CHROMATIC IMAGINARIES
COLOR CONSTRUCTS THE HUMAN EXPERIENCE
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# CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Statement</td>
</tr>
<tr>
<td>7</td>
<td>Abstract</td>
</tr>
<tr>
<td>9</td>
<td>Essay</td>
</tr>
<tr>
<td>10</td>
<td>What is Color?</td>
</tr>
<tr>
<td>12</td>
<td>Introduction: A World Without Color</td>
</tr>
<tr>
<td>14</td>
<td>History of Color in Architecture</td>
</tr>
<tr>
<td>16</td>
<td>An Interdisciplinary Approach</td>
</tr>
<tr>
<td>18</td>
<td>Color Theory - Scientific Theories</td>
</tr>
<tr>
<td>20</td>
<td>Color Theory - Theories in Painting</td>
</tr>
<tr>
<td>24</td>
<td>Color as an Element of Architecture</td>
</tr>
<tr>
<td>26</td>
<td>Color + Light</td>
</tr>
<tr>
<td>28</td>
<td>Color + Form</td>
</tr>
<tr>
<td>30</td>
<td>Color + Context</td>
</tr>
<tr>
<td>32</td>
<td>The Power of Perception</td>
</tr>
<tr>
<td>34</td>
<td>Conclusion: Chromophilia</td>
</tr>
<tr>
<td>36</td>
<td>Annotated Bibliography</td>
</tr>
<tr>
<td>38</td>
<td>Precedents + Case Studies</td>
</tr>
<tr>
<td>49</td>
<td>Site + Program</td>
</tr>
<tr>
<td>50</td>
<td>Site + Program Narrative</td>
</tr>
<tr>
<td>52</td>
<td>Setting: The Modern City</td>
</tr>
<tr>
<td>53</td>
<td>Site: Industrial Ruins</td>
</tr>
<tr>
<td>54</td>
<td>Program</td>
</tr>
<tr>
<td>58</td>
<td>Chromatic Imaginaries</td>
</tr>
<tr>
<td>70</td>
<td>Works Cited</td>
</tr>
</tbody>
</table>
STATEMENT

Color is a powerful element of our world that uniquely affects the human experience yet is often underutilized in the realm of architecture.

However, through its interaction with light, context, and form, color can amplify spatial intentions, shape perception, and augment the interaction between humans and the built environment.
Paintings by author. Based on collage by Kurt Schwitters.
ABSTRACT

Color is powerful. As a physical element in our world that is created in our minds, it is uniquely visceral yet intangible. Color has objective rules, finite categories, subjective interpretations, and embedded meanings. Color can calm, activate, soothe, shock, welcome, stimulate, and rejuvenate. Yet color is often relegated to the realm of ornament, and its powerful performative properties are underutilized in the realm of architecture. If its unique potential was instead realized, color could be used to communicate emotionally and spatially, subjectively and universally.

The properties of color have been analyzed through scientific investigation and artistic exploration for their spatial, psychological, and emotional effects. In the realm of painting, color is a fundamental way to imply space on a canvas and stimulate response from viewers. Scientifically, color has been the subject of countless studies for its effects on human behavior as well as its physical properties and universal significance.

Theories emerging from these fields can be utilized to create a richer, more intentional relationship between color and architecture. Much more than a coat of paint, color can be used to construct the architectural experience. It can be equated with other fundamental elements, such as form, light, and context, as a tool in the creation of space. Through its interaction with these elements, color can amplify spatial intentions, shape perception, and augment the interaction between humans and the built environment. Emphasizing architecture’s ability to shape the human experience, this thesis constructs a future of architecture where color is fundamental.
THESIS ESSAY
WHAT IS COLOR?

PHYSICS OF COLOR
The modern understanding of color begins with Isaac Newton and his experiments with triangular prisms. In the late 1660s, Newton used a triangular prism to refract white light into its component colors, the full spectrum of the rainbow. He used a second prism to refract the light back together, disproving the previous theory that the impurities in the prism colored the light. Newton proved that light alone was responsible for color. Color is a function of light, each one corresponding to a certain wavelength of radiant energy. Objects do not have color in themselves. Color appears because the surface of the object absorbs some wavelengths of light’s color spectrum and reflects the remaining wavelengths that reach our eye.

PROCESS OF PERCEPTION
The human ability to see color depends not only on these properties of light, but on the processes of the eye that register and relay color stimulus, and the capacity of the brain to process this stimulus as a visual sensory perception. The eye directs visible wavelengths to the retina, where rods and cones translate the physical stimulus into a psychological one. Rods sense light and dark while cones detect color. Humans have trichromatic vision, meaning there are three different types of color sensitive cones which correspond to long, medium, and short wavelengths of light – red, green, and blue, respectively. These receptors then relay the stimulus into the brain through the optic nerve where it becomes conscious vision. This complex physiological-psychological process demonstrates the universal yet subjective nature of color as a physical element of our world that is individually reconstructed and perceived. This duality is what makes color such a unique and powerful element of the human experience.

