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## RESEARCH ARTICLE

# Conceptualizing the chromatic experience of environment: Two case studies using the Color Walk method

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## Abstract

Designing the colors of a new neighborhood without a color definition of facades is challenging task. While there is a wealth of research on color perception and architectural color design, tools and methods are needed to understand the chromatic experience of areas. Thus, this case-study research aims to explore the chromatic experience by introducing a new ethnographic Color Walk method. The participants are professionals in the fields of architecture and color. Two voice-recorded and transcribed discussions are examined from two perspectives: the suitability of the Color Walk to conceptualize the chromatic experience of neighborhoods and analyzing the main concepts used by professional participants. The analysis shows that the seven main concepts are: (1) material; (2) light; (3) views in/from/into the area; (4) atmosphere; (5) identity; (6) landscape/nature/landscape architecture; and (7) architecture. Architecture includes four subareas: (a) the color scale of the building design, (b) the color scale of the urban design, (c) the history of architecture, and (d) color trends. The results indicate that the Color Walk method allows conceptualizing how environmental colors are experienced. However, several repetitions are needed to confirm all the concepts. Furthermore, complex facade colors are only one element of the chromatic experience. Thus, other aspects should also be emphasized in environmental color design. The results also show that environmental color design is related to urban design and building design. The findings of this study contribute to existing research by expanding the concepts of urban design to environmental color design.

## KEYWORDS

architecture, atmosphere, color walk methodology, environmental color design, experience

## 1 | INTRODUCTION

The color design of architecture is a demanding task; the outcome of designing includes both the physical properties of the buildings as well as the subjective experience of the

beholder. Environmental color design is even more difficult, because it not only includes the concepts of architectural color design but also the concepts of environment. In environmental color design related to urban planning and urban design, the results are color plans of a city or an

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area,<sup>1–6</sup> color strategies and color principles for historic cities,<sup>7–11</sup> and color-planning methods, means and tools of environmental color design.<sup>12–17</sup> Color plans have been drawn up for various cities, such as Barcelona,<sup>18</sup> Budapest,<sup>19</sup> Moscow,<sup>20</sup> Norwich,<sup>8</sup> Potsdam,<sup>21</sup> and Turin.<sup>22,23</sup> French color designer Jean-Philippe Lenclos and Dominique Lenclos have studied the *Geography of Color* across the world.<sup>24–27</sup>

However, at a detailed planning level, color design for new residential areas differs from color plans for old city centers. In Finnish detailed planning, an urban planner and/or a color designer decide the main color and material principles of a new residential area. The available and useable facade colors are defined with color concepts and a color scale or color palette. In the words of the British architect and color consultant Michael Lancaster, “Colour guidelines are based on the colour character of a place which is expressed either through the predominant materials, such as brick or stone including the roofing materials, or through ‘body colour’ painted on walls”<sup>28</sup> (p. 16). The architect who is responsible for designing the building, applies regulations and suggestions set by an urban designer. In other words, in environmental color design on an urban scale, the color designer rarely has the possibility to decide on the exact final colors for facades and details.

This article describes and analyzes two case studies of Finnish neighborhoods using the Color Walk method. During a Color Walk, professionals from the fields of color and architecture walk along a pre-determined route and discuss their perceptions, experiences, and some pre-given topics. The main factors influencing the perception of architectural color, as described by Fridell Anter<sup>29</sup> (pp. 40–41) and mentioned below (3.2), are the starting points for the discussion. In addition to these points, concepts such as atmosphere and identity of a residential area are included and provided beforehand.

The research questions of this paper are: How can we conceptualize the chromatic experience of neighborhoods using the Color Walk method? What are the main topics drawn from the experience of environmental colors arising from the Color Walk case studies? Thus, this research aims to conceptualize the chromatic experience of environmental colors in order to apply the concepts to the color design of new neighborhoods in urban planning and design.

## 2 | MATERIALS AND METHODS

The research methods of this study are a literature review and a new ethnographic method named Color Walk that was developed by the author. The literature review

(Section 3) outlines the theoretical background of the Color Walk method.

The data is based on two Color Walk case studies conducted in Finnish neighborhoods (Aurinkolahti and Etelä-Hermanni) in 2016 and 2017 respectively and described (Section 4). The residential areas were selected because the design guidelines for the Aurinkolahti area included a highly detailed color plan in which all facades have color options in the NCS color system.<sup>30</sup> (pp. 22–25). In contrast, the design guidelines of Etelä-Hermanni did not contain a color plan but proposed three visual inspiration and color references outlined by urban planners.<sup>31</sup> (pp. 28–30). The recommended hues in the design guidelines are red and yellow, while blue and green are forbidden. In addition, the color guidelines are determined according to the specifications of the building materials and the desired architecture. Furthermore, Aurinkolahti is a new area that extends an older Vuosaari neighborhood, while Etelä-Hermanni is an infill development area. Both residential areas exemplify a high-quality and pleasant built environment with a recognizable chromatic identity.

The preliminary results of the Aurinkolahti case presented at the AIC 2016 conference in Chile<sup>32</sup> encouraged the use of the Color Walk research method to conceptualize the experience of architectural colors. In the conference paper, the Color Walk was linked to a photography method, but after feedback and discussion, the focus turned to the experiences and concepts used by professionals in the Color Walk approach. The photography method was thereafter used as a pre-work tool for on-site route planning.

