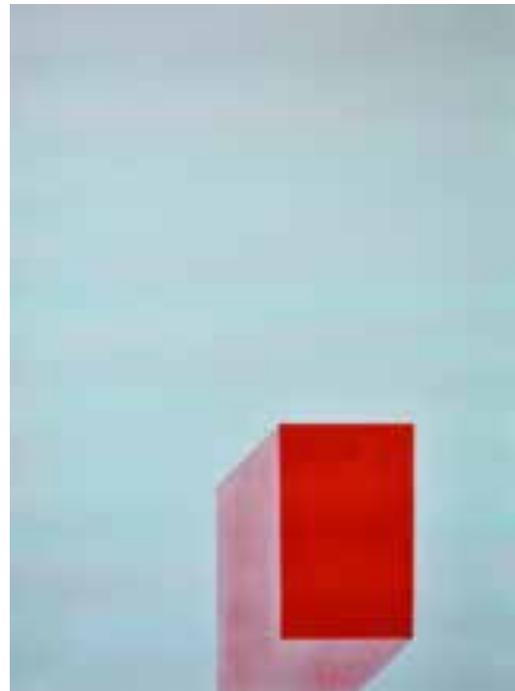


Fig. 26. Maria Ory, acrylic on watercolor painting of choir bottle of light, 2018



Fig. 27. Maria Ory, acrylic on watercolor painting of eastern wall, 2018



Fig. 28. Maria Ory, acrylic on watercolor painting western wall, 2018



Fig. 29. Maria Ory, acrylic on watercolor painting of Reconciliation Chapel bottle of light, 2018



Fig. 30. Maria Ory, acrylic on watercolor painting of Blessed Sacrament Chapel bottle of light, 2018

Once I composed each bottle, I looked at them as a whole. At first I lined them up in relation to the spaces with the same contrasting colors - narthex and choir, east nave and west nave, Blessed Sacrament Chapel and Reconciliation Chapel. This did not give me the result I was looking for, which was to find some sort of reasoning for the bottle placement in relation to their colors. In order to find the outcome I was searching for, I returned to the basics - the plan. After arranging the compositions in relation to the chapel plan, it opened up a whole new discussion for analysis. The layout of all the bottles with their respective colors in plan revealed new relationships between each space that I had not realized beforehand. All of the bottles with color relate across a certain axis. The red and green of the narthex reflect across a horizontal axis in plan. The blue and yellow of the east and west nave reflect across a vertical axis. The orange and purple of the confessional and sacramental chapel reflect across a diagonal axis. The placement of the stained pane in relation to the baffle for each bottle also reflects across these axes.



Fig. 31. Maria Ory, composition of all chapel paintings, 2018

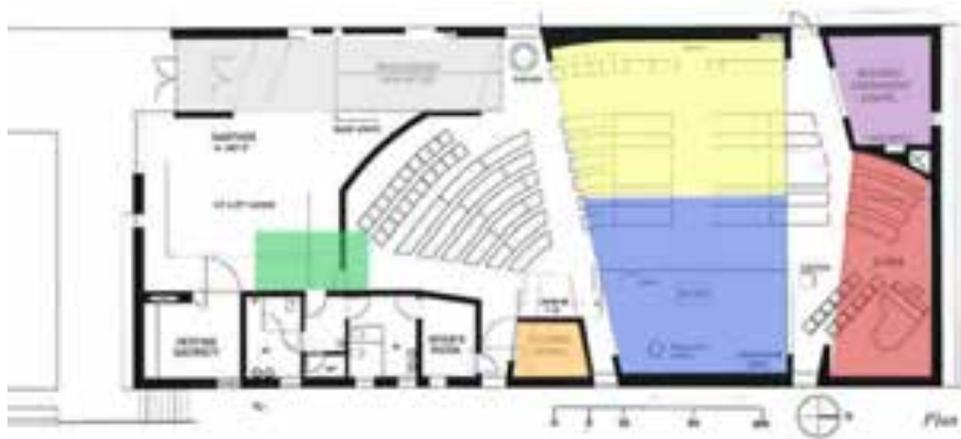


Fig. 31. Maria Ory, colored diagram of plan to correspond to painting placement, 2018

Conclusion

The intentionality behind Steven Holl's use of color is not obvious at first glance. Upon entering the viewer is swept away by the contours of the walls and ceilings and the natural light coming in. However, after carefully observing the source of each color within the bottles and analyzing them through painting, the intent becomes clear. Holl is an architect that builds with color, and although he uses architectural elements to portray these hues, the colors are not confined to them. The colored elements are utilized in a way to extend onto other elements, spreading the effect, and letting color emerge from light creating "ethereal effect[s] on space."⁵ The Chapel of St. Ignatius is a prime example of how to design architecture using color as a foundational tool. Holl wished to create a space with seven bottles of light, and with that creating seven bottles of color. It seeks not just to add a touch of color to an environment, such as

painting a wall surface, but to transcend to another level of architectural meaning beyond the realm of a physical space. This aspiration strives to stimulate users in an intellectual and spiritual way, touching their mind and their soul. Steven Holl himself said that "soul is essential to architecture," and through his use of color in the chapel, he achieved this goal.⁶

Notes

1. Steven Holl, *Steven Holl*, 5-8.
2. "Chapel of St. Ignatius, Seattle University," 108-125.
3. Fr. William Saunders, "The Colors of Liturgical Vestments."
Catholic Education Resource Center,
<https://www.catholiceducation.org/en/culture/catholic-contributions/the-color-of-liturgical-vestments.html> (Sept. 30, 2018)
4. Johannes Itten, *The Elements of Color*, 49.
5. Steven Holl, *Steven Holl: Color, Light, Time*, 23.
6. Steven Holl, *Steven Holl*, 25.
7. Fig. 3 from "Linked Hybrid," Steven Holl Architects,
<http://www.stevenholl.com/projects/beijing-linked-hybrid> (Sept. 27 2018)
8. Fig. 4 from "Chapel of St. Ignatius," Steven Holl Architects,
<http://www.stevenholl.com/projects/st-ignatius-chapel?> (Sept. 27 2018)
9. Fig. 5, 6, 7, 31 from "Chapel of St. Ignatius, Seattle University." Steven Holl: GA Document Extra 06 (1996): 108-125.

Cuadra San Cristobal

Background: Luis Barragán

Luis Barragán grew up on an expansive ranch in Mexico, his fixation with horses, plants, and water was cultivated early on.¹ This translated into the inspirations for his works, where he includes extensive gardens, numerous water features, and proportional systems based off of a horse rider's eye line. He began his career in Guadalajara, after achieving an engineering degree and travelling around Europe in 1923. He designed houses of the Mediterranean style, with touches of Mexican influences, creating his first design phase. After travelling once again to Europe in 1931, he came back with knowledge of the Rationalist and Neoplastic styles, influencing his second design phase. He then began building houses in Mexico City, where he used the culture and preexisting Mexican architectural style of the place to develop his own interpretation of Mexican housing in the city.² This new style Barragán created, his third and final design phase, meant closing off the house to the outside, keeping the architectural experience within its walls.



Fig. 1. Luis Barragán, house designed using Mediterranean style, Gonzalez Luna House, Guadalajara, 1929



Fig. 2. Luis Barragán, house designed using Rationalist style, Mexico City

The first two phases, the Mediterranean and Rationalist style, Barragán is least known for because he was discovered in his third phase, using his own Modern methods. This third phase was his most creative because he came up with his own design style, using simple forms integrated with a touch of color, either a painted wall, room, or window. He insisted no one copy him in the formal sense, given that he used architecture purely as a way to express himself. He explained that he often turned away from the ideas of functionalism and returned to the origins of architecture, the fundamental precepts, to create his own modern architecture.³

His approach transcended all of the tactics of his contemporaries; although some read his plans as non-functional and elementary due to their simplicity. However, he sought not to make perfectly composed plans, but to construct harmonious spaces. He used his imagination to create unified compositions of elements.⁴ Barragán placed a huge emphasis on "seeing" his architecture; which to him was actively analyzing instead of "looking" as passively glazing over. He insisted that looking was not enough, one must "see" it.⁵ When seeing a Barragán space, the observer is thrown into another realm, removed from the outside world due to his use of windows not facing the street, only letting light in from above or from a view facing within the property. He wished to bring back certain concepts with his compositions, which had been lost in the fast-growing movement of modern architecture. He brought these concepts of "Beauty, Inspiration, Magic, Spellbound, Enchantment ... Serenity, Silence, Intimacy and Amazement" back into the architectural arena through

colored elements.⁶ He viewed architecture in a fantastic sense, searching for the worthiest way to portray the mood he aspired to present.