**Additive Color**
RGB color and the color of light. Created by mixing colored light: beginning with darkness, colored light is added to produces white light when all three primaries are mixed.

**Subtractive Color**
CMYK color and the color of pigment. Results from absorption of light: beginning with white, pigments absorb portions of the white light while reflecting others that we see as the color of the pigment, when all three primaries are mixed the result is black.

Diagram by author, based on theories from *Elements of Color*

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INTRODUCTION: A WORLD WITHOUT COLOR

WHITESCAPES
Color affects various aspects of daily life from mood, to appetite, to heart rate, body temperature, memory, and attention. But what happens when all color is erased? Some contemporary architects have created these types of environments by prescribing to a stripped-down material aesthetic devoid of color and ornament. The result is the idealized minimalist “whitescape” that pervades architectural imagery today. In his book Chromophobia, David Batchelor describes a visit to a stark white, minimalist home:

“Inside this house was a whole world, a very particular kind of world, a very clean, clear and orderly universe. But it was also a very paradoxical, inside-out world, a world where open was also closed, simplicity was also complication, and clarity was also confusion. It was a world that didn’t readily admit the existence of other worlds. Or it did so grudgingly and resentfully, and absolutely without compassion... You really could become lost in this apparently blank and empty white space.”

This depiction is almost dystopian in nature. In this realm of extreme minimalism, the aggressive whiteness stifles the realities of human occupation that is dynamic, chaotic, complicated: colorful. The imagined future dystopias of literature and film are eerily similar. An environment that lacks color becomes emotionless, sterile, and oppressive to individuality.

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continued to design with this precedent of revised history. The idea of purity and order in architecture still lingers today, but the role color played in ancient architecture is largely overlooked.

**Color as Ornament**

Early 20th century masters of modern architecture rejected color as a serious element in the realm of architecture. In Le Corbusier’s early writings in *L’Esprit Nouveau*, an avant-garde publication of art and architecture, he wrote with painter Amadee Ozenfant, he viewed color as a problem in the Purist universe.

> "The idea of form precedes that of color. The form is preeminent, color is but one of its accessories. Color depends entirely of the material shape... Color is coordinated with form, but the reciprocal is not true. We believe, thus, that a theme should be selected for its forms and not for its colors."³

Corbusier denied color’s importance in the construction of space. He placed color in the category of kitsch, along with other “modern forms..."
of degeneration\textsuperscript{14} such as ornament and clutter. He, along with many other modernists, viewed color as a contaminating element of architecture's purity. They did not consider color among other fundamental elements of architecture such as form and light. However, in his later writings on Architectural Polychromy, Le Corbusier seems to change his mind about color. He develops sample books featuring specific colors that he defines as architecturally harmonious in the modern home\textsuperscript{5}. This approach does not dispel Corbusier's lingering distrust of color, as he still very much seeks to subordinate and control its use. Yet it does begin to align the practice of architecture with its contemporary artistic disciplines that were experimenting with color theory during that period.

Harmony and Order

Opposing color's function as decoration, the De Stijl movement emerging from the Bauhaus in 1917 focused on biological, psychological, and visual phenomena that introduced color's influence on spatial perception. With origins in abstract painting, such as Mondrian, the movement advocated for a reduction of elements to pure geometric forms and primary colors. Focused on color theory and practice, the goal was to express harmony and order through simplicity and abstraction. While the movement produced significant theories, manifestos, and images, there was little contribution to built work in the field of architecture and design.

Cultural Critique

The postmodern style was a critique of modernism, rejecting its rigidity and uniformity and criticizing its ignorance of the history and culture of context. The response was exaggerated ornament and reference to historical precedent, and color in architecture took on a new meaning. Architects Ricardo Bofill and Luis Barragan exemplify this shift and their work has become the paradigm for the application of color in the architectural environment. Both architects designed using color as an integral element that responds to the physical and cultural contexts, shifts with natural light, harmonizes with form, and emotes the intentions of the space.

AN INTERDISCIPLINARY APPROACH

THE APPLICATION GAP
While the use of color in architecture has evolved over time, it is still not taken advantage of for its performative properties. Color has been extensively studied in disciplines such as painting, psychology, and physiology and, presently, the specificity of knowledge about color is unprecedented. Yet theories emerging from these investigations are rarely utilized effectively in architecture. Knowledge surrounding the psychological, physiological, spatial, and emotional effects of color has been improving for decades, yet the application gap remains.