The empirical material of this study consists of two voice-recorded and transcribed Color Walks. The analysis of the Color Walk was based only on visual observation, not on rigorous color measurement using a colorimeter, spectrophotometer, or color atlas. All discussions on color were highlighted. The two case studies were then analyzed by coding them separately. This first circle of analysis gave descriptive information about the areas and concepts used in two case studies (Section 4). After that, the data were combined, and the main topics were conceptualized by coding (Section 5), followed by a discussion of the results (Section 6) and a conclusion (Section 7).

## 3 | LITERATURE REVIEW

### 3.1 | Walking methods and ethnography

During the urban planning phase, several walking methods were used to gather information about the area and the history of the site. In Finnish urban planning, a *detailed planning walk* is a method to gain knowledge

about the residents and the important characteristics of the place and evaluate the impact of new construction on the areas. The chromatic experience itself was studied using various methods. The purpose of the Color Walk method is to conceptualize the chromatic experience of environmental colors as well as the main topics associated with the experience. Therefore, it differs from the *Chromatic Effects* research method of walking, which examines color in urban environments.<sup>33,34</sup> The purpose of the Chromatic Effects method is to analyze the effects of color on urban space. Another walking method to study the urban landscape, known as *La méthode des parcours commentés*,<sup>35,36</sup> can be called the *Reading Colourscape* research method. This method focuses in particular on developing “a methodology for reading public space and for allowing those who manage the city to generate sustainable forms of inducing meaning to places”<sup>36</sup> (p. 236).

The Color Walk method is influenced by different fields of ethnography. It is an ethnographic method because the researcher prepares the route and is one of the participants during the walk. The role of the researcher is primarily one of moderating the discussion with several prepared questions, rather than being an active interlocutor. In the preliminary research and preparatory visits, the researcher used photography as a tool to “understand” the main elements of a given area. In her book *Doing Visual Ethnography*, British-born ethnographer and social anthropologist Sarah Pink explained that “... the photographic survey as conventionally developed in this work brings elements of material environment together with personal narratives and meanings”<sup>37</sup> (p. 81). In a Color Walk, however, the environmental colors and the environmental color design are relevant to the context, not the personal opinions or preferences of the researcher. In *Doing Sensory Ethnography*, Pink proposed reconsidering the concepts of place and space, stating: “I suggest going beyond a focus on the affinity between the study of the senses and of place-making of place, to consider how the concepts of place and space offer a framework for rethinking the ethnographic process, and the situatedness of the ethnographer”<sup>38</sup> (p. 33).

Walking has often been used as a research method for understanding phenomenological, spatial values and experiences. American philosopher David Macauley defined the idea of walking as “Walking locates the body in place”<sup>39</sup> (p. 7). In this way, experience changes during the walk. In addition, sharing experiences is important: “... walking with others or asking others to represent their own experiences through walking offers an inspiring route to understanding”<sup>40</sup> (p. 3). Different walking methods include the *Walk-along method*<sup>41,42</sup> and the *Walking-interview method*.<sup>43</sup>

### 3.2 | Perception and experience of architectural color

Several concepts are related to the perception of colors and chromatic experience of environment. Indeed, the human chromatic experience is a complex one. According to Swedish color researcher Karin Fridell Anter, the main factors influencing the perception of architectural color include the quality of light, viewing distance, observation angle, surroundings, the observer, size, shape, gloss, and surface texture.<sup>29</sup> (pp. 40–41). Because the colors of the surrounding buildings and environment affect the chromatic experience, Lancaster utilizes the concept of *colourscape*.<sup>7</sup> Portuguese architect and color researcher João Pernão outlines the following concepts that can be used to understand the phenomenological experience of chromaticness of a setting: landscape, townscape, the image of the city, synesthesia, colourscape, the geography of color, color loci, the emotional atmosphere, as well as light and time.<sup>44</sup>

According to Swedish color and light researcher Ulf Klarén, “The human experience of the outside world is continuous, multidimensional, and dynamic. As such, it cannot be described in full. However, what can be described, is how the experience's form and content in principle can be related to different levels of experience”<sup>45</sup> (p. 22). Klarén divided experience into three levels. The first level, categorical perception, is the basic sensory experience of several aspects, such as color, light and space, the perception of hues and shades, contrasts and contours, spatial directions and relationships. The second level, direct experience, refers to the way one learns to interpret the experiences one sees, hears, and feels. The third level of experience, indirect experience, includes the cultural context—such as history, traditions, customs, trends, theories, art, and literature—with which all sensory experiences are related.<sup>45</sup> (pp. 22–24). In a Color Walk all levels occur during the chromatic experience, including cultural aspects (history of architecture and architectural color trends).

### 3.3 | Atmosphere

The atmosphere of architecture has been used by philosophers and architects as a concept to describe both the holistic embodied experience and the characteristics of places or spaces. The Finnish language has a word for mood, “*tunnelma*”, which denotes two senses, a conjunction of expression and feeling<sup>46</sup> (p. 44). Swiss architect Peter Zumthor described atmosphere as the first impression of a place: “I enter a building, see a room, and – in the fraction of a second – have this feeling about it”<sup>47</sup>

(p. 13). Finnish architect Juhani Pallasmaa suggested the following definition of an *experiential atmosphere*:

Atmosphere is the overarching perceptual, sensory, and emotive impression of a space, setting, or social situation. It provides the unifying coherence and character for a room, space, place, and landscape, or a social encounter. It is ‘the common denominator’, ‘the colouring’, or ‘the feel’ of the experiential situation. Atmosphere is a mental ‘thing’, an experiential property or characteristic that is suspended between the object and the subject.<sup>48</sup> (pp. 20–21).

