Anchorage, Alaska: Exploring Color in an Urban Frontier

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Abstract

An outstanding winter city can be defined as one that: allows the urban form to respond suitably to a northern environment; reflects the history and culture of the people who have made it their home; and provides a unique sense of place to residents and visitors alike.[1] Many contemporary northern cities aspire to become outstanding cities, yet face the challenge of adapting a sprawling urban form into a dynamic urban experience. Our research uses Anchorage, Alaska, as a case study to explore how color can be considered as one element in a complex design strategy to enhance a city's image.

Problem Statement

Color is integral to the character of cities. A color identity defines and distinguishes urbanity and influences the way in which residents, future residents and visitors will experience the city. Remarkable cities, such as Boston, Mass.; Siena, Italy; and Bergen, Norway, have specific palettes that are essential to their identity. Many contemporary cities, however, manifest themselves physically in standard, formula-driven, easy-to-build architecture that is often bland in respect to color. This mass-produced urbanity contributes to the sense of "placelessness" that these cities, Anchorage among them, must struggle to overcome.

Based on the premise that color can resist placelessness and enrich an existing built environment, this research uses Anchorage as a case study to explore how a complex color plan can be purposely and methodically applied in a large, contemporary urban context.

Purpose

This paper provides a framework for using color as a medium for creating a dialogue between the man-made and natural environments specific to a northern context. It describes the approach we have developed for creating a color plan specific to Anchorage that emphasizes both visual cohesion and diversity. It is presented as a basis for future discussions and decisions about color that could become integrated into

the built form in individual projects or in the creation of an actual color plan. It is hoped that, as a consequence, the thought-provoking nature of this subject matter will permeate the community, create lively debate and impact residents' perceptions of their present city image and what they can envision for its future. It is meant to contribute to the body of knowledge pertaining to color and its role in a large urban context, thereby benefiting other communities interested in addressing the topic of color.

Significance

Color is often considered last in architecture and rarely considered at all in the larger urban fabric. This research is significant because, with an understanding of the color principles applicable to a city, color can assume a more prominent role in the city's future growth, as well as in the coloration of the city's existing urban fabric. This includes the coloration of buildings, infrastructure, public amenities, streetscapes, hardscapes and housing.

Research Approach

Preliminary research included a review of pertinent literature on color theory, color planning, northern design, and on Anchorage's history and the planning process that led to its current comprehensive plan. Next, the existing colors in Anchorage found both in the natural and built environments were surveyed and documented in various seasons and light conditions. The methodology for analysis was developed concurrently with the primary research. The Natural Colour System (NCS) is used as the tool for analysis.

Paper Organization

The first section of this paper provides an introduction to color, color theory, multiple perceptions of color, and various color systems including the Natural Color System (NCS), which was utilized in this project.

The second section discusses the possibilities for using color in architecture and the urban form. By way of example, we describe three cities where their distinctive color profiles evolved slowly over time and fundamentally influenced each city's identity. This is followed by a discussion of the lessons that can be taken from Longyearbyen, a privately owned mining town on Svalbard island, Norway, which received a color plan and new image in the 1980s. Finally, we lay the foundation for selecting Anchorage, Alaska, as a subject to study the potential for a color strategy to enhance a contemporary city's image and discuss the controversial nature of color planning.

The third section provides examples of a color analysis from two sites in Anchorage and show how this type of analysis and information can be used to make color decisions.

We conclude with the methodology we developed and recommend as a basis for thoroughly documenting color in Anchorage and creating a color plan. We also suggest

non-prescriptive and prescriptive strategies that Anchorage and other cities could consider to manage, to various degrees, their color image.

I. Multiple Perceptions of Color

Color is recognized by cognition, which is the act or process of knowing, including both awareness and judgment. Cognition is influenced by perception, and what is important to understand in respect to color is that its perception is influenced in multiple ways, including through the hard sciences, the fine arts, nature and culture. In the book, Colour: Art & Science, multiple perceptions of color are categorized. This section draws heavily from this source. This information is meant to provide a fuller appreciation of the complexity of addressing the subject of color as a visual phenomenon, and a basis for understanding the debate concerning whether color can be addressed objectively or must be left to subjective interpretation.

Color is scientifically understood in the sciences. For example, in physics, color is understood as prismatic light. In psychology it is understood as responses in our eyes and brain. In contrast, color is experienced through pigmentation and as expressive in the arts, as in Picasso's blue period painting, and as phenomena in nature, such as in the array of light emitted in the Aurora Borealis, or northern lights. Culturally, color is understood through language. How we name color influences how we see them. Perhaps it is in architecture that these multiple understandings come together coherently, and bring together these various means of color perception into a complex experience of color in the urban context.

Our understanding of the physics of color has developed during the last 400 years. Refraction of light was understood in context of the rainbow in the 1600s. Then Isaac Newton developed the definition of the optic colors and found white light as a mixture of the spectrum of colors[1]. Closer to our time, color vision was investigated, and the discovery was made of trichromacy, which means that we see color through the mixture of three colored lights. In that sense, Newton's optic color scale becomes challenged.

Culturally, Newton's desire to define the color spectrum analog to the seven tones of the musical scale might have influenced the way we think about color and how we organize them. In defining some colors as base colors, Newton influences the science of color and also art. We look for a particular number of colors in the rainbow, perhaps only because we are taught to do so[2]. Also, the chromatic juxtapositions of color found in modern art, such as the paintings of Josef Albers, is inspired by early 20th Century scientific findings about how color is perceived. In that way, colors are defined by the culture through which we see them.

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[1] While white light is achieved by mixing the colors of the spectrum, in dealing with pigmentation, white is created by removing color.

[2] The number of colors in a rainbow is defined by some to be as few as four to as many as eight. Newton defined the rainbow as having seven colors to correspond to his definition of the color spectrum, which he related to the musical scale (the musical scale having seven notes compared to an octave, where one note is repeated.).

In architecture, the cultural