OVERCOMING CHROMOPHOBIA
The evolution of the relationship between color and architecture relies on the interaction between scientists, artists, and designers. The theories outlined by artists and effects proven by scientists should be utilized to create intentional relationships between color and other elements of architecture. When its properties are understood, color can be utilized with greater effect. The powerful properties of color should not be feared, but rather embraced for their unique capability to add another dimension to architectural space.
COLOR THEORY

SCIENTIFIC THEORIES

PSYCHOLOGY OF COLOR
In the 1960s, theorists such as Faber Birren began to consider the psychological and physiological aspects of color, writing extensively on human perception and response to color. Birren explained that as a sensory stimulus color permeates every dimension of a person – body, mind, and soul – to trigger reaction, emotion, thought, and memory. Color can have effects that are emotional, synesthetic, symbolic, and associative. For example, a blue color stimulus can trigger thoughts of the ocean and sky – a walk along the beach, the smell of a salty ocean breeze – leading to areas of memory and association activated by the original blue stimulus. These far-reaching associations of color stimulate more than just our sense of sight; they can activate parallel sensations such as touch, smell, taste, and temperature. Color can be perceived as warm or cool, hard or soft, heavy or light, fresh or stale.

PHYSIOLOGICAL EFFECTS
Extensive neurological investigation has determined how the brain physically processes and reacts to sensory information from external stimulus. It has been scientifically proven that the physical waves that each color transmits influences brainwaves, the function of the nervous system, and hormonal activity. Stress research indicates that sensory overstimulation or understimulation can lead to dysfunction in the body. Overstimulation occurs when the brain is overloaded with a surplus of stimuli, such as intense color and graphic complexity, and can increase breathing and pulse frequency, blood pressure, and muscle tension. Understimulation occurs in extreme monotony when the brain is deprived of stimuli and can lead to restlessness, irritability, and difficulty concentrating. The wave patterns of specific colors can also generate physiologically qualifiable effects on the body. For example, the color red has been shown to increase pulse and breathing rates and raise blood pressure while blue calms the nerves and lowers blood pressure. These arousing and soothing effects of color are widely accepted but also depend on many other factors such as hue, amount of color, and its location in space.

HUMAN RESPONSE TO ENVIRONMENT
People are directly connected to the space that surrounds them; the characteristics of which can affect human development, quality of life, and behavior. Scientific study has proven that the human response to the architectural environment is largely based on the sensory perception of color. A space can convey moods and impressions that appeal to human emotion. Color can make a space appear austere, welcoming, sacred, or playful. Color also has a symbolic effect, an ability to convey universal messages that impact behaviors, feelings, thoughts, and actions within a certain space. The color of a space can denote its function in relationship to other areas and determine how people appropriate the space and how they act within it.

Color stimulus triggers emotional, synesthetic, symbolic, and associative response - diagram by author.
Objective Laws
Color theory has been developed by artists over centuries. Some of the most significant color theorists were painters and teachers at the Bauhaus, including Wassily Kandinsky, Paul Klee, Josef Albers, and Johannes Itten. In his book The Art of Color, Itten defines objective laws of color such as contrast and harmony. The value of a color is often determined by its relation to another; therefore, color adjacency and the context in which a color is viewed greatly affects the perception of color. There are many different types of color contrast, such as light-dark, chromatic-achromatic, cold-warm, and complementary contrast. These different contrasts have varying visual effects.

For example, in the case of light-dark contrast a white square on a black background appears larger than a black square of the same size against a white background; the white expands the boundary while the black shrinks within it.

In chromatic-achromatic contrast a pure yellow square on a white background will appear dark, delicate and warm, but on a black background the same yellow appears cold and intense.

Color Harmony
Itten discusses color harmony as another principle that should be released from the subjective realm to imply more than just a “personally” pleasing effect. He defines the concept as the joint effect of two or more colors that creates balance and a symmetrical energy, which can be demonstrated by the physiological phenomena of successive and simultaneous contrast. Successive contrast is the phenomena in which the afterimage of a color will always appear as its complement. For example, after gazing at the color green and closing one’s eyes, a red afterimage will appear. Simultaneous contrast is the propensity of pure colors to shift adjacent colors toward their complements. A gray square in a field of pure yellow will look gray-violet, in orange it will appear bluish gray, in green a reddish gray, and so on. The eye requires all three primary colors, which each complementary pair contains, in order to reach harmonic equilibrium. These phenomena demonstrate the basic principle of harmony derived from Goethe’s rule of complementaries, in which he states that the eye is only satisfied in totality of color - when the complementary relationship is established.

**Color Harmony**
The complementary contrast between violet and yellow hues creates harmonic equilibrium.

**Successive Contrast**
Stare at the green circle for 10 seconds, then look at the outline of the circle next to it. A faint red afterimage will appear.

**COLOR + FORM**

Wassily Kandinsky, who was a painter, theorist, and synesthetic, analyzed the relationship between form and color. He focuses a chapter in his book *Concerning the Spiritual in Art* on the language between these two integral elements of art. He states that form can stand alone but color cannot. A boundless color can only exist in the mind; in reality it needs boundaries of some kind. This interdependent connection creates a mutual influence between form and color. Kandinsky believed that there is an "inner necessity" in the artist and the viewer for harmony of form and color. His extensive explorations of the two led him to associate certain colors with specific forms.