Barragán turned to artists for inspiration and guidance in order to achieve these concepts. He worked closely with Mathias Goeritz, with whom he completed several projects, like the Torres de Satellite. Goeritz created art pieces to adorn Barragán's projects by Barragán's request, like in his home Casa Barragán and the altar piece for the Chapel of Capuchinas, showing how the design relationship between art and architecture functioned by one seeking help from the other.⁷ The architectural projects that contain Goeritz's artworks seem to have been made specifically for that piece of art, the surrounding space and artwork melding into one, specifically in the Chapel. The golden altar piece fits perfectly into the red space, and it is evident that their collaborative relationship was filled with imagination and design brilliance. Barragán's inspiration from art is ever-present.



Fig. 3. Luis Barragán and Mathias Goeritz, collaborative art installation, Torres de Satellite, Mexico City, 1958



Fig. 4. Luis Barragán, main chapel space with Goeritz altar piece, Chapel of Capuchinas, Mexico City, 1960.

He also worked with Chuco Reyes, who "[introduced] the colours that became so characteristic of his work."⁸ Chuco Reyes was extremely influential to Barragán, who attributes his knowledge of color to the theories that Reyes taught him. Reyes' style would not be considered traditional to Mexican culture by his contemporaries at that time because of his wild expressive line-work and cartoon-like components, however, the colors he used were customary for Mexico.



Fig. 5. Chuco Reyes, "Pelea De Gallos"



Fig. 6. Chuco Reyes, "Pareja de caballos"

The evidence of Reyes' influence is apparent, for "Barragán's colouring scheme contains the familiar colours of traditional Mexican art - bright pink, golden yellow, ochre, indigo, cobalt blue and purple."⁹ These colors, however, were mostly present in Mexican artwork and not architecture. Barragán chose the colors for his designs, not to overwhelm the viewer, but to stimulate their senses upon perception, just like in an art piece. The observer must suspend all

ideas of what is "normal" and allow their emotions and impressions to take over, giving in to the mood Barragán created within his spaces. "Color is a complement to the architecture," Barragán stated.¹⁰ He treated it as its own architectural element, often coexisting with light. He used them together in order to create visual sensations for the observer, pushing the boundary to prompt an aesthetic reaction.

The sensations activated by color are defined by Kandinsky, who went into depth to describe the sensory effects of color, noting that certain colors cause an emotional response, inducing a "psychic vibration" - an effect that "touches the soul."¹¹ This was Barragán's intent, to impress upon the observer the concepts that he feels had been lost in architecture. He induced emotion through aesthetics, applying colors not for meaning, but to evoke that emotional response Kandinsky was after, adding depth to spaces to achieve that "touch of magic" that had been dormant in architecture.¹² A pinnacle work in Barragán's career, the project that encapsulates all of these notions, is Cuadra San Critsobal, a building teaming with pigments that touch the senses and bestow wonder into those who see it.

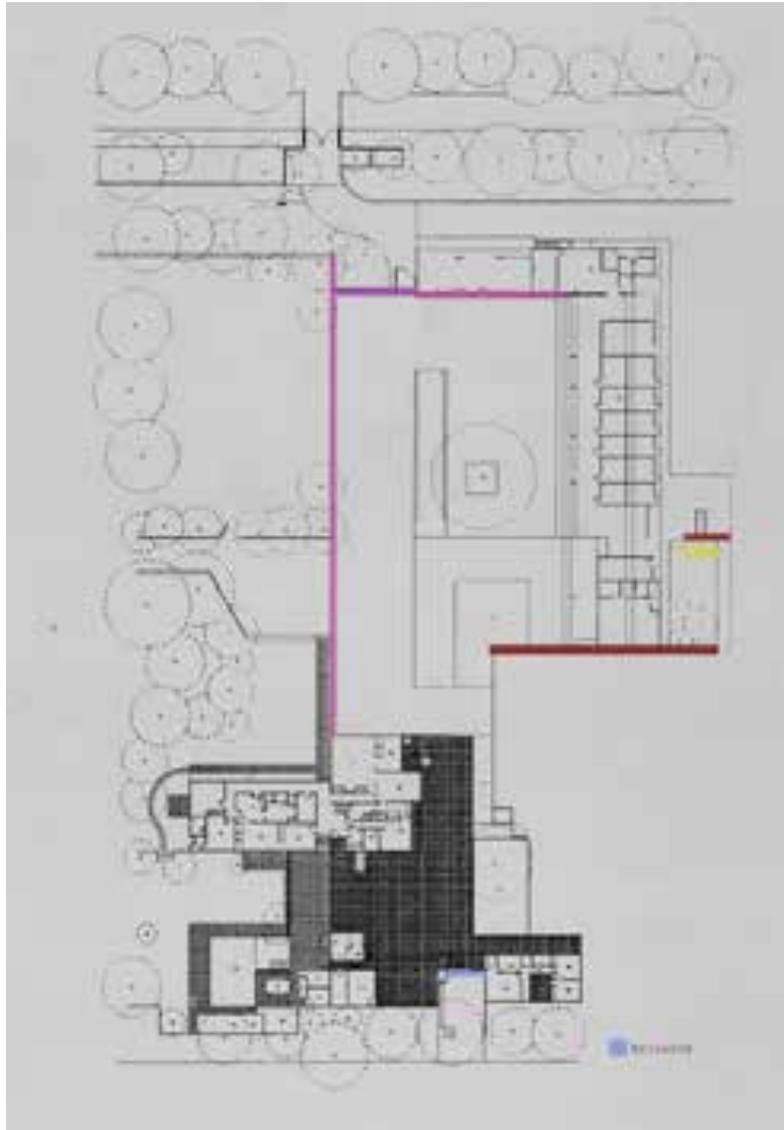


Fig. 7. Luis Barragán, floor plan, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

The Courtyard

The courtyard of Cuadra San Cristobal lies within the walls of the Egerstrom property, along with the Egerstrom residence and numerous pastures for the family's horses. In order to enter, there is a tiny metal bell hanging outside the heavy wooden entry door, which is set into the massive stucco walls lining the property. After ringing the bell, a friendly groundskeeper welcomes the viewer to the estate, exchanging "Hola!" and "Buenos Dias!" The initial view of the

courtyard is seen from this point, just after crossing the threshold. To the west is a tiled parking area that leads up to the Egerstrom house, which is painted white over the stucco. One of the smaller pastures on the estate grounds is to the east. This pasture is lined with a hedge of the left edge, approximately three to four feet high, that guides the eye to the courtyard.



Fig. 8. Luis Barragán, initial perspective view, Cuadra San Cristobal, Los Clubes, Mexico City, 1966



Fig. 9. Luis Barragán, view of red wall and stables, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

Continuing on this path covered in brownish-orange dirt, at the end of this hedge lies a giant red wall, which functions as a wall for the changing room for the stables that lies behind the wall, and contains a spout for the horses' bathing pool on the exterior. This pool rests at the edge of the hedge, extending past the red wall into the more central area of the courtyard. Lined up perfectly within the perspective between the white house and the red wall is a giant Jacaranda tree. After rounding the corner of the residence to the west, breaking from the initial perspective, there is a large pink wall that extends to the edge of the courtyard. This wall contains two openings, both not to human scale. The scale is set for horses and their rider, giving them the ability to ride under them without any height issues.



