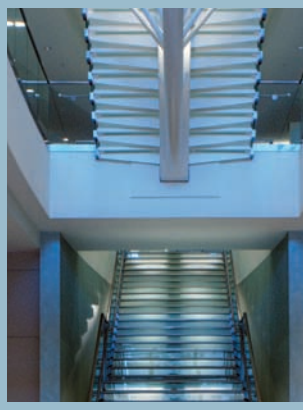
Color Planning for Interiors

An Integrated Approach to Color in Designed Spaces



MARGARET PORTILLO, PhD

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WILEY

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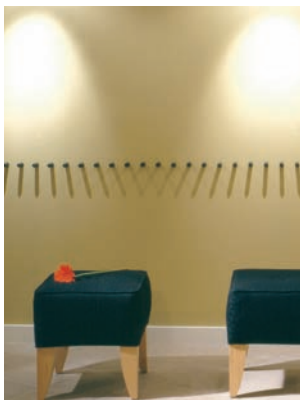

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Introduction

This book is about color in interior design, and it explores several questions: What basic knowledge and applied research inform color planning? How do designers think about color, and what guides their processes? What lessons can be drawn from experienced designers, and how can this information guide future work? Over the years, the answers to these questions have fueled my teaching, research, and experience with color. They form the foundations of this book.

The book speaks to the depth and range of thought involved in designing with color. First and foremost, color must be considered in relation to context: form and light and materiality. Designers also employ color to communicate concepts or images in interior spaces as well as to engage the senses, affect decision making, and, to a certain extent, influence behavior. Further, color in interiors may reflect designers' personal preferences or those of their clients or occupants of the space; other times, market trends, sustainability objectives, and material constraints influence interior coloration. It is my hope that awareness of the color functions framing this book—color as composition, associated meaning, human response, preference, and pragmatics—offers a way to expand the creative vision of designers.

Design innovation can be seen in this book's twenty original projects that illustrate color in design practice (see Table 1-1). These project narratives reveal multiple facets of color and offer a guide for thinking about color by demonstrating critical and creative thinking. In addition to process, the book emphasizes color research from anthropology, art, design, psychology, and marketing. Some chapters also include research notes that

critique the methods, procedures, and findings of studies presented to help the reader become more discerning in evaluating strengths and limitations of applied color research. The need to leverage such studies in the design process is critical to the evolution of interior design as a field increasingly positioned as research-based. The application of research in design also figures prominently in current standards of the Council for Interior Design Accreditation.

Research Foundation of the Book

When I began teaching color theory in an interior design program nearly twenty years ago, a research base on color decision making was practically nonexistent. Little, too, was known about key color qualities that designers think about, or about differences in the treatments of these qualities. To address this gap, I developed the Color Planning Framework from my research and have used its color criteria to organize this book.[1] Over one hundred color criteria, representing five distinct color functions, stem from this study, articulated by leading designers and colorists describing their projects in cities from San Francisco to New York. As a window into the design process, these criteria offer both structure and flexibility in developing color in designed spaces: a solid rationale for color planning and a bar for evaluation.[2, 3]

Organization of the Book

Color Planning for Interiors comprises nine chapters on color theory, planning, and practice. Themes integrating color, lighting, materiality, and architectural form introduced in the first chapter continue throughout the book. To explicitly consider color processes, five obstacles to working with color that often go unexamined and unspoken are described in Chapter 1, which also presents the color planning framework of a contemporary residential project and a reexamination of color in Fallingwater. Chapter 2 presents classic theory and contemporary research on the art and science of color, describing constructions of color meaning, color systems, and color contrast theory. Chapter 3 introduces color perception, color testing, and color illusions that recognize the objective and subjective dimensions of color.

The core knowledge presented in the first three chapters segues into more detailed examination of the color criteria identified in the Color Planning Framework. Chapters 4–8 each address one color function. Chapter 4 examines color as a formal design element, while Chapter 5 centers on criteria for color preference research and color market cycles. Chapter 6 surveys the literature on color symbolism, emphasizing the role of color criteria in developing associative meaning such as

NARRATIVES ON COLOR PLANNING IN DESIGN

Chapter 1

Contemporary Color: Truth-to-Materials

Historic Color: Fallingwater

Chapter 4

Cinnabar: Residential Design

Firehouse Red: Adaptive Use

Kiwi and Tangerine: Workplace

Color Marketing: Model Condominium

Chapter 5

Integrated Color: Workplace

Kinetic Color: Workplace

Chapter 6

Corporate Color: Workplace

Regional Color: Three Resource Centers

Mid-century Modern Color: Workplace

Creative Color: Advertising Agency

Chapter 7

Understanding Color: Korean Luxury Shopping

Gourmet Color: Korean Speciality Market

Big-Box Color: Mexican Grocery

Calming Color: Spa

Healing Color: Neonatal Intensive Care Unit

Wellness Color: Pediatric Clinic

Chapter 8

Educational Color: K–8 School

Chapter 9

Experiential Color: Designing the Aquarium

Table 1-1
Summary of project narratives by chapter

brand identity. The human response to color is the topic of Chapter 7, which discusses the influence of color on arousal, emotion, cognition, and behavior in applied research and in workplaces, schools, and healthcare facilities. Chapter 8 focuses on practical considerations of color related to resources and materials, paying particular attention to color criteria for sustainable design.