![Kandinsky assigns color to form](image)

For example, an energetic, bright color like yellow deserves a dynamic shape like a triangle; while blue, a soft, deep color, deserves a round form like a circle; and red, an intermediate color, deserves a moderate shape like a square. As one of the first truly abstract painters, Kandinsky used form and color to break away from purely externally expressive art to create deep and powerful work that affects the viewer internally.

**SPATIAL EFFECTS**

These color theories developed in painting also have applications in three-dimensional space. As in painting, pure, highly saturated colors will advance to the foreground, while cool, dull colors recede to the background. Applied in architecture, this spatial dimension of color is amplified by perspective. Color can also be used to influence the perception of spatial proportions. Generally, brighter, more passive colors are experienced as “lighter” and have the ability to expand space, while dark and active colors are “heavier” and can make a space feel smaller. Color has different effects on different surfaces of a space, such as walls, ceilings, and floors. The relationship of the color to each surface can push and pull different elements to manipulate perception of space.

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Color affects perception of depth, proportion, and atmosphere - spatial studies by author

B. Spatial studies by author, color theory inspired by Albers’ Homage to the Square series.
COLOR AS AN ELEMENT OF ARCHITECTURE

THE FUNDAMENTAL ELEMENTS
The means of architectural design can be broken down into three parts: 1) the properties of its elements, 2) the relationships of these elements, and 3) the relationships between elements and the people that perceive them. In order for color to be used effectively in architecture it must be treated as one of these elements. The properties of color and their effects on human perception and response have been outlined previously. Now, in order to apply these theories it is important to consider the relationship between color and other fundamental elements of architecture such as light, form, and context. When color is considered in relationship to these elements, it becomes an integral part of the design and expresses the architectural intention. In order to explore how color interacts with each element, case studies in painting are paired with architectural precedent to demonstrate exemplary application of color and suggest strategies for spatial translation.

1. The Elements of Architecture - each element has properties separate from the others

2. The Relationship Between Elements - different elements come together to form relationships with each other

3. The Relationship Between Elements and the People that Perceive Them - architecture is conceived in the human perception of these elements and their relationship.

The "Means of Architecture" - diagram by author
COLOR + LIGHT
The interdependent relationship between light and color has been proved by Newton and explored in many other scientific and artistic settings. Yet in architecture achromatic, bare spaces are often regarded as optimal conditions for the pure expression of light and shadow. However, color has the potential to amplify the effects of light to create more impactful architecture. Light changes the perception of color and space throughout the day. Monet’s *Rouen Cathedral* series clearly demonstrates this shift in color perception. As light changes every hour, he paints the cathedral with new hues. Luis Barragan’s Casa Gilardi is a classic example of the architect’s emphasis on ‘emotional architecture’. A corridor illuminated in yellow light leads into a room where blue and red surfaces extend from the pool through a hidden skylight above and reflect the natural light shifting throughout the day. The interaction between color and light produces harmonious equilibrium and awakens the viewer’s emotions.


Color + Form

Color theory developed in painting as well as empirical observation of three-dimensional space demonstrates the spatial effects of color. Yet color and form are treated as independent elements of architecture and their mutual influence is not considered. Most often the form of a room or the exterior of a building is designed and then color is applied retroactively with little thought of its relation to the form. However, in Kandinsky’s work, color and form were inherently related. He intentionally paired certain colors and forms to have a specific effect on the viewer. Ricardo Bofill is one of few architects to explore the tension between color and form. In his La Muralla Roja housing complex, he uses bright playful colors to soften the exterior fortress-like design of the building. This relationship of form and color can be further exploited in architecture to construct new levels of spatial meaning.
Composition VIII, Wassily Kandinsky


Color is always viewed in context – adjacent to other colors and materials – and colors influence each other and affect the way they are perceived by the human eye. In architecture, monochromatic color schemes or bare materials are often used to highlight context, such as the view of a landscape or surrounding buildings. Instead, color could be used to amplify and interact with the context. Itten’s work with color adjacency demonstrated the varying effects of color juxtaposed in different contexts. His theories were used by many artists, especially Paul Klee, to add a sense of depth to paintings. There are many examples of these theories utilized in art but few in architecture. James Turrell’s installation work is one of the few, but successful examples of the exploitation of the spatial relationship between color and context. In his “Skyspaces” he frames the sky at dusk and dawn with a light sequence of varying hues. The manipulation of the color of the surrounding surface dramatically shifts the perceived colors of the sky, causing it to appear in unimaginable hues. The relationship between architecture and its context is a powerful one, and can become even more dynamic with the use of color.
The final aspect that must be understood is the relationship between these elements and the people that perceive them. The process of perception and interpretation adds another layer to the architectural experience. Architects such as Steven Holl and Peter Zumthor have mastered phenomenological design, integrating sensory perception and evoking emotion through their work. This theory of phenomenology prioritizes human experience and acknowledges architecture’s ability to impact the human senses to create an experience that is beyond tangible. Steven Holl writes, “A building stands in mute solitude, yet receptive individuals silently perceive the soul instilled in the work.” This powerful dimension of architecture, the “soul” or emotional value of a space, exists through the interaction between form, light, context and the individual.