Fig. 10. Luis Barragán, western pink wall with openings, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

Walking around the pool, there are two parallel horse tethers that rest to the west of the Jacaranda tree, extending on towards the back northern wall. In plan they are placed centrally between the pool and edge of the courtyard. Following the tethers to the northern edge, there are two purple doors set in the northwestern corner of the courtyard. On the eastern side of these doors is the hay storage, which has been painted pink. The wall facing the courtyard has two giant vertical slits in it beginning at the top, used as ventilation for the hay, breaking up the otherwise solid pink stucco façade. Along the eastern side of the courtyard are the stables, lined with heavy wooden doors similar to the one at the entry. The bottom of the stable walls are covered in a one and a half foot band of a low value and saturation purple paint over the white paint of the remaining wall. This band is used for dirt, for when it is kicked up by foot traffic, it hides the brown dust that would otherwise show up on the white wall.



Fig. 11. Luis Barragán, horse tethers with pink hay storage and purple doors in view, Cuadra San Cristobal, Los Clubes, Mexico City, 1966



Fig. 12. Luis Barragán, horse stables, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

In the southeastern corner of the area is the changing room, which is now used as a visitor's area. The threshold of this room is covered by two giant wooden sliding barn doors. North of this space is another tether area for horses where their saddles are stored along the wooden clad walls. This is where the stable hands saddle up the horses or take them off. Then east of that area is a bathing station for the horses, painted a vibrant yellow and a dull red. All the elements of the courtyard flow seamlessly from one to the next, creating an atmosphere of peace and contentedness.



Fig. 13. Luis Barragán, visitor area, Cuadra San Cristobal, Los Clubes, Mexico City, 1966



Fig. 14. Luis Barragán, visitor area, Cuadra San Cristobal, Los Clubes, Mexico City, 1966



Fig. 15. Luis Barragán, saddle area, Cuadra San Cristobal, Los Clubes, Mexico City, 1966



Fig. 16. Luis Barragán, bathing station, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

Spatial Effects of Color

The visual effect a color has on a viewer has many different variables. These variables include the area the color takes up, how this area relates to adjacent colors and the area they occupy, the value and saturation of these colors, their hue families, and their shape. For example, if a rectangle of green has a small red rectangle in the middle, about one-twentieth of the green's size, the red rectangle will appear to hover in front of the green field of color, being pushed forward, seen in Fig 17. This is due to the imbalance of the amount of color present. If the colors were evenly distributed, each given the same area, than they would appear on the same plane, neither in front of the other, depicted in Fig. 18.

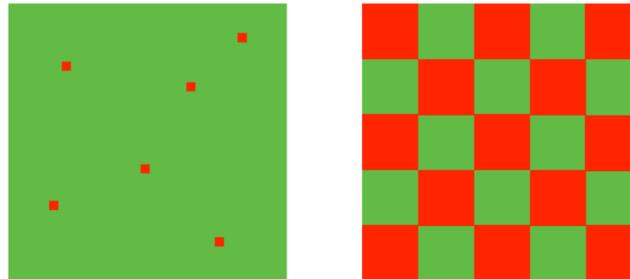


Fig. 17-18. Contrast of Extension, Johannes Itten, *Elements of Color*, pg. 61

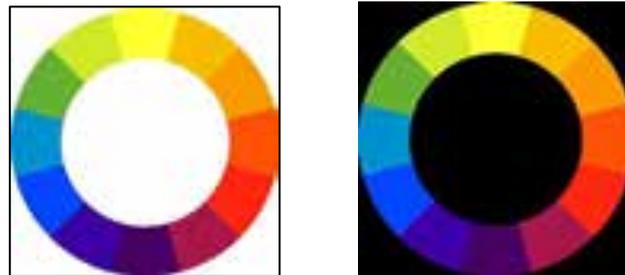


Fig. 19-20. Spatial Effects of Color, Johannes Itten, *Elements of Color*, pg. 77

A similar effect happens with lighter versus darker colors. If there are two color wheels, each containing the six main hues - red, blue, yellow, green, orange, and purple - which are then each placed on different colored backgrounds. One is placed on white, and one is

placed on black. Certain colors will appear more prominent than others due to the value of the background. With the white background, the purple will appear most prominent due to its low value in contrast to the high value of the white. The opposite is true for the wheel on the black background, for the yellow will be most prominent because of its high value contrasting the low value of the black, shown in Fig 19-20.



Fig. 21. Luis Barragán, initial perspective view of courtyard, Cuadra San Cristobal, Los Clubes, Mexico City, 1966

In Barragán's work, Cuadra San Cristobal, his color choices and their effects follow this theory. The initial perspective when entering sets up a distinct composition, similar to a painting. In this composition rests a field of various hues, all appearing at different depths. These hues are, in receding order, green, white, red, blue, pink, green, and purple. If all these colors were on the same plane, with the background color being white, their depths would be comparable to their actual order. Barragán set it up this way. The

closest objects in the perspective, the green hedge and red wall, would appear closest due to their lower values, contrasting against the light value of the blue sky. He places the higher value colors, the purples and pink, at the farthest depth. Placing these tints farther back exaggerates the depth of the area, elongating it. The elements and colors within the space are all a part of the composition, working for Barragán's goal to create a strange atmosphere to engage the viewer visually and intellectually.

If he had placed the lower value red in the background with the higher value pink in the foreground, in contrast with the high value sky acting as the background, the perception of the space would change. The composition would become flattened, the darkened far walls trying to push into the foreground of the image, decreasing the appearance of depth in the space. It is for this reason that Barragán's color choice is successful, elongating the perceived depth of the space.

Painting Analysis: Spatial Effects of Color

My painting to analyze the spatial effects of color is composed on a 30" x 40" canvas. I used acrylics for their ease of mixing, vibrancy of color, and quickness of drying to be able to create clean edges. I began thinking about the initial perspective shot, and which method of painting would work best to portray the effects it has on the viewer. Barragán himself was influenced by painters when designing, so I thought this was the proper medium to use for

exploration of color. He is said to be inspired by the Surrealist painter de Chirico in particular, with many of the painter's works containing points of realism as well as exaggerated perspectives. I drew from de Chirico's artworks to find an approach to my analytical painting, thinking about how he set up a perspective in a painting. I was also inspired by the work of Theo van Doesburg because of his use of colored planes, similar to how Barragán composed space. I looked at the expressionist approach as well, specifically how they tended to place an emphasis on the colors and the feelings the colors create rather than a hyper-realistic approach because Barragán focused on how color can create feelings in his designed spaces.

My main source for compositional ideals was Theo van Doesburg. I studied how he treated his creations, whether a two-dimensional painting or an axonometric, and how he applied color to the planes of the piece. His work demonstrated the colored plane method I needed to properly portray the analysis of the colors used by Barragán in the courtyard. Choosing a more two-dimensional, geometric method allowed me to express the relationships between the colors, examining their spatial effects.

The painting of the courtyard allowed me to truly see the spatial relationship of the colors themselves without other factors like shape of elements distracting from the intended analysis. After composing it and taking a step back to observe, the painting opened up before me and revealed this spatial effect created by color alone, for the colors exist on the same plane. This observation proved how Barragán

chose the colors with the intent of exaggerating the visual perception of the space.



Fig. 22. Maria Ory, painting analysis of Cuadra San Cristobal, spatial effects, 2018

Color Effects of Simultaneity

The idea of simultaneity in color theory stems from the eye's ability to change the hues of colors when they are surrounded, or adjacent, to other colors. In the courtyard of Cuadra San Cristobal, the effect of simultaneity appears on the northern-most edge. Here the pink stucco wall of the hay storage and the lavender doors are adjacent to each other. This is an interesting choice of colors to place next to each other, for they border each other on the color wheel. Adjacent colors on the wheel create a feeling of balance and harmony due to their similar natures of hue. They tend to be not as

vivid and more subdued in nature. However, this is not the effect the viewer experiences. The intensity of the chroma and high value of the hues used, a light pink and lavender, are stimulating to the eye. Although there is stimulation, there is still a harmony. The colors cause excitement within the viewer, but are not as drab as adjacent colors are described. The unique properties of these particular hues cause the eye to change certain color effects, particularly on the lavender.