Chapter 9 concludes the book by illustrating the way both additive and subtractive color systems create a memorable design experience in a world-class aquarium. The chapter also presents a first-person reflection on the experience of navigating a color-infused interior, revealing the reactions of a new visitor to an inspirational space.

NOTES:

1. Portillo, Integrating Color and Creative Vision: Color Criteria in the Design Process.
2. Portillo and Dohr, "Bridging Process and Structure through Color Criteria."
3. Portillo and Dohr, "A Study of Color Criteria used by Noted Designers."

1

Color Planning Pathways

Think of color as three-dimensional from the start. Color should provide clues as to what you are going to encounter in that environment. Color is the first thing you notice and the last thing you leave with.

—Agnes Bourne, Interior Designer

Color elevates the human experience and transforms space; yet, the process of designing with color can be quite complex and challenging. When challenges to color planning are recast as opportunities for development, designing with color can be optimized and creativity unlocked. This book contains twenty narratives of design projects that reveal the ways designers use color to define form and create meaning while addressing human needs.

For experienced designers, color represents more than a name: red, yellow, or blue. *Hue,* or the family name of the color, simply represents its position on the visible spectrum, while the second dimension of color, *value,* indicates the relative lightness or darkness of the hue. Value defines the position of the hue in relation to black or white

and the amount of light the color reflects. By gradually increasing the black in the color, less light is reflected, thus reducing its value. The opposite is true with white. Value can be gauged both achromatically and chromatically. *Chroma* is the third dimension of color. Also known as *intensity,* chroma defines the relative brightness or dullness of a hue; it represents the saturation level. Consciously considering dimensions of hue, value, and chroma gives designers more liberty to explore the potential of color.

Color planning does not stop with individual colors but necessarily extends to color groupings. Noted color theorist Josef Albers declared that color is the most relative element in art and astutely observed how some colors appear to shift in appearance when placed next to others. Color dimensions are relative to one another rather than absolute. A color that appears dark in one palette, for instance, may be judged lighter in another context, while a hue that appears bright in one palette may appear less saturated among other colors. In addition, color appearance is influenced by factors, such as lighting conditions and texture, that have implications for designing interiors. Color planning is much more than correctly anticipating how a swatch of color will translate an interior space.

The study of color is complex and can be understood in both subjective and objective terms. The subjective response to color is intuitive and varies from individual to individual. The objective response to color is rational and consistent, factual and standardized. Color research and knowledge, however, recognize both objective as well as subjective aspects of this design element. For example, the subjective naming of hues in a rainbow varies by culture, but its light wavelengths can be objectively measured in nanometers. The understanding of objective and subjective dimensions of color has been advanced in the following fields with particular relevance to the design of interiors:

- *Art:* Color interaction and contrast
- *Anthropology:* Cultural and historical color symbolism
- *Design:* Color planning narratives
- *Marketing:* Color and arousal, branding, and product differentiation
- *Physics:* Color and light properties and measurement
- *Psychology:* Color sensation, perception, and response

Challenges of Color Planning

Designers face five challenges to color planning that, while potentially limiting, can be overcome through knowledge and experience (see Figure 1-1):

- *Subjectivity:* Color likes and dislikes
- *Objectivity:* Prescriptive color solutions
- *Conventionality:* Traditional schemes and harmonies
- *Materiality:* Natural coloration of materials
- *Dimensionality:* Visualization and application

Figure 1-1
Challenges to color planning from designers, clients, and users with example colorations

Subjectivity

Perhaps the most fundamental barrier to color planning is too heavy a reliance on personal preferences when designing. Research shows that humans prefer certain colors and tend to avoid others. As beginning designers reach beyond their subjective views of color, their confidence in working with myriad colors and materials grows as they align design intent with project context. Awareness of personal preferences and subjective beliefs about color may not even be conscious. This makes it important to reflect on the following questions: *What colors appear again and again in my own work and in the field? How can innovative and imaginative color palettes be introduced across market sectors?*

Objectivity

If dangers arise from overemphasizing subjective beliefs, other barriers emerge from an overreliance on expert rules. For example, it was reported that a saturated pink, called Baker-Miller pink, subdued aggressive behavior in people being admitted into correctional facilities. Yet what was discovered over time was that prolonged exposure to this intense pink actually increased agitation. When a prescribed color formula is followed blindly, the result may not only lack imagination but also, however unintentionally, negatively affect human behavior.