Together with these elements of architecture, color becomes the ultimate tool for phenomenological manipulation. Color influences perception in a powerful way, affecting not only external spatial perception but internal interpretation of space. Color can distort the perception of scale, volume, and depth. It can also make a space feel warm, cold, open, or stuffy. Through juxtaposition and contrast, color can manipulate the perception of the surrounding context. Whether supportive or counter to architectural intentions, color has the ability to communicate spatially, emotionally, and atmospherically.

CHROMOPHILIA

CONCLUSION
The potential of color in architecture lies in much more than a coat of paint. Color, in its duality, creates a unique opportunity for architects in the manipulation of the human experience. Phenomenological thought combined with knowledge of theory can bring color out of the realm of subjectivity and into the built environment in a purposeful way. Within this environment, color inspires viewers both collectively through universal symbolism and individually through personal associations. Color creates diverse realities that add richness to architecture and elevate the human experience – the essence of what architecture seeks to accomplish.

ANOTATED BIBLIOGRAPHY


This podcast is a sweeping look at color from many different angles – philosophically, scientifically, historically, anthropologically, etc. Beginning with Newton’s experiments with a triangular prism, hosts Abumrad and Krulwich discuss the science of color. They delve into the tangible and constructed nature of color, as it is physical light hitting an object yet the color itself is created in our minds. Endeavoring to demonstrate a rainbow beyond anything that humans can imagine, the hosts use a choir to compare the two by singing each spectrum as a scale. Many different experts join the podcast, such as Jay Neitz, a vision specialist who has successfully cured colorblindness in monkeys and believes he can replicate the method in humans. The podcast ends on a fascinating segment posing the question “Why Isn’t the Sky Blue?” exploring the extent to which color is learned and how the way we learn color affects what we see. This podcast captures the essence of human fascination with color and affirms color as a valid topic to explore. The proven science behind color can become an objective basis for my thesis and support my proposal. The ideas about the constructed nature of color can also offer a path for exploration.


In this book, Batchelor defines ‘chromophobia’ as “fear of corruption or contamination through color.” He argues that in Western culture color is treated as corrupting and superficial. This practice becomes apparent in the many attempts to purge it by assigning it to the domain of “the superficial, the supplementary, the inessential, or the cosmetic.” He is concerned with resistance to chromophobia and considers the works of artists and writers that deal with colors in a positive way. He opens the first chapter with a description of a visit to a stark white, minimalist home. His depiction of the absolute “whiteness” of the interior paints a dystopian picture of a world where inner life is hidden, a metaphor for the inner life of its occupant. Batchelor then explores the causes and reasons behind chromophobia and the ways it manifests in Western culture. He criticizes Le Corbusier’s taming of color as one such example. Corbusier argues that “color is detached from the master narrative of architecture” and whiteness is the aesthetic fantasy. However, later Le Corbusier is forced to address color in his work when he compares architecture to painting. He addresses it in an effort to control it, creating systems of color with supposed logic, order, and universality. This comparison of architecture and painting is central to my thesis. However, my aim is not to control color but to utilize its capacities as a tool for architecture, one that resists chromophobia. Batchelor’s description of the all-white home creates a dystopian image of the trajectory of modern architecture, an image that could become useful in my thesis argument. This book identifies and legitimizes the fear of color in modern times. Batchelor’s examples can help me demonstrate this phenomenon so that I can explain why color has been removed from architecture and venture to reinstate it in a significant way.


This book is a condensed rendition of Itten’s major work The Art of Color. Johannes Itten was one of the greatest color theorist and teachers of modern times. He developed the basic course on color and form at the Bauhaus and then operated his own school in Berlin. Itten defined objective rules and laws of color but also explored its subjective aspects. He believed that color could be released from its “subjective bondage” through knowledge of its objective principles. He eloquently analyzes color through the lens of a painter but does not limit his scope to the artist. He discusses physics, chemistry, physiology, and psychology to demonstrate the intellectual, emotional, and spiritual aspects of color. This book is particularly relevant to my thesis as it describes important concepts of color theory such as successive and simultaneous contrast, color harmony, and color adjacency. Using color theory developed by painters over centuries, I hope to explore how color can be utilized in architecture with the same impact.
Wassily Kandinsky, a Russian painter at the turn of the 20th century, is credited with painting the first truly abstract works. His book, "Concerning the Spiritual in Art," captures his theories, thoughts, and philosophies about painting and art in general. In the first part, "About General Aesthetics," Kandinsky criticizes the general public for reducing art to appreciation of technique and skill and argues that the true task of art is to "harmonize the whole." He also admonishes the idea of "art for art's sake" – when art becomes a commodity rather than an experience – and calls for a spiritual revolution in painting. In his work, Kandinsky strives to move beyond purely external art to create deep and powerful art that affects the viewer internally. Kandinsky then discusses the psychology of color, the language of form and color, and the role of the artist. He states that color produces a dual effect of both a "purely physical impression" and a "psychic effect." The external impression of color is only important because it leads towards an internal effect on the body and soul. As a synesthetic, Kandinsky considered colors as sensations, describing them with tactile terms such as rough, sticky, smooth, hard, and associating them with certain scents and sounds. He states "painting has two weapons at her disposal: 1. Color and 2. Form." Form can stand alone but color cannot, creating an essential connection and mutual influence between the two. The first condition (the color) is subjective and affected by the second (the form). Therefore, form becomes the external expression of the interior meaning. This chapter on the language and form of color is the most valuable chapter for my thesis as it defines an important relationship to explore in the realm of architecture. In painting, color and form are inseparable and it is my goal to translate that connection into architecture. The role of the artist that Kandinsky establishes can be interpreted as the role of the architect – not only to create external effect but to strive for internal impact through their work.