Painting Analysis: Color Effects of Simultaneity

For this color analysis I chose to use acrylic paints on canvas because acrylics allow me to mix colors easily and apply with accuracy and crispness. I set up my canvas with four squares of color - white, black, grey, and pink. The white, black, and grey are to provide variables for the theory, varying on value, while the pink is representational of the color on the courtyard's walls. Within each of these fields I painted a smaller lavender square, each the exact same purple, representational of the purple doors on the northern edge. Due to the ideas of the color effects of simultaneity, the outcome was what I anticipated. The lavender on the white appeared of lower value; the lavender on the black appeared of higher value; the purple on the grey appeared neutral; and the purple on the pink appeared vibrant with a reddish hue to it. The lavenders on the white, black, and grey had more of a bluish hue.

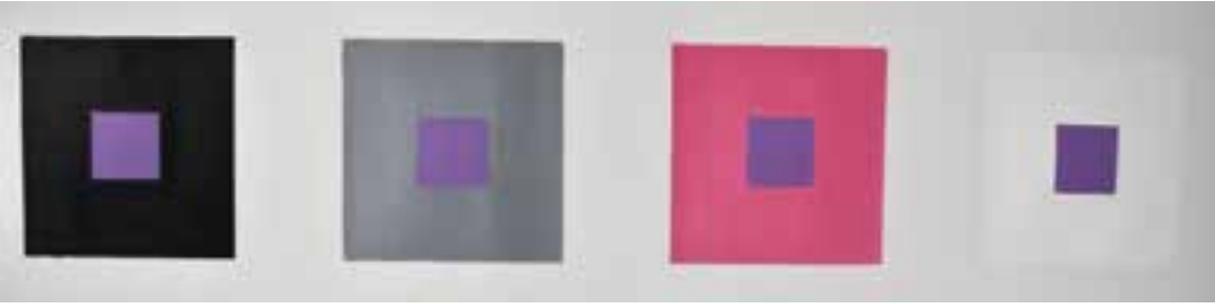


Fig. 23. Maria Ory, painting analysis of Cuadra San Cristobal, simultaneity, 2018

Due to the proximity to the pink, the lavender began to take on some of the properties of the pink, giving it a more reddish appearance. This creates a well-balanced composition, however, it still maintains a certain dreamlike quality that Barragán often included in his works. This quality of fantasy stems from the choice of color. If, for example, Barragán had chosen two different analogous colors, such as orange and yellow, the quality of the space would change. These colors lack the whimsy that pink and lavender contain. The best way to characterize this is comparing the view of two different types of sunsets. There are those sunsets when the sky is sparse of clouds, the horizon is a reddish-orange, and the area around the sun is golden. Then there are the sunsets where the sky is filled with clouds, and the atmosphere takes on a pink sheen while the clouds are a deep, rich purple, with flecks of gold and red. The captivating quality that pink and purple have together are difficult to match, for they are so rarely seen in nature. Barragán wished to create this feeling because the objective in most of his works is to bring "magic" into architecture.

Conclusion

Luis Barragán strove to find and create what he felt had been forgotten in design. He worked to make environments that let people lose themselves, forgetting where they are and just appreciating the spaces. Cuadra San Cristobal exemplifies his goal, for within the walls, it feels as though nothing else exists, just the landscape that Barragán created. The colors have a great effect on this feeling, the vibrancy of the colors removing the viewer from reality with their fantasy. Barragán wished to bring "Beauty, Inspiration, Magic, Spellbound, Enchantment ... Serenity, Silence, Intimacy and Amazement" back into the language of architecture, and with the courtyard, he was able to achieve this.¹³

Notes

1. Yutaka Saito, *Luis Barragán = Ruisu Baragan no Kenchiku*, 14.
2. Luis Barragán and Paul Ripsa *Barragán: The Complete Works*, 17-18.
3. *Ibid.*, 13.
4. *Ibid.*, 26-17.
5. *Ibid.*, 14.
6. Yutaka Saito, *Luis Barragán = Ruisu Baragan no Kenchiku*, 10.
7. Information provided by Roberto Davila, architect and tour guide for Luis Barragán works.
8. Luis Barragán and Paul Ripsa *Barragán: The Complete Works*, 15.
9. Daniéle Pauly, *Barragán: Space and Shadow, Walls and Colour*, 188.
10. *Ibid.*, 183.
11. *Ibid.*, 183.
12. Luis Barragán and Paul Ripsa *Barragán: The Complete Works*, 25.
13. Yutaka Saito, *Luis Barragán = Ruisu Baragan no Kenchiku*, 10.

Haus Portois & Fix

Background: Max Fabiani

The end of the nineteenth century brought about the artistic style of Art Nouveau, where artists and architects, interior designers and furniture designers, were all turning away from the traditional and conventional and moving towards this new style. This meant the waning of the Baroque and Neoclassic styles with their regimented proportion systems and repetitive, overused trim details. The goal was to reject old ideas "in the aim of achieving purity of form."¹ This purity extended to all parts of a building. The furniture, the wallpaper, the flooring, the exterior façade - all were designed to create a harmonious composition where one piece relates to the next. This composition in architecture took on a whimsical appearance combined with the discipline of an architect and the expertise of a stain glass glazier. Art Nouveau was opposed to the concepts of naturalism, which were emphasizing the rawness of material and blending human habitation with nature. Instead, the focus was on creating "beauty, elegance, and decorativeness," whether that was in the architecture, textiles, or furnishings.² However, some would hesitate to stray from the steady nature of traditional architecture. One that approached the challenge of the new style willingly was Otto Wagner, an Austrian architect. Instead of running from change, he challenged it, but not letting it fully envelope his work. He did this by using decorative elements, often ceramics and ironworks, not to cover his construction and architectural lines, but letting one absorb

the other to create his compositions.³ This can be seen in one of Wagner's most notable creations, the façade of the Maiolica House in Vienna. Using ceramic tiles, he designed a façade that is two dimensional in nature, yet appears to have depth with what seems like a foreground, middle ground, and background.

The foreground is comprised of the organic shape of roses and leaves in varying hues of red, green and blue positioned in an orthogonal pattern. This layer abides by Wagner's goal of combining the vision of Art Nouveau, with the elegance and decorativeness of the roses, and aligning it with the constructional grid lines of the structure, demonstrating how Wagner combined traditional techniques with the new style, seen in Fig 1-2.



Fig. 1. Otto Wagner, Façade, Maiolica House, Vienna, 1899



Fig. 2. Otto Wagner, Close-up of Façade, Maiolica House, Vienna, 1899

Under the roses is the middle ground, consisting of fluid lines, growing across the building in a very natural and non-geometric way, whirling around at their own discretion. This is the most modern of the layers, portraying the popular biomorphic whiplash shape of the time. These two layers rest upon the canvas of the background layer,

an arrangement of what one would typically describe as "tan" tiles, although they are actually in the family of varying yellow hues. This draws the whole configuration together. Without the subtlety of the background tiles, the other layers would be lost. This foundational layer of tiles nods to a concept in traditional architecture, where a column must rest upon a base, the background tiles acting as the base, supporting the other elements of the façade.

A contemporary of Otto Wagner, Max Fabiani, created similar façades for his buildings using this tile technique. He was also an Austrian architect during the Art Nouveau period, and he began his education at the Vienna University of Technology taking architecture courses, where he would later become a professor. Fabiani also worked at Wagner's studio at the end of the century, where the two worked on buildings and numerous city planning projects. Fabiani was heavily influenced by Wagner's style at the time, seeing as Fabiani joined Wagner's studio, who was twenty plus years his senior, right after schooling - a highly impressionable time in a designer's life. Even under Wagner's influence, Fabiani still managed to develop his own sense of design.