According to German philosopher Gernot Böhme, “Atmosphere is the common reality of the perceiver and the perceived”<sup>49</sup> (p. 20). During the Color Walk, the participants (i.e., perceivers) discussed a subject related to the object: the residential area that includes both the architecture and its environment. Furthermore, according to Böhme, German gardening theorist, philosopher, and art historian Cay Lorenz Hirschfeld stated that the characteristic elements of a region comprise “water, light and shadow, colour, woodlands, hills, stones and rocks, and finally also buildings”<sup>50</sup> (p. 27).

Remarkably, in the discussions of architects and philosophers regarding architectural atmosphere, color is understood as a quality of natural light, as a feature of a landscape, or as a characteristic of a material. In the field of color research, Chilean color researcher Elisa Cordero-Jahr used the concept of *chromatic atmosphere*, “*atmósfera cromática*,” to describe the chromatic atmosphere of architecture or landscape.<sup>51</sup> According to French color consultants France Cler and Michel Cler, and Swiss color researcher and art and architectural historian Verena M. Schindler, the colors and thus the chromatic atmosphere of an area are continuously evolving:

As a chromatic landscape, the atmosphere of any urban space is a process of the on-going construction, de-construction and reconstruction of ‘colour appearance/shadow’ which is performed through and upon buildings, voids, vegetation, and networks of various systems of activities and events, including those of the city’s inhabitants<sup>12</sup> (p. 222).

### 3.4 | The identity of a neighborhood

Color and building materials are essential elements for the identity of a neighborhood. In an old neighborhood

or a city, the chromatic identity evolves over time with different styles, materials, and architectural colors. In contrast, the building process of a new residential area can take 10–20 years. In Finland, urban planners design and define the desirable identity of new neighborhoods and architecture. As a design concept, identity has two meanings. In the detailed plan, the neighborhood embodies a design goal, a desirable identity. On the other hand, identity is a characteristic of the place, the *genius loci*. According to Norwegian architect Christian Norberg-Schulz, light imparts to an environment its primary character<sup>46</sup> (p. 2). He mentioned “*dark light*” as the phenomenon of winter nights when the sky is large and unified<sup>46</sup> (p. 36). Additionally, weather is more important in Nordic countries than in Southern countries<sup>46</sup> (p. 6). Five seasons—winter brown, spring green, summer green, autumn green, and winter white<sup>29</sup> (p. 198)—create a specific and changing seasonal identity in this particular geographical context. In environmental color design, fluctuating natural light can also be used to communicate about the color identity of a space, affecting its chromatic atmosphere<sup>12</sup> (p. 219). Cler et al. described a method in which changing light conditions influence mood and identity of a place. This method uses as main features: materials, distance, light and shadow, natural and artificial light, protection/seduction, and the color identities of cities<sup>12</sup> (pp. 219–222).

## 4 | TWO COLOR WALKS

### 4.1 | Preparatory work of the Color Walk

Before conducting the Color Walks described in this study, the area’s detailed plan, the design guidelines, and the color plan first needed to be familiar to the researcher in order to understand the main design principles, such as information about the local history, the natural environment and landscape, the urban vision of the new cityscape, the new identity of the area, and the description of the desired atmosphere. The color plan contained instructions on architectural colors and the potential color scale.

Second, the researcher visited the areas at least three times in different seasonal, weather and light conditions. The purpose was to gain a bodily understanding of the area and its surroundings. The route of the Color Walk was planned by walking in the area and making visual notes by taking photographs. Photography provides visual information about the area and acts as a tool for planning the route. One purpose was to try to locate crucial spots where the main ideas of the detailed plan, design guidelines, and color plan would be visible. The





**FIGURE 1** Left: Map with dashed line of the route. The walk started at point 2, continued in numerical order to 12, and ended at point 1. Right: View of buildings along the canal, east side of Aurinkolahti, Vuosaari, Helsinki, Finland. Photo: Saara Pyykkö, 2016.

other aim was to identify the places where it would be possible to evaluate the connection of the new area to the surrounding architecture and landscape.

The four to five invited participants were professionals in the fields of architecture and color. The participants rotated in the role of photographer; the researcher, however, introduced the walk and the “rules of the walk”, and also recorded the discussions during the walks. About 10 questions were prepared in advance (a semi-structured interview). The goal was not to criticize the architecture or the architectural or environmental colors; rather, participants were to take on the role of the architect and/or the color designer. The mental atmosphere greatly contributed to a relaxed, yet professional discussion. All opinions and perceptions were encouraged. The participants were promised that they would be anonymized in the discussion analysis and that only the topics addressed would be conceptualized.

## 4.2 | Case Study 1: Color Walk in Aurinkolahti, Vuosaari

Area: East side of Aurinkolahti, Vuosaari, Helsinki, Finland.

Date of the Color Walk: 25th May 2016.