This book is written for architects and other design professionals as a reference and guide for human-centered design. The authors discuss colors as "fundamental elements of our visual perception and environmental experience; they are the substance of how we experience the environment." The book outlines extensive studies of color from psychological viewpoints, to psychophysiological effects, psychosomatics, characteristics of major hues, achromatic environments, the biology of vision, light, and the role of color in specific architectural scenarios. Through scientific investigation color has been proven to have symbolic, associative, synesthetic, and emotional effects on human beings. It is the responsibility of the designer to understand how visual stimulation, its processing, and response produces the best environments for human beings. This book is useful in the development of my thesis as a reference for scientific processes and theories of color perception in the architectural environment. The definition of the "means of architecture" also offers a framework for my argument that color should become a fundamental element of architecture.


This article examines the power of color in architecture through case studies of three different executive residences – the White House, the Pink House in Argentina, and the Blue House in South Korea. Each of the buildings has become strongly associated with a specific color over time. In all three cases, these identities were formed during a period of strong democratic leadership where there was a need for a new beginning, and color became the unifier. Reidel argues that these buildings are defined more by their exterior color than their architectural style, stating that color has the "ability to communicate at a level more basic and universal." Reidel frames the case studies by pointing out that most architects are "suspicious" of color because it often falls under the category of "ornament." Most architects shy away from color because it is considered a subjective decision, unlike more "architectural" elements such as form and program. His intention is to prove that the power of color should not be ignored by architects as it can be an effective tool. Reidel’s points about architects’ apprehension towards color are well articulated and support the central issue I want to address in my thesis. However, my thesis will take the argument a step further by examining how color can become an element of the architectural design process, rather than just a layer of paint.
PRECEDEANTS + CASE STUDIES
Superstudio was a group of architects that was part of the radical architecture movement of the 1960s. Challenging broad modernist visions, they proposed conceptual interventions as architectural collages and argued that ambiguous non-solutions create a new kind of architecture that becomes a political, social, and cultural critique. The Continuous Monument collages use a monolithic gridded system to impose order in an unordered landscape and contrast form, color, and context. This juxtaposition creates an ambiguous tension which allows for plurality of interpretations.


CONSTRUCTED
PERFECT VERSION OF REALITY
PAWEL NOLBERT
2016

Nolbert, a graphic artist, web designer and illustrator, retouches his travel photos and adds colorful insertions to create his "perfect version of reality." He intends these photos to be a commentary on the distorted realities of social media, stating "We construct our reality in our own way. We do that every day on our (social media) and create entirely new ones. These manipulations amplify the spatial and material relationships that already exist in the photo and create entirely new ones. The series blurs the line between reality and graphics and challenges the relevancy of that distinction in today’s constructed world.


As a prolific graphic and typography designer, Bayer produced architecture that was heavily influenced by ideas of graphic design. A student under Kandinsky at the Bauhaus, his work demonstrates the relationship between color and form and reflects ideas of Neo-Plasticism and the De Stijl movement. Focused on aesthetically purified representation, this movement used the basic elements of rectilinear form, straight lines and pure color. These projects for kiosks and small enclosures boldly capture space with planes of color and text, merging the realms of architecture and advertising. These designs are powerful diagrams of architecture distilled down to basic elements of form and color.

LA MURALLA ROJA
CÁSBAH HOUSING PROJECT
RICARDO BOFILL
LA MANZANERA, CALPE, SPAIN
1968


"La Muralla Roja" RTBA. <http://www.ricardobofill.com/projects/la-muralla-roja/>
The austere brutalist form of the building could make the structure seem unfriendly but the bright colors add an element of cheerfulness and give the architecture an inviting energy. The tension between these elements creates a unique balance of rigor and playfulness that attracts people to the space. Color is used strategically to break up the imposing façade and to differentiate the maze of spaces on the interior.

The labyrinth-like design creates layers of walls and form that merge into a colorful collage with the surrounding landscape. Various tones of red and blue were chosen to interact with the surrounding context, to either contrast nature or complement it. The façade is painted with shades of red to contrast with the blue of the sea and sky while some stair towers on the interior are painted blue to blend with the sky as the viewer looks up.