Establishing his footing in the architecture community around this stylistic period affected the design output of the works he produced. He was able to, "[witness] a moment of great transformations, bridging two centuries torn between the myth of technological innovation and the sense of tradition and continuity."⁴

He believed that one cannot just simply turn away from the language of past architecture, but they must transform it. This led him to “rediscover the expressive power of the classical architectural elements,” combining his knowledge of the past with the emerging style of Art Nouveau.⁵ With this outlook on architecture, Fabiani found his own approach to architectural design, which is evident in what is considered one of his greatest projects, Palace Portois & Fix, shown in Fig. 3-4.



Fig. 3. Max Fabiani, View of building when approaching, Haus Portois & Fix, Vienna, 1899

The Façade

The first encounter with Haus Portois & Fix is intriguing, for the sheen of the façade created by the summer's evening light, around

7:00 P.M., draws the viewer in, creating an inquiry as to what material is on the building. As one draws near, the colored tiles spring to life, revealing the designs of Fabiani. Across the street is an abandoned retail store with a stoop, an ideal place to sit unbothered by passersby to observe his work.

The façade's tiles appear to have a more yellowish hue, due to the evening light, than the pale green as viewed from images. One reason in-person observation is better is for the accuracy of observation. The tiles also have a slight reflective sheen. From a distance the whole composition is made up of a high value green and low value green. Upon closer examination it is revealed that every tile is a different color, each having slight nuances from each other. They mostly vary in value and saturation, a few varying in hue. This means that some appear more bluish, while others lean more towards the yellow spectrum. They also vary within the tile itself, some with darker edges or a light spot in the corner, seen in Fig. 5-6.



Fig. 4. Max Fabiani, Façade, Haus Portois & Fix, Vienna, 1899



Fig. 5-6. Max Fabiani, Close-up of tiles, Haus Portois & Fix, Vienna, 1899

The tiles create a pattern across the façade, but the exact color of each does not matter, for they are not consistent colors. The relationships between adjacent tiles and their placement in relation to the whole is what was important to Fabiani, otherwise he could have used two different colored tiles instead of a variation. Therefore tiles are grouped together for the pattern in relation to their values, Fabiani separating lighter and darker tiles to then create his façade's composition.

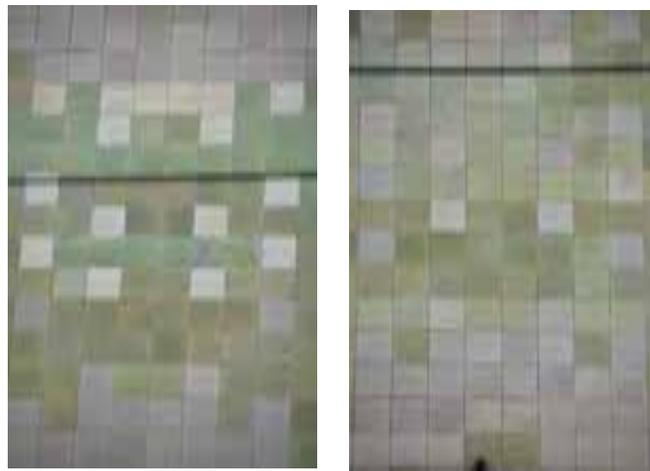


Fig. 7-8. Max Fabiani, Close-up of tiles, Haus Portois & Fix, Vienna, 1899

Using the Munsell Color Chart of the hue 5GY, the colors, in this light, stay within the 6 to 8 range of value, and within the 2 to 6

range of chroma. This is relatively light compared to how low some of the values appear. This affect can be explained by light-dark contrast, an affect that tests a viewer's ability to see value changes of a hue within a composition. If one has not studied these concepts beforehand, noticing these differences in color is difficult without the proper knowledge. Practice with this theory can lower the viewer's threshold, allowing them to pick up more gradations.⁶ Within the façade of Portois & Fix, this task is extremely difficult to the untrained eye, for many of the lightest value tiles appear the same. Comparing directly adjacent tiles aids in the discovery of differences in these tints, and once the viewer notices one, the whole façade becomes a gradation of color.

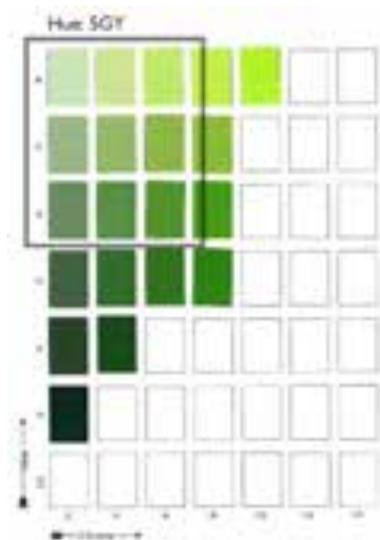


Fig. 9. Munsell Color System hue chart 5GY, *The New Munsell Student Color Set: Fifth Edition*

Settling onto the stoop, with late morning light now resting on the tiles, the façade has changed from previous observations. The yellowish-green tiles from before are now bluish-green. The sole reason for this change is the sun's light at this time of day, around

11:30 A.M., bringing a visual sharpness to the building and giving the street an overall cooler tone. This demonstrates the ever-changing nature of color, its characteristics solely dependent upon its environment.

In this light the green tiles also appear more vibrant, and the contrast between the higher and lower values is more apparent. This is due to the lack of direct light on the building, and the sheen of the tiles is not visible. It is easier to view the colors and pattern because of the lack of glare. The values of the tiles are lower as well, an environmental effect due to the light.

The tiles have slight differences, so this creates a moving, rippling effect across the façade. This movement goes in several directions - up and down, between windows, and along the windows. The pattern of the tiles helps portray movement as well.

Although the pattern between windows horizontally is made up of rectilinear shapes, they create a wave-like form using the high and low value greens to make a distinguishable shape. The tiles touching the windows' sides are mostly lower value, while moving towards the center the low value ones decrease and there are more high value greens, creating a sideways hourglass-shape, depicted in Fig. 10. This gives the effect of tiles moving up and down, rising to meet the tops of the windows, and then relief in between.



Fig. 10. Max Fabiani, partial view of façade pattern, Haus Portois & Fix, Vienna, 1899

The pattern between windows vertically uses the lower value greens in the same way, creating motion. The main motif of the pattern is a cross-like shape made up of twelve darker tiles. This cross is then surrounded by higher value tiles and an implied circle of darker green tiles similar to the cross. This motif alternates horizontally with another one, a square of four low value tiles with same implied circle surrounding it. The crosses are placed between the hourglass-like shapes, and the squares between the windows themselves. With the crosses placed within the reliefs of the hourglasses, it gives them hierarchy to the squares. This pattern creates movement horizontally again with a proceeding and receding motion of tiles, the crosses coming forward and the squares moving backwards. The implied circles surrounding both shapes form a rippling effect similar to the pattern between windows mentioned previously, the circles nestling into its profile, depicted in Fig.11.



Fig. 11. Max Fabiani, partial view of façade pattern, Haus Portois & Fix, Vienna, 1899

Beginning a new day of observations, with the early morning sun casting its light upon the street, the journey to the viewing spot across from Portois & Fix is quieter at this time of day, for the city of Vienna does not seem to be awake yet. The early morning light now mixes with the façade. It takes on a warmer glow, returning to the earlier examined yellowish-green hue. This does not seem to be solely based on the sun's light, but also the sun directly hitting the building across the street, and that building's light reflecting into the façade. The building is a warm white, which explains why Portois & Fix would appear on the more yellow spectrum of green because yellow is a warm color, juxtaposed to a bluer green, which is a cool color. Not only does it change the appearance of Portois' colors, but the building across the street also leaves a dancing spot of light on the right side of the façade, a spot created by a reflective surface on

the opposing building, seen in Fig. 13-14. This effect can only be seen around this time of day, 7:30 A. M., because of the sun's angle.



Fig. 12. Building across the street from Haus Portois & Fix, Vienna



Fig. 13-14. Max Fabiani, light reflecting onto façade from across the street, Haus Portois & Fix, Vienna, 1899

This effect ties into the idea of motion created by the façade. Not only do the colors of the tiles appear to meander across the façade, but the street itself plays into this motion. Whether it is the sun's light moving throughout the day, changing the color temperatures of the tiles and bouncing light off of surrounding buildings, or the passing of the metro, which casts a shadow on the façade for just a moment, they all play a part in the façade's appearance.