Size of the residential area: For 2400 inhabitants, 40.4 hectares.

Project: Detailed plan and written statement containing the basic design layout, building lines, and planning conditions<sup>52</sup> was approved in 2002 and 2003; The color plan was created by Arkkitechdit Hannunkari & Mäkipaja Oy in 2003<sup>30</sup> (pp. 22–25).

Participants of the Color Walk: Professor Kimmo Lapintie, artist and color researcher Harald Arnkil,

architect Kati Winterhalter, and an anonymous participant.

Language: Finnish.

The first Color Walk of Aurinkolahti started at 10 a.m. on a sunny day and ended at 12 p.m. (Figure 1, left). Participants discussed color from the point of view of their expertise in architecture. They used professional language and concepts, but also descriptive words as well as free association. Despite their professionalism, the participants had personal preferences. One liked chromatic and another achromatic colors. By walking, the participants were able to “read” the built environment and architecture. For example, the facade was sometimes perceived as merely a nice decorative composition, planned as two-dimensional image. Then, contrastively, the colors of several buildings appeared to have been designed in three dimensions with the colors related to the volume. One aim of the discussion was to discuss the ways in which the colors or materials followed the volume. One of the participants on the walk expressed this by saying: “All the buildings have the same volume. Color has a role to play as decorative element, and color has been used to break up the volume of the building.” The participants discussed the design scales of architecture—from urban design to building design—as well as the trends and history of the architecture. For example, they discussed the colors that resulted from the detailed plan as opposed to the design solutions provided by the architects of the buildings. The issue of unity of the area versus variety was one of the topics that arose in the discussion. Color was related to the architecture, in particular, to the color scale and materials of the roofs, facades, balconies, windows, entrances, and wall bases. The grayness of the window frames and other details of the NCS color system’s N-scale (neutral grays) was perceived as cold and “boring” (Figure 1, right). Participants wondered whether



**FIGURE 2** Left: East side of Aurinkolahti, Vuosaari, Helsinki, Finland. Right: Supergraphics have been used at the entrances to facilitate orientation. Another building is reflected in the windows. Photos: Saara Pyykkö, 2016.

the urban planning habit of representing areas from a bird's eye view might also affect the color design in some way. After all, the bird's eye view does not correspond to the human experience of environmental colors. In the design guidelines, the one-story taller brown building in the center left of the photograph was articulated as a landmark of the residential area (Figure 2, left). It is the only building with a brick facade, while the other facades are plastered. However, in the experience of the participants, the color solution of the landmark should have been stronger to support the idea.

The participants compared the architecture of Aurinkolahti to the architecture of other countries, other cities in Finland, and other neighborhoods of Helsinki. They observed the chromatic connection between the whiteness of the older Vuosaari (1960s, 1970s) and the new Vuosaari named Aurinkolahti (1990s). Additionally, the white part of new Aurinkolahti (2003-), named *Bianco*, runs along the coastline continuing the history of white in architecture. Hannunkari & Mäkipaja Architects, the color planners of the new Aurinkolahti, specified three subareas using Italian names: *Bianco* (white), *Sole* (sun), and *Terra* (earth)<sup>30</sup> (p. 24). *Terra* provides a chromatic association with terracotta brown (in the center of Figure 2, left), and *Sole* with yellow (Figure 1, right). *Sole* is also related to the Finnish name of a larger residential area, Aurinkolahti (meaning Sunny Bay). However, the experience of *Sole* was merely whitish, yellowish, and grayish, with small chromatic details (Figure 1, right).

The discussion about the building materials was not only about the chromatic experience of the materials, but also about the limitation that each building material imposes on its potential color scale. Moreover, developers often have contracts with certain building material companies, and architects are restricted to use those building materials. Participants discussed the patina of contemporary architecture and the changes the materials undergo

in reaction to sun and humidity. One of the participants noted: "It's difficult when different materials have the same color, since all materials age differently. After a few years, they will look ill-conceived." Indeed, after only a few years, some highly chromatic materials have already lost their intensity.

As concepts, atmosphere and identity were highly interrelated. In fact, the elements of nature—rocks, trees, the forest, and the Baltic Sea—strongly affect the atmosphere. The participants surmised that the chromatic experience would be totally different in November. With this in mind, one participant explained: "I visited this area during the winter and at a leafless time. The colors worked well, though yellow and gray were too dominant in the white wintertime."

During the walk, the participants emphatically criticized the Color Walk method itself pointing out that the inhabitants of the area should also be interviewed. The residents could have a totally different chromatic experience of their neighborhood. To the participating color and architecture professionals, Aurinkolahti presented itself as a clean, pleasant, and well-planned (perhaps even overly-planned) environment. It felt like the new area in the Asterix comics *Le Domaine des Dieux* (*The Mansions of the Gods*), the well-designed area next to the forest and the sea.

### 4.3 | Case Study 2: Color Walk in Etelä-Hermanni

Area: Etelä-Hermanni, Helsinki, Finland.

Date of the Color Walk: 7th March 2017.

Size of the residential area: For 2500 inhabitants, 47.9 ha.