The geometric forms of the building create sharp shadows that appear as if they too are painted onto the structure. As the shadows shift with the sun, they create a dynamic experience in which color changes throughout the day. Subtle changes in paint color of adjacent walls also create the illusion of shadow and depth.

Rising from the cliffs on the coast of Spain, the vertical walls of La Muralla Roja reference the popular architecture of the Arab Mediterranean and the tradition of the Kasbah, a walled fortress structure typically found in North Africa. The plan is based on the geometry of the Greek cross with a maze of walls that create a complex division of public and private spaces. The bright colors challenge the white washed buildings and earth tones of architecture on the Mediterranean coast.
MIT CHAPEL
EMOTIONAL ARCHITECTURE
EERO SAARINEN
MIT, CAMBRIDGE, MASSACHUSETTS
1955

The windowless brick volume masks the undulating brick surface surrounding the interior. The spaces created between these walls allows the moat to seep into the chapel through low arches at the base of the exterior wall. These layers of contrasting material and light create a dynamic fluid form inside what appears to be a monolithic object.

Saarinen’s manipulation of space, light, and material create a spiritual architectural experience. The mysterious qualities of color and light illuminate the walls of the chapel with a silvery glow, awakening the spirit and quieting the mind of the visitor.

Light filters into the chapel through the gaps created when the undulating interior wall pulls away from the cylindrical façade. The surrounding moat reflects blueish light up onto the red-orange brick wall. The contrasting colors create an incredible effect of harmonious light glowing inside the chapel. Another shaft of light enters from a skylight, reflecting bright white light from the altar and shimmering sculpture below.

Red brick is a traditional material in the northeast, and one that is associated with comfort, warmth, and tactility. However, in the MIT Chapel when the brick walls are bathed in natural blue light the material loses its familiarity and transforms and acquires ephemeral, intangible qualities.

The chapel is located in the center of MIT’s campus. The cylindrical shape breaks the orthogonal grid of the campus but contextually aligns with the other brick buildings that surround it. The building is nestled in a forested area but does not interact much with its site. The windowless façade directs the focus inward, the only connection to the outside is the light that filters through.
THE COLOR INSIDE
SKYSPACE
JAMES TURRELL
THE UNIVERSITY OF TEXAS AT AUSTIN
2013

While Turrell’s Skyspaces are site specific they are fundamentally the same. They provide a contemplative space for viewers to perceive their surroundings. The addition of color and light allows Turrell to challenge the universal conception that the sky is blue and creates awareness of the subjectivity of the human reality.

The light sequence frames the sky with different hues and dramatically shifts its color beyond what viewers usually perceive at sunrise and sunset. The circle of sky appears in unimaginable colors by manipulating the context that surrounds it. This phenomena demonstrates the color theory that context informs perception because human beings always see color in context.

An elliptical space with reclined benches directs the viewers focus to the oculus in the ceiling above which is open to the sky. The smooth white plaster of the walls and ceiling creates a pure surface for light to manipulate and the dark basalt benches create a sharp division between the zone of the viewer and the surface for viewing. The sharp edge of the aperture creates an unperceivable division between ceiling and sky that seems to bring the sky down to the viewer.
SITE + PROGRAM
SITE + PROGRAM NARRATIVE

The goal of the thesis is to highlight the spatial, psychological, and emotional effects of color and to explore its relationship with fundamental elements of architecture such as form, light, and context. The vehicle sets up an armature or infrastructure as a datum for manipulation in order to explore and compare different opportunities for color.

The theme of duality - stemming from the human experience of color as both tangible and intangible - is embraced in the expression of the architectural vehicle. The inherent duality of color creates richness and multiplicity of readings, similar to the resonant ambiguity of the experience inherent in art. Mimicking this experience, the relationship between program and site is a collage of real and imagined elements. Aspects of the familiar and fictional are layered to construct the human experience.

SETTING AND SITE
The site is set in an unnamed yet familiar world, creating a recognizable yet unspecific contextual layer behind the architecture. Locating the site in a ubiquitous setting suggests the universal application of the ideas developed in the thesis. The program is rational and mundane to set up a platform for manipulation through color. This programmatic armature reinforces a spatial sequence strategy which allows for the development of a narrative and sets up a series of vignettes.

PROGRAM
As the central mode of representation for the project, the vignettes highlight the experiential and experimental focus of the thesis. Each space constructs human experience and takes a position on the relationship between color and other elements of architecture such as context, form, and light. The phenomenological approach emphasizes users as active participants instead of passive observers of the architecture. The architectural strategy strives for richness in layers of meaning and depth that arise from the spiritual and emotional effects of color and its impact on the human experience.