Painting Analysis: The Façade

At first glance, about a block down the street, the building appears to be a typical apartment structure, six stories tall, with a rather flat façade. Moving closer into view the tiles burst into life, their colors enhanced by the natural light. Walking along side it, the tiles continue to ripple with light and color. This rippling effect is what I wished to capture, and the biomorphic whiplash shapes of Art Nouveau would assist in this task.

To analyze the façade of Portois & Fix, I used acrylic, for ease of mixing colors, on an eleven by fourteen inch canvas. I began with thinking about how these tiles act as a whole, not as individual squares. I then divided this composition into three parts, the background of the higher value greens, the combined middle-fore ground of the window lining and low value greens. Then, to decide what style would best represent what I saw, I turned to the artists of Art Nouveau. I thought this was fitting because Fabiani himself embraced

this style. Art Nouveau was a time filled with organic shapes and nature-inspired décor, which is not apparent at first with Portois & Fix; however, the ideas are present with its natural tones of green and pattern reminiscent of lily pads on the surface of a pond.

Setting up my canvas, I painted the background the same colors as the high value greens, applying the varied colors with a slightly waved brushstroke for the ripple effect. Next I painted a rust-orange rectangle to represent the lining of the windows. I then painted my own version of the whiplash using the low value greens, depicted in Fig. 15. I weaved them in and out of the window frame, showing how one is not superior to the other, for on the façade itself both elements read to have the same hierarchy. These colors and methods capture Fabiani's design intentions, for with a two-dimensional media he created a three dimensional effect. Not just the colors, but the tile materiality and light also contribute to the overall composition.

Through the process of painting, I was able to see the range of greens Fabiani used, picking up the different values and hues when mixing the paint. This then allowed me to examine what the colors were contributing to the façade as a whole and how their placement created a repetitive pattern across it. With the slight differences of the colors, they created the moving effect I tried to capture with the painted composition.



Fig. 15. Maria Ory, painting analysis of Haus Portois & Fix façade, 2018

Conclusion

Even though Max Fabiani is lesser-known to the general public, and even to some architects, he should not be overlooked. He implemented color onto Portois & Fix with such dexterity and intellect with the placement of the tiles, showing his mastery of the trade. Throughout his years in the architectural field, he never fully developed a definitive style, however, what was apparent was his “unceasing passion for design.”⁷ Those around him said he was, “constantly enthusiastic about his profession,” this fervor shown in the design of Portois & Fix.⁸ There is a certain language to Fabiani’s work, made to be understood by the viewer through the architectural element of tile. With this language he speaks of the subtle colors drawn from nature, the movement these colors make with their gradations, and the light that dances across them all. He treated this

façade like a masterpiece, framed by the street. Portois & Fix is a hidden gem of Vienna, much like Fabiani, sitting on a street with little vehicle and pedestrian traffic, surrounded by mundane, washed-out buildings, shimmering in the light of the city.

Notes

1. Bernard Champigneulle, *Art Nouveau*, 135.
2. Renato Barilli, *Art Nouveau*, 10.
3. Bernard Champigneulle, *Art Nouveau*, 137.
4. Marco Pozzetto, "Max Fabiani," 83.
5. Marisa Macchietto "Max Fabiani: Nuove Frontiere Dell'Architettura,"
13.
6. Johannes Itten, *The Elements of Color*, 37.
7. Marisa Macchietto "Max Fabiani: Nuove Frontiere Dell'Architettura,"
13.
8. *Ibid.*, 12.

Casa Batlló

Background: Antoni Gaudí

Antoni Gaudí was born in the middle of the nineteenth century into a family of coppersmiths. Plunged into this trade as an apprentice, he began to learn how to create things with his hands from an early age. As a child Gaudí also struggled with rheumatic issues, rendering him incapable of participating in common childhood activities, remaining within his house and workshop. This limitation came with some benefits, allowing Gaudí to become more observant of his surroundings and nature.¹ One might say that without this illness, he may not have developed the eye for detail that he did. This eye for detail emerged in his formal Spanish architectural schooling, where he would excel in hand-renderings and design. However, he was “not a particularly good student” due to the fact that he liked doing things his own way.²

Another effect of his illness was his affinity for solitude. He was not an off-putting or irritable person, but he did not go out of his way to be sociable. He often kept to himself, but most of the conversations he did have were with colleagues, strictly about his architectural projects. He never married or had children; the only family that remained towards the end of his life were his father and a niece whom he lived with. Gaudí, a reserved man, dedicated his life to his work. He never even wanted to travel to other countries or converse with international architects. He was content with the world he created in Barcelona.

Since Gaudí did not travel, many of his architectural influences came from within Spain. His education came around the time of early Renaixensa, a style characterized by an abundance of ornamentation heaped onto the cornices of a building, creating an unstable effect.³ This style influence is evident in one of the first residences he designed, Casa Vicens. While working on this project, he was able to work with a local artisan who created the polychrome tiles used, incorporating his own designs onto them. The freedom given to Gaudí on this early project, introducing him to this world of polychromy, visibly shaped his style and methods of applying color in the years to come. Beginning with Casa Vicens, his style took on a more Moorish appearance, due to his fascination with the Alhambra, with the simulation of *muqarnas* and rich colors used by the Moors, pictured in Fig. 1-3. He then moved into designing with Gothic influences because of his studies of the French architect Eugène Viollet-le-Duc, who promoted a Gothic Revival. Yet Gaudi saw this style as flawed because he wished to design without the crutch of flying buttresses. This decision led to the shape Gaudí is most known for - the parabolic arch, a structural shape that does not need support from a buttress. After this discovery his architecture headed off in a new direction; one that had never been seen before. The new aesthetic created combined his formal Spanish architectural training with the emerging ideas of Art Nouveau.



Fig. 1. Exterior doorway detail, Casa Vicens, Barcelona, Spain, 1883



Fig. 2. Exterior façade, Casa Vicens, Barcelona, Spain, 1883



Fig. 3. interior room ceiling, Casa Vicens, Barcelona, Spain, 1883

Some claim he was outside the realm of Art Nouveau, a new style entirely, but those within the movement claim his innovativeness, labeling him the "genius of Spanish Art Nouveau".⁵ Gaudí embodied many characteristics of the movement, particularly in choice and care of materials and drawing inspiration from nature. He followed the goal of Art Nouveau, which was to "render the essence of natural creation at the moment of greatest tension and exuberance," by incorporating nature into the majority of his designs, whether it be a vaulted ceiling shaped like a spine or a ceiling shaped like a nautilus.⁶ The focus on nature is apparent in all of Gaudí's works, spearheaded by religion.

Being a catholic he sought to honor Christ through his work, seeing himself as an instrument. Since Christ is the creator of nature, Gaudí strove to honor nature and use its forms within his projects. For example in his project, Casa Mila, the entry doors into the courtyard are inspired by butterfly wings, or maybe the scales of a reptile, as seen in Fig. 4-5. His objective was to turn aspects of nature into beautiful elements of design. Casa Batlló showcases this method through its façade and interior, teeming with life that Gaudí created.



Fig. 4. Exterior door detail, Casa Milà, Barcelona, Spain, 1906



Fig. 5. Exterior door detail, Casa Milà, Barcelona, Spain, 1906

Although Gaudí drew ideas from nature, his use of color throughout this building rides the line between natural and unnatural. The colors he used can be found in nature, but these compositions made within Casa Batlló are seldom seen amongst the flora and fauna. Some of his color configurations delve more into the realm of fantasy, setting high saturation hues adjacent to each other. The possibility of finding these color combinations is probable, but it is rare. For example many of his *trencadís* creations, the broken-tile mosaic technique shown in Fig.6-7, appear haphazard, the reasoning behind

them never documented by the architect. However, they are a useful medium to implement color into the building.