Project: The detailed plan was approved in 2001, the design guidelines were accepted in 2004 (including color



**FIGURE 3** Left: Participants of the Color Walk. Photo: Harald Arnkil, 2017. Right: Map showing the route. The walk started at point 1 and continued in numerical order to point 15. Due to the cold weather, the route continued directly from point 15 to point 17 and ended at point 1.

suggestions). No color plan, only verbal description of acceptable and non-acceptable colors, and three color references<sup>31</sup> (pp. 28–30).

Participants of the Color Walk: Professor Karin Fridell Anter, associate professor Ulf Klarén, artist and color researcher Harald Arnkil, architect Kati Winterhalter, and artist and architect Kaisa Berry.

Language: Mostly in English, partly in Swedish and Finnish.

The second Color Walk in Etelä-Hermanni started at 9 a.m. on a cold, gray winter day and ended at 11 a.m. (Figure 3). The main difference between the two case studies was the point of view. In the first case, the participants merely talked about color from the perspective of architecture. In the second case, participants discussed the relationships of color and other aspects such as architecture, place, space, views, light, atmosphere, and identity. They talked about color in terms of color nuance, darkness/lightness, warmer/cooler appearance, contrast, nominal color versus perceived color, color connotation, and the impact of buildings being mirrored by neighboring ones. Besides professional concepts, they also used figurative and descriptive language.

The contrast and lack of contrast formed one topic. A challenging situation was the combination of the red-brick facade and the plastered reddish facade. The participants pondered what is a sufficient contrast and what, on the other hand, resulted in a too strong color contrast. In this regard one participant noted: “I think there’s enough contrast and there’s variety, and I can look at it for a long time. If I look at the signal color there, I get tired of it in a few minutes. That’s one reason I think twice about the very strong colors, because



**FIGURE 4** The sequence of spaces and views from point 13 (see Figure 3, right). Photo: Harald Arnkil, 2017.

these small contrasts, many small contrasts together, last longer.”

The building material, its “honesty”, and its scale of colors formed another topic. For example, the question of the base wall, which was a thin and shiny stone attached to the concrete wall, looked and felt fake. On the other hand, brick or stone as building materials were a good choice from a color point of view.

The color solution using yellow has been mentioned several times (Figures 4 and 5, right). If the yellow is greenish, blackish, or grayish, the feeling and impression is cold and unpleasant in the natural light of Helsinki. The discussion also addressed the reasons for some white facades feeling “dirty.” For instance, one of the





**FIGURE 5** Left: The history of the area affects the building design. The new ‘cow house’ resembles the old barn of a veterinary hospital. Right: An old chimney has been left in the area as part of the cityscape. Photos: Saara Pyykkö, 2017.

participants remarked: “When looking at these sorts of whitish facades, I see the third one as being dirtier, and I wonder if it is the facade that is dirtier or if it’s a reflection of something that is opposite.”

The Swedish participants offered a new viewpoint on the atmosphere and identity because they did not know the history of the area. The route was planned to ensure that the participants first observed the area and its relation to the surrounding city, and after that, little by little, the historical aspects (within the area) emerged during the walk. In this second walk, the concepts of atmosphere and identity also were interwoven. Five concept types of identity were highlighted: the identity of nature, such as rocks and old trees; the spatial identity of the place; the spatial identity of the demolished buildings of the veterinary hospital; the spatial and material identity of the existing prison; and the chromatically designed identity of the new buildings. The chromatic identity of the area was related to the colors of the older buildings in the surrounding area and the facade materials of the older buildings within the area. One participant commented: “That building, it’s upside down, because if you want to have black, you should have black at the bottom and then lighter colors going upwards, and it shouldn’t be like this. It’s not—I mean, compared with the one that we found was firmly grounded, this one is trying to fly, but it can’t fly because it’s too heavy.” (Figure 5, left) Participants discussed the reasons for the strong identity of a particular place.

Participant 1: “...a strong identity. ... Now, do you notice that turquoise balcony there? (Figure 5, right).”

Participant 2: “Why is the identity so strong? Can you explain that? What is part of the identity?”

Participant 3: “Because it looks as if it has been planned and built in one go. It has kind of haphazardly, organically developed. I think the color designer or the architects have had an idea, a unified idea, about what to