“I SPEAK OF A COMPLEX AND CONTRADICTORY ARCHITECTURE BASED ON THE RICHNESS AND AMBIGUITY OF MODERN EXPERIENCE, INCLUDING THAT EXPERIENCE WHICH IS INHERENT IN ART. ... I WELCOME THE PROBLEMS AND EXPLOIT THE UNCERTAINTIES. ... I LIKE ELEMENTS WHICH ARE HYBRID RATHER THAN “PURE”, COMPROMISING RATHER THAN “CLEAN”, ... ACCOMMODATING RATHER THAN EXCLUDING. ... I AM FOR MESSY VITALITY OVER OBVIOUS UNITY. ... I PREFER “BOTH-AND” TO “EITHER-OR ... AN ARCHITECTURE OF COMPLEXITY AND CONTRADICTION MUST EMBODY THE DIFFICULT UNITY OF INCLUSION RATHER THAN THE EASY UNITY OF EXCLUSION.”

- ROBERT VENTURI
COMPLEXITY AND CONTRADICTION IN ARCHITECTURE
"Constructed", Pawel Nolbert

"The Continuous Monument", Superstudio
Technology has created an automated world, with an easy, user-friendly interface. There is little friction in daily life, with everything at the touch of a button and the world at your fingertips. All experience can be absorbed through a screen, so urbanites no longer need to participate in the realities of their environment. They belong to the groups they join and have unprecedented means of communication, but they generally rely on secondary relationships in daily life. This automated environment emphasizes rationality and the importance of individuality, revolves around materialism, and operates on anonymity.

**SETTING: THE MODERN CITY**

A cluster of tall buildings rises up, concentrated on the flat land in the center of a valley. The gridded street system extends from the center for miles, its checkered pattern of wide and narrow streets interrupted only by a network of highways. In the area surrounding the center, a blanket of low rise housing fills in the grid. Along the wider arterial roads structures rise and extend to promote commercial and industrial functions. Yet many of these structures have been emptied and abandoned over time. The digital revolution has rendered them obsolete, their past function now performed by websites and warehouses.

The once-booming print factory... Has now become a ruin of industry.
In this modern city, on the fringes of the urban core, lies the site. An abandoned print factory that once fed urban society with news, art, opinion, and entertainment, now sits vacated and neglected. The physical structure and remnants of machinery are the only parts that have endured through the age of digital capitalism. The presses no longer churn out saturated pages for mass consumption. The products of these presses have now become artifacts of an analog age.

As an armature for manipulation, this ruin of industry offers a unique opportunity to test and demonstrate the theories developed in this thesis. Physically, the structure offers unique spatial configurations that can be reimagined to impact the human experience. The factory was designed to accommodate machinery rather than human occupation and therefore contains unusual residual spaces as well as exaggerated scale. As an artifact of the past, the building also acquires a romantic and mysterious atmosphere. The saturated interventions bring the analog experience of color back to the factory in a new way, reviving it with the very substance it once produced. Metaphorically, the plight of the factory parallels the narrative of architecture as it evolves in the digital age. To restore the relevance of what is left behind, the focus must be on human experience, the essence of architecture.

SITE: INDUSTRIAL RUIN

Existing abandoned factory - photographic base for vignettes:

Within the industrial ruin a series of interventions constructs a sequence of spaces through manipulation of form, light, and material and the incorporation of color. The implied movement through space creates a cinematic experience. There is no specific program, although the collective memory of the structure with its layers of time and space suggest current or former uses. The function of each space is purely experiential. Each space demonstrates the visual and experiential phenomena that color can produce in space, so that the architecture becomes a gallery for itself.
A series of spatial interventions within the structural framework of an industrial ruin.

A Diagram by author
PROCESS
The axon represents the industrial ruin in which the colorful interventions are placed. It also acts a key to the spatial sequence. Each vignette can be matched based on its colors within the structural armature. The structure also creates continuity within the vignettes as the concrete material is the same physical material in each collage, which creates continuity and a point of comparison. Concrete acts as the physical structure of the building and the metaphorical structure of the collages. As a neutral gray, the concrete is also malleable based on its surrounding context.
CHROMATIC IMAGINARIES

Each space, represented through montage, takes a position on the relationship between color and architecture. Aspects of the familiar and fictional are layered to construct the spatial experience, mimicking the duality inherent in the perception of color. Emphasizing architecture’s ability to elevate the human experience, this thesis constructs a future of architecture where color is fundamental.
near or far
saturated hues deny depth - pure red wall occupies foreground
COOL INTENSITY
warm hues shift neutrals to their complement - gray concrete is tinged with cool purple hue
Light Wash

ggradation reverses ground of middle tone - gradient shifts reading of objects in the foreground
PIECE OF SKY
shifting purity interacts with complement - pure orange reverberates with sky bringing it down to the viewer
DEEP SPACE

color value manipulates proportion - light, dull color expands depth and width of space
B A T H E

cleansing light reveals purity of form - shadow splits color into its tonal values
HARMONIOUS OPPOSITION
complementary contrast accentuates the natural - cool tones blend with context while red tones emphasize it
analogous colors manipulates perception of middle tone - simultaneous contrast shifts appearance of framed color and tinges concrete with warm hue
CHROMATIC IMAGINARIES: 
COLOR STRUCTURES THE HUMAN EXPERIENCE
NICOLE SAVILLE
WORKS CITED