Fig. 6. *Trencadís* technique in courtyard, Casa Batlló, Barcelona, Spain, 1877



Fig. 7. *Trencadís* technique in courtyard, Casa Batlló, Barcelona, Spain, 1877

The Façade

The first element that strikes the observer is the concrete entrance. The façade of the first, second, and half of the third floor is formed with concrete, seemingly carved from one giant stone. Each column and window opening flows seamlessly into the other, creating a sculptural entrance, seen in Fig 8-9. Within this sculpture lies more artworks; Gaudí's signature circular stained-glass windows in various shades and tints of blue, green, and purple. These panes are held together by green mullions, accenting the trencadís on the façade. This mosaic work begins on the third floor and extends all the way to the bottom of the roofline.



Fig. 8. Façade, Casa Batlló, Barcelona, Spain, 1877



Fig. 9. Wave-like concrete arches, Casa Batlló, Barcelona, Spain, 1877

The Trencadís

Approaching Casa Batlló from the right, the concrete structure of the façade peeks out from the line of the adjacent buildings. Arriving to the bench perched directly in front of it, the colors of Casa Batlló are revealed. The summer sun was still out at 7:00 P.M., but not shining its light directly onto the façade. With a bounty of indirect light, the observation of color was easier at this time than other times during the day.

The trencadís of Casa Batlló is nestled between the concrete entrance and roof. The gamut of colors is wide, but using the Munsell Color System, they were able to be documented. The hue 5YR is used, and the colors present range from 4 value to 7 value, and 2 chroma to

10 chroma. The hue never reaches 8 value, and it is more on the brownish-red spectrum. The hue 5R is used, and the colors present range from 4 value to 5 value, and 4 chroma to 8 chroma. None of the reds are of high saturation and stay in the more brownish spectrum, however its vibrancy increases more towards the top of the façade due to natural lighting. The hue 5Y is used, and the present range from 6 value to 7 value, and the chroma never goes past 8. The hue 5G is used, and the colors present range from 4 value to 7 value, and 4 chroma to 8 chroma. These colors are more on the yellow side of the spectrum. The hue 5PB is used, and the colors present range from 4 value to 8 value, and 6 chroma to 12 chroma. There are more tints of this hue whose values are 8 and whose chroma ranges from 2 to 6, which are similar to the colors used from the hue 5B with a value of 8 and chroma of 2, all these hues seen in Fig. 10.

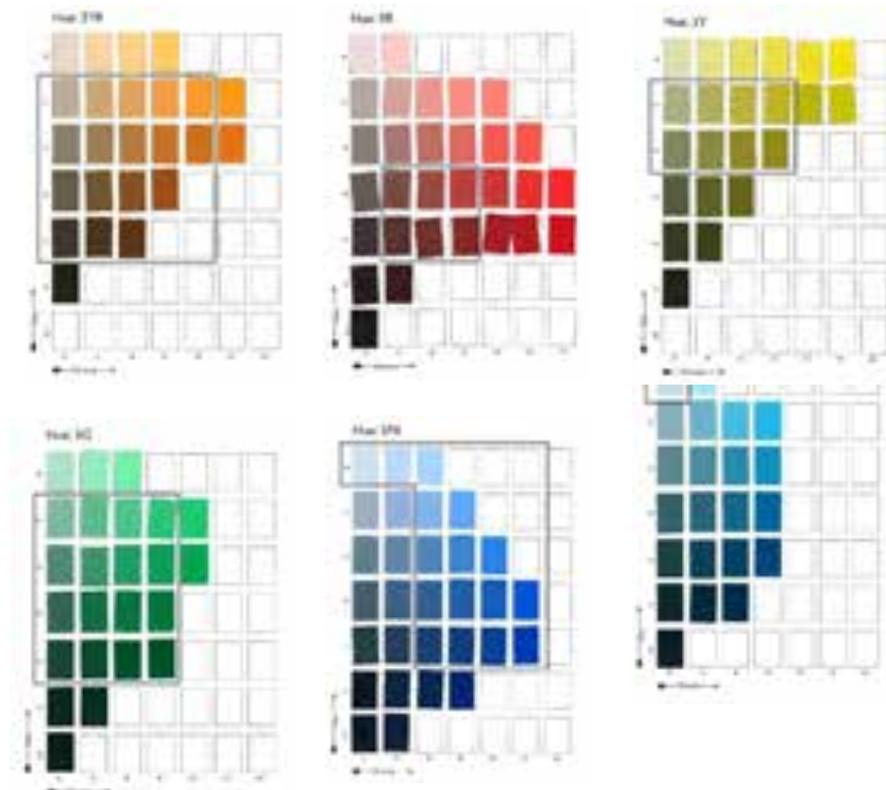


Fig. 10. Munsell Color System hue charts, *The New Munsell Student Color Set: Fifth Edition*



Fig. 11. Close-up of trencadís to see hues, Casa Batlló, Barcelona, Spain, 1877



Fig. 12. Close-up of trencadís to see hues, Casa Batlló, Barcelona, Spain, 1877

With these observations one can conclude that for the façade, Gaudí chose a few hues, and within those hues he used several variants of that hue to achieve his coloration. The effect of this tactic gives the façade a cohesive look rather than a mismatched one. If more hues had been used, it would appear overwhelming, but Gaudí found a good balance of color for the trencadís.

The mosaic-work, however, is not a consistent pattern across the façade, but it does have a certain rhythm. The tiles are placed in bunches of similarly colored tiles, spreading into clusters of different colors. The mosaics have the appearance of a foreground, middle-ground, and background, with the high value and low chroma tiles as the background, the mid-value and high chroma as the middle

ground, and the circular extruding tiles as the foreground. These circular tiles are set apart from the others because they are applied on top. They also differ in that they do not consist of just one color, but several. Each of the circular tiles have their own unique composition of color, giving off the appearance of a watercolor painting. These tiles on top of the other *trencadís* pieces make the whole façade look like a painting. Since Gaudí was so inspired by nature, this particular scene seems to come from the depths of the sea, the broken-up tiles acting as swirls of water with the circles acting as bubbles. Tying into this motif is the concrete base with its wave-like sculptural entrance. To complete the façade, like a capitol on a column, is the roof, depicted in Fig. 16-20.



Fig. 13. *Trencadís* on façade, Casa Batlló, Barcelona, Spain, 1877



Fig. 14. Watercolor-like technique of the *trencadís*, Casa Batlló, Barcelona, Spain, 1877

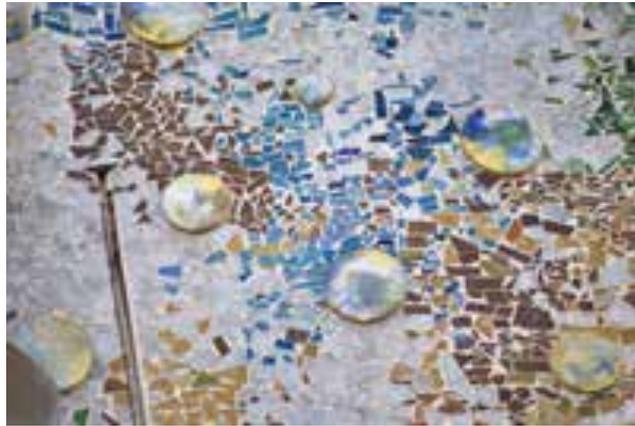


Fig. 15. Close-up of the *trencadís* showing the fore, middle, and background effect, Casa Batlló, Barcelona, Spain, 1877



Fig. 16. View of façade meeting roof, Casa Batlló, Barcelona, Spain, 1877

The Roof: Painting Analysis

Casa Batlló's roof is the defining feature of the exterior of the building. In keeping with the marine theme, it caps the top with giant colored roof tiles, looking like the scales of a giant sea creature. The "body" of this creature changes color from left to right, each tile subtly initiating the gradual change from a light reddish-purple hue to a vibrant green, using blue as the mediator. The mastery of this gradient is commendable, for Gaudí made it so harmoniously with separate objects acting as one continuous object. Up close one can see the slight nuances between adjacent colored tiles, but from afar they

blend together. Another seamless transition of color Gaudí makes is in the spine of the roof. This element does not stand out in comparison to the rest of the façade because it is a small detail that is easy to overlook, but it should be recognized for the artistry that went into its design and construction.