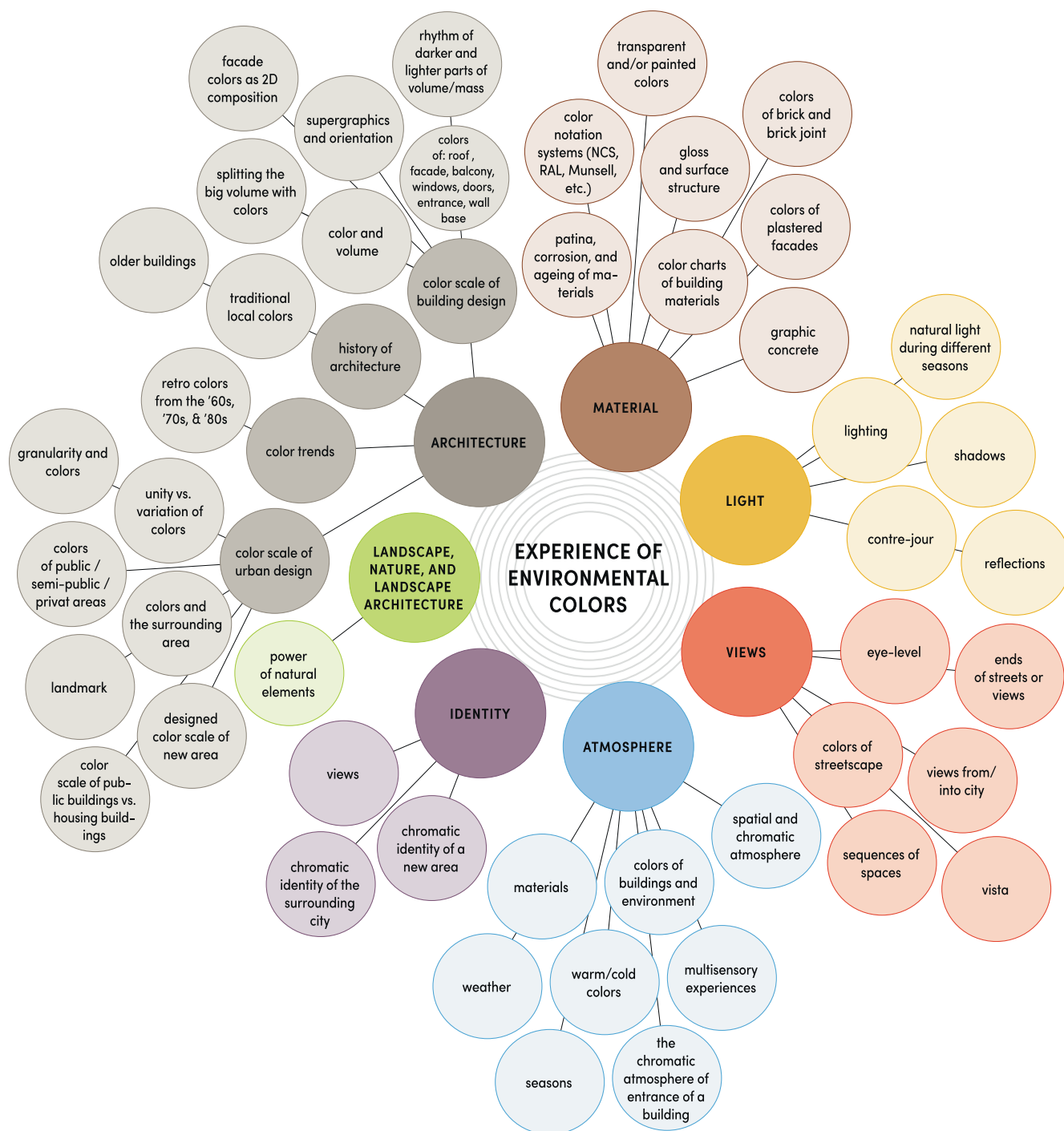
do here. They have been brave enough to carry out that idea to the end, having these really strong signal colors, identity, and forms. I like the rhythm of this very much.”

The concept of atmosphere consisted of various aspects: the spatial experience of the area; the atmospheres that colors evoke; the layers of the history of the area; the quality of the building materials; the natural light and distinct reflections; the views within the area and out onto the cityscape; and the multisensory aspects (such as the coldness of winter, a cold wind from the sea, humidity, the noise of cars from the main street, and birds singing). The previously built elements—a brick wall, a chimney, a large wall made of natural stone, granite stairs, small parks and their vegetation—strongly influenced the atmosphere of the neighborhood (Figure 5). The following quote of a participant concluded the experience of Etelä-Hermanni: “I have not been here previously, but the places are very strong. There are very strong atmospheres in the spots. In that way, it feels very good as a new place.”

## 5 | CONCEPTUALIZING THE COLOR WALK

### 5.1 | The color concepts

For the Color Walk, a list of topics or concepts provided the starting point for discussion and exploration of the ways in which color relates to the experience of environment. However, it did not provide any hints as to which color concepts were essential. As professionals, participants analyzed hue, lightness and darkness, as well as chromaticness. During the walk experience, the color temperature (cold or warm) arose as a fourth main quality. Other concepts that emerged in the discussion included contrast, color connotation, reflections and their causes, and the distinction between nominal color and perceived color. Participants also used figurative



**FIGURE 6** The main concepts of experience concerning environmental colors arising from the Color Walks. Diagram: Saara Pyykkö, 2023. Graphic design: Camilla Pentti, 2023.

and descriptive characteristics such as ordinary, mundane, careful, hesitant, boring, eager, timeless, a very beautiful color, artificial, awful, dramatic, timid, elegant, dull, ugly, wrong-colored, and tacky. The concepts of color harmony and disharmony proved to be superfluous. Furthermore, they talked about their personal taste and feelings with rich, explanatory, and lively expressions.

The results of the analysis of the two case studies (Figure 6) show that the seven most important concepts of environmental color experience are as follows: (1) Material; (2) Light; (3) Views in/from/into an area; (4) Atmosphere; (5) Identity; (6) Landscape/Nature/Landscape Architecture; and (7) Architecture. Architecture includes four subareas: (a) the color scale of the building design, (b) the color scale of the urban

design, (c) the history of architecture, and (d) color trends.