The problem with one-size-fits-all recommendations is that they fail to account for context. Contextual considerations include the relationship between color and lighting, the influence of color on the amount of time to be spent in an interior, and individual differences in how color is perceived. Like inquiry on any topic, color research varies in quality and usefulness. To determine whether particular research findings should be applied to a design, begin by asking these questions: *Have the researchers carefully reported their methods, procedures, and participants? Have the color testing materials, lighting, and color vision of the participants been carefully controlled? In what types of settings can the findings be applied?*

Conventionality

Another barrier to color planning is an overreliance on conventional color schemes. Traditional color harmonies surface in interior architecture with deadening regularity. While monochromatic, analogous, and complementary schemes, for instance, offer acceptable ways to organize color relationships, an unhealthy dependence on organizational rules blocks creativity. Traditional color schemes often focus on hue. However, all dimensions of color, including value and intensity, should be considered

in relation to space and form. From a color planning perspective, conventional harmonies and schemes offer a beginning point rather than a solution. When developing color directions, consider the following questions to circumvent conventionality: *What is original and unique about the color palette? How is this coloration most appropriate for the design context?*

Materiality

A further challenge is to recognize that materials and finishes, whether glass, granite, or paint, contribute color to interiors. Just as the hues of nature have inspired artists through the ages, introducing natural materials into designed spaces creates a coloration that is often nuanced and complex. Some designers and schools of thought embrace a truth-to-materials stance that celebrates materiality in design. This perspective elevates natural materials over applied color finishes, such as paint. Regardless of the design stance on authenticity, color planning should be approached with intention and purpose. This chapter presents a contemporary and historical narrative illustrating how interior color is created primarily with natural materials that unify and sculpt space as well as convey meaning. Rather than debating whether a painted wall is less authentic than a stone one or not fully considering the impact of materials selection on the overall palette, it is more critical to ask these questions: *Is the natural coloring of materials considered part of the color palette? How do material and finish coloration contribute to the architectural form and interior space?*

Dimensionality

Another challenge is understanding color in three dimensions (see Figure 1-2). Developing color and materials palettes in two dimensions is not as complicated as applying these palettes to three-dimensional space. Sketch models, perspectives, elevations, and floor plans can facilitate visualization of color in the proposed design. Yet anticipating interaction of lighting and form on color placement, and viewing distance, scale, and proportion can be difficult even using the latest digital modeling techniques and physical mock-ups. One colorist I interviewed underscored the importance of careful and analytical observation: "Color expertise comes from experience. Look at color in the plane, where the color will be applied [on wall, ceiling, or floor surfaces], in the appropriate lighting at different times of the day. Consider the viewing distance when designing interior spaces." The coloration of materials can appear to change under different lighting conditions. To optimize the translation to three-dimensional color, consider these questions: *Has color been considered in relation*

Figure 1-2
Translating a color scheme from materials palette to perspective rendering

to form and space from the beginning of the design process? How can the visualization of color be developed through observation, experimentation with multiple media, sketch models, large samples, and mock-ups?

Color Planning Framework

The criteria-based framework presented in this book (see Figure 1-3) addresses five distinct functions of color and illustrates an integrated planning approach by specifically addressing:

- Color as *compositional element,* shaping space
- Color as *communication,* creating meaning
- Color as *preference,* reflecting individuality or market trends
- Color as *response,* arousing feelings and responses
- Color as *pragmatics,* responding to resource parameters

Color as Composition

Working with color compositionally requires objective problem-solving to integrate color, lighting, and materiality. Individual colors also can be understood in compositional terms. For example, a white may be blue-based or red-based. Single colors can vary in the complexity of their composition. A neutral can be mixed from black and white (achromatic gray) or created from a pair of complements (chromatic gray). The complexity of color can be discovered by examining dimensions of hue, value, and chroma.

Further, groupings of colors can be analyzed compositionally. Establishing value relationships is particularly important for relating color to three-dimensional form. Color palettes offer a way to unify the interior with the exterior and can visually connect one interior space to another. Color also can create focal points and camouflage areas within an interior. Key concepts for color composition are complexity, balance, contrast, relationships, interaction, and integration.

Color as Communication

Humans communicate with color and interpret color meanings. Color associations develop the conceptual design and enrich the more objective compositional approach to color. Professor Harold Linton explains, "Color must first convey an expressive meaning that is appropriate to the specific project for which a color solution

is sought; and color and form must be presented to the observer in a manner that achieves visual unity."[1] Expressive color facilitates conceptual development and communicates both overt symbolism and subliminal connections that associate closely with the emotional aspect of color. Key concepts for color communication are identity, concept, ambiance, time, and place.

Color as Preference

Color preferences influence the design process. Designers and clients have subjective color likes and dislikes that shape color planning. Further, individual preferences can be influenced by market trends and cycles where product offerings encourage the selections of current colors and finishes. Key concepts for color preference are signature color, personal identity, and market color.

Color as Response

Color influences a range of human responses, from arousal to the ability to navigate complex buildings. The relationship between color and the human response is tangible but not fully understood or empirically established. Key concepts for the human color response include physiological, psychological, and behavioral responses, including spatial orientation and performance.

Figure 1-3
Color planning framework