Fig. 17. View of roof with its body tiles ad spine tiles, Casa Batlló, Barcelona, Spain, 1877



Fig. 18. Close-up of the left side of the roof, Casa Batlló, Barcelona, Spain, 1877



Fig. 19. Close-up of the middle of the roof, Casa Batlló, Barcelona, Spain, 1877



Fig. 20. Close-up of the right side of the roof, Casa Batlló, Barcelona, Spain, 1877

The spine is composed of two different types of tiles, cupped ones that line the curved apex of the roof, and bulbous ones to cover the joints of the cupped ones. Both types are colored, creating another gradient across the roof. However, the gradients are flipped for each type. The cupped ones begin on the left with red and transition through the entire color spectrum to blue on the right, seen in Fig. 17-20. The bulbous ones begin on the left with blue and transition through the spectrum to red on the right.

To analyze the roof through painting, I decided to use oil paints, for their slow drying time to create an even gradient and saturation of color, on a 20" x 48" canvas. For stylistic references I pulled from the work of Surrealists, for Gaudí's works capture this artistic movement with his outlandish compositions, and from Impressionists because his use of color is reminiscent of brushstrokes.

The painting is composed using these two styles, Surrealist and Impressionist, separated by the silhouette of the roof. For the spine I used Surrealist techniques to capture its imaginative quality. The colors of the cupped tiles on the spine are represented by the sky, which moves across the canvas from red to blue, the colors orange, yellow, and green painted along the way to show the full spectrum. The bulbous tiles are represented by the clouds, which also transition through the full color spectrum, beginning with blue on the left to the red on the right. This is where the Surrealist painting technique comes in, for many of their works often contain the smooth blending of

paint to transition between colors. I painted the smoothest gradient of colors for the sky and clouds to show the skill that was needed to manufacture these tiles that flow from one color to the next.

Within the silhouette of the roof is where Impressionist techniques were used through single brushstrokes of color to represent the roof's "body" tiles. This technique was chosen because of the nature of the tiles, being individual elements, but working together for a gradient. The brushstrokes used in my work simulate this technique, a gradient from afar, but if studied closely one can see how each stroke is a different color.



Fig. 21. Analytical painting of the colors used on Casa Batlló's roof, Maria Ory, 2018

With this painting of Casa Batlló's roof, I was able to analyze the range of colors Gaudi used, picking up its slight nuances. It is easy for a viewer to get caught up in the design of the building as a whole and overlook the smaller details, like one colored roof tile slightly varying from the next. Filling a roof with so many colors

might seem daunting, or even crazy, as an old professor of his once called him, but Gaudi did it in such a delicate and seamless manner that it begs the question of why not design this way.⁷

The Light Well

Within Casa Batlló is a central space used for circulation, the light well. This is the main staircase that the residents used when the building was apartments for the bourgeoisie of Barcelona. It is not a typical stairwell like one would see today, for it has Gaudí's unique design touch. The space extends from the second level all the way to the roof, topped with a skylight. The walls of the well are lined with windows, decreasing in size on each increasing level to control light intake. The light is also a major factor for the coloration of the walls. The walls are adorned with blue tiles for the entirety of the well, however, it is not a singular blue.



Fig. 22-23. Sections showing the placement of the light well in the building, Casa Batlló, Barcelona, Spain, 1877

Gaudí worked with the light from the skylight of the well to create another design masterpiece. He used numerous different blues, and as they ascend up the walls, their value decreases and their saturation increases. The bottom blues have the highest value and low

saturation, making them appear almost white, some appearing grey. Working their way up, more value and chroma are added. The reason for this is to balance out the brightness of the natural light coming in at the top. From the bottom looking up, the whole well appears to have the same light blue tiles. When one is at the top looking down, however, the coloration is vibrant with highly saturated blues. Using color and light to create this optical effect demonstrates how complex the characteristics of color are and how it can change the environment of a space, shown in Fig. 24. If one can master these effects, the design possibilities are endless.



Fig. 24. View of light well from the bottom, Casa Batlló, Barcelona, Spain, 1877



Fig. 25. Lower light well tiles, Casa Batlló, Barcelona, Spain, 1877



Fig. 26. Skylight and upper light well tiles, Casa Batlló, Barcelona, Spain, 1877



Fig. 27. Upper light well tiles, Casa Batlló, Barcelona, Spain, 1877



Fig. 28. Upper light well tiles, Casa Batlló, Barcelona, Spain, 1877



Fig. 29. Middle light well tiles transitioning from high to low value, Casa Batlló, Barcelona, Spain, 1877

The Light Well: Painting Analysis

To analyze the light well, I used eighteen 4" x 4" canvases to represent the tiles. To paint them I used acrylic, for ease of color mixing. I set the canvases up in rows of three, six rows in total. I began with the darker more saturated blues and worked my way down to the light blues. Upon closer examination of my photos and notes when painting, I realized how many different shades and tints are present.

Due to the nature of painting, however, the physical actions involved to make the colors I had observed gave me a greater understanding of the colors within the space. I was able to pick up the slightest nuances of whether a tile contained a hint of green or leaned towards a reddish blue. While I was there it was difficult to pick up these differences because of the intense light pouring in, but the camera helped me to filter out some of the glare, allowing me to see the true colors present. It is almost as though the colors are hidden by the light. However, these colors are then exposed when viewed from above. In doing so he reveals color to the viewer, one flight of stairs at a time.



Fig. 30. Analytical painting of the colors used in Casa Batlló's light well, Maria Ory, 2018

Conclusion

Antoni Gaudí designed to capture nature-inspired beauty, bringing color onto the streets of Barcelona. He went about it in a way that was unique to him, transcending the architecture field during his time with his formwork and ability to apply colored elements. The amount of detail that went into every element of Casa Batlló is difficult to fathom because it seems as though a lifetime of work went into it. It was just one of many colored masterpieces. One of his professors upon Gaudí's graduation said that, "I do not know if we have awarded this degree to a madman or to a genius; only time will tell."⁸ The precision and delicacy Gaudí used on his works helps defend the latter, for he was a talented architect that redefined Barcelona, filling it with the color and design it is known for today.

Notes

1. Rainer Zerbst, *Antoni Gaudí i Cornet: A Life Devoted to Architecture*, 7.
2. Ibid., 9.
3. Ibid., 8.
4. Mario Amaya, *Art Nouveau*, 75.
5. Ibid., 76.
6. Renato Barilli, *Art Nouveau*, 36.
7. Rainer Zerbst, *Antoni Gaudí i Cornet: A Life Devoted to Architecture*, 7.
8. Ibid., 7.
9. Fig. 22-23 from Zerbst, Rainer. *Antoni Gaudí i Cornet: A Life Devoted to Architecture*. Cologne: Benedikt Taschen Verlag, 1993.

Concluding Thoughts on Color in Architecture

With the analysis of the four buildings implementing an array of approaches to involve color in their designs, connections between buildings became apparent. The simplicity of the Chapel of St. Ignatius and Cuadra San Cristobal, each only containing a few colors, but with those colors an entire atmosphere of serenity and awe is created, with hue as the facilitator. The architects of these buildings were both inspired by the stimulating nature of paint to spark their color-filled designs. In Casa Batlló and Haus Portois & Fix, both have tiled façades with gradations of color working towards composing movement across the façade. With the light well of Casa Batlló and the baffles of the Chapel of St. Ignatius, the architects both used light in a way that enhanced the space, reflecting it off of the colors to create an effect. All of these connections between building and architect through color demonstrates its influential nature in the realm of architecture.

This research only covers a few instances of color used in architecture, only scratching the surface of the subject. My hope is that architecture begins to open up to the discussion of color further, for it is often the forgotten element. Its qualities are complex in dealing with hues, value, chroma, complements, adjacent color, area, and light. However, color is a challenge I hope architects start to undertake, for if these qualities are fully understood and handled correctly, the outcome is fulfilling.

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