## 5.2 | The main concepts of the environmental color experience

### 5.2.1 | Material

By material is meant all the materials that are related to the built environment and the way these materials are painted, treated, or protected. Here, roughness, glossiness, and surface texture influence the appearance and chromatic experience of the material. The patina, corrosion, and aging of contemporary architecture and the uncontrollable change of colors formed one topic. The materials themselves, such as brick, stone or concrete, have their own possible color scales. The different types of plaster also have their own scales. Thus, different materials have their own “honest” potential. The color of a brick wall consists of the combined effect of the color of the bricks along with the color of the joints. One challenge is to combine different materials such as brick and plaster in one building. If the purpose is to associate two different hues and building materials, the materials should have a sufficiently contrasting hue and lightness, otherwise they will look indefinable. Another challenge is to combine different materials exclusively from a color perspective. Sometimes the intention of the architect was to combine several building materials, but since the materials change and age in varied ways over time, the design looked cheap after only a few years.

### 5.2.2 | Light

Both Color Walks were organized in the morning before noon. For this reason, the concepts relate to a daylight experience and lack an important experience at night. Furthermore, the influence of different times of day, seasons, and weather conditions were missing. Concepts for light affecting the color experience included the quality of light (in Nordic countries), and shadows. Furthermore, contre-jour effects and different types of reflections were experienced (for example, reflections of facade colors, reflections from windows, and the way buildings were reflected in the water of the canal).

### 5.2.3 | Views in/from/into an area

The walk offered views in/from/into the neighborhood. Views from the city into an area and from the area into

the city were felt to be important. Walking as an act provided movement and a diversity of views during the time of the walk. Participants observed the area from different viewing distances and observation angles. The colors of the streetscape and the end of the vistas were valued by the participants. The colorfulness of the spatial sequences opened up during the walk. The most important perceptible elements were at eye level. The experience of the views was related to speed. A car driver and a pedestrian have a different rhythm and time span in which their perceptions are formed. Participants discussed the viewing experience of an inhabitant. What does the view from a balcony with high-chromatic orange glass look like? What is the view from one building to another and to the surroundings like?

### 5.2.4 | Atmosphere

The concept of atmosphere was partly related to the aesthetic qualities of the places, buildings, and neighborhoods, and partly to the participants' feelings and bodily experiences. Based on experience, it was difficult to differentiate between the atmosphere and the identity of a place. For example, spatial and chromatic atmospheres were related to the spatial and chromatic identity. Further, the designed chromatic identity of an area or a block created the respective atmospheric quality. Multi-sensory themes included humidity, wind, cold and warm weather, light situations, the fragrance of flowering cherry trees, the noise of cars, and the song of birds. The feeling of material and materiality was mentioned as an important atmospheric characteristic of the color and building materials. The entrance to the buildings was felt to be warm and pleasant with warm colors. Seasonal aspects, such as the color scale of the environment in summer or winter, the local light, and the color of the sky influenced the atmosphere. Even in the same spaces, there were several different atmospheres depending on the season, light, and weather. The participants also contemplated the concept of atmosphere. Is it possible to plan the atmosphere of an area, or is it something that emerges over time? Is the atmosphere just a perceived attribute of a place, or are residents and people also part of the atmosphere?

### 5.2.5 | Identity

Color is related to identity in many ways. Nature (e.g., rocks, trees), past architecture of the surrounding area, and history all influence the chromatic identity of a place via the color scale and building materials. The

new neighborhood has a newly designed spatial and chromatic identity. The scales of the chromatic identity include the city, the neighborhood, smaller areas, blocks, and buildings. The identity of plazas, parks, and streetscapes is related to their colors and materials. Views of the city and the new area influence the experience of identity. The participants considered which part of the felt chromatic identity arose from the history of the area and deliberated over the designed chromatic identity of the new neighborhood. They also wondered whether it was possible to transfer a certain chromatic identity or traditional local color scale of a country (in the Mediterranean area) to another culture (the Nordic countries) and apply it in different light and weather situations.

### 5.2.6 | Landscape/nature/landscape architecture

Based on the experience of the participants, the natural elements (such as rocks and trees) were impossible to separate from the landscape architecture in the built environment. Therefore, the elements of nature and landscape together with the landscape architecture were grouped into one sub-concept. The gray asphalt roads and pathways, the green grass, and the water of the canal represented the ground level of the landscape. The seasonal elements, such as the blue of the sky in summer and the grayness of winter, affected substantially the chromatic experience of the landscape.

### 5.2.7 | Architecture

The chromatic experience was related to two different types of color design. The first was the color scale in architecture related to building design, such as colors of roofs, facades, balconies, windows, entrances, and wall bases. As the participants were professionals in architecture, they were able to read the architectural and color compositions of the facades as architectural illustrations. If the facade composition was arranged in two dimensions, it felt like a three-dimensional building with unconnected two-dimensional facades. However, if the (color) design was three-dimensional, the color composition would expand around the volume. In the case of larger buildings, they could be divided into smaller parts with a rhythm of darker and lighter tones. The second color scale was related to concepts of urban design. Here chromatic experience was related to an area, smaller sub-areas, blocks, or single buildings. The concept of granularity or urban grain<sup>53</sup> can also be combined with color

design. Then “spatial patterns of different compositional grain”<sup>54</sup> (p.128) or a certain number of buildings with the same volume or size could be of the same color and/or same material. The following concepts were also related to the urban scale: color unity versus color variety of areas, colors of public, semi-public, and private areas, colors of landmarks and public building versus residential buildings, and colors of new neighborhoods in relation to their surroundings. In addition to color scales of urban and building design, the history of architecture presents a chromatic source for contemporary color design, including the traditional local colors. Contemporary color trends are influenced by retro colors from the ‘60s, ‘70s and ‘90s.

## 6 | DISCUSSION

### 6.1 | Results of the two Color Walk case studies

Out of the most important concepts discussed during the walks described above, atmosphere and identity were intertwined and essential to understanding the complexity of environmental color design and the role and meaning of color in the urban environment. This study emphasizes that the concept atmosphere includes both the chromatic and spatial characters of the city, cityscape, landscape, neighborhood, architecture, place, space, or view, as well as the chromatic and spatial experience of the perceiver. In other words, the above concepts explain the components of the *chromatic atmosphere*.

On the scale of urban design, this study reveals two types of *chromatic identity*. The first includes materials and colors of the surroundings with older buildings documenting the history of the area. The second is based on new chromatic, spatial, and material identity created by urban planners and building designers. Nature, weather, and light were experienced as an essential part of the concept of identity in Nordic countries.

The previous walking methods and ethnography were the starting points of developing the Color Walk method. The positive and curious attitude of the participants in their role as walkers, observers, and interlocutors elevated them to the role of co-researchers. Participants considered not only the different scales of color design in urban planning and architectural design, but also issues related to the history of architecture and architectural color trends. During the walk, the background of the professionals and the overall dynamic participation had an impact on the results. Sharing experiences is important as an inspiring source of understanding.



## 6.2 | Suggestions for further research and Color Walk 2.0

This study contains only two case studies, which limits this research and also proposals for future studies. The Color Walk method should be repeated multiple times in the same as well as other areas, countries, and cultures to confirm the concepts developed in this research (Figure 6). The application of the Color Walk to historic districts could generate new concepts of color related to history, locality, architecture, preservation and identity. The two case studies discussed in this paper, which were conducted in daylight, provided some information about the significance of light. The Color Walk could be conducted at different times of day or year and with a different group of professionals. For example, the same method could be applied to walks with lighting professionals to create a “Light Walk” that explores lighting design in the context of urban design.

Using three different languages (Finnish, English, Swedish) was a challenge. Several Finnish professional and cultural concepts were difficult, if not impossible, to translate without lengthy explanations, so they had to be excluded from this study. Several research questions related to environmental color design arose from the participants' discussion, for example, what would be the chromatic experience of a color-blind person in the area and how should it be considered in the design?

Participants also considered the influence of Bauhaus, Rietveld, and (Finnish) architectural education on the colors of contemporary architecture. Since the participants did not live in the area, the chromatic experience of the residents could reveal different results.

There also are a few practical suggestions for Color Walk 2.0. The optimal number of participants is four to five people. If the group is larger and splits into two smaller groups, it is not possible to record the other group's conversations. If the Color Walk method is used to study the influence of urban planning and design, the detailed plan, design guidelines, and color plans should be mentioned when planning the route.

## 7 | CONCLUSION

How could the seven main concepts of chromatic experience be applied to urban design and urban planning? The role of environmental color design in urban planning has been seen in color plans, color documentations of areas and cities, color principles for historic areas, and other color schemes for large areas. Environmental color

design on an urban planning scale is the combination of the colors of architecture and their surroundings as poignantly summed up in Lancaster's *colourscape* concept. Thus, the experience of environmental colors in an urban context involves more than the facade colors. It also includes the colors of nature and the landscape, the natural light on site, the colors of the sky, the colors of the different seasons, and the changing views when walking through the area.

In urban planning and design, if a color plan is not established for an area (in which the colors for each building are determined), other means must be used to control and manage the colors. The first starting point for color design is to specify the chromatic relationship between the existing neighborhood and new residential areas. These areas may have the same color scale and facade materials, representing Lancaster's *body color* of an area. However, the urban designer should consciously decide whether to apply the past *body color* to a new area or create something new. The chromatic specifications and building materials form an effective design tool to connect a new area with the old architecture and cityscape of the surroundings. Another tool is to divide an area into smaller parts using specific colors and materials. This study shows that the *chromatic identity* and *chromatic atmosphere* are powerful design tools in urban design. The *chromatic identity* of a neighborhood is a combination of old architecture and the designed new identity. In the cases of new large residential areas, designed *chromatic identity* is a way to create a *genius loci* and a characteristic atmosphere.

The Color Walk as a research method shows how color design is related to different concepts of building design and urban design and planning. The concepts and tools of architectural color design are more obvious, such as the material colors and color scales of roofs, facades, balconies and other architectural elements. What is new is how urban designing and planning concepts can be combined with color design. Then the design tool is related to colors on different scales, such as the colors of an area, smaller subareas, blocks, and a single building, which could have different color definitions. Another means of color planning is to distinguish public buildings using a different facade color or material. Zones of urban planning (public, semi-public, private areas) can be implied by color. However, these two case studies offered a research environment only for the concepts of contemporary architecture in new neighborhoods. The figure of the main concepts (Figure 6) is designed for free use and can be utilized by environmental color design researchers to spread knowledge about the concepts of the chromatic experience and provide research-based information for designers.

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## DATA AVAILABILITY STATEMENT

The research data are not available due to privacy restrictions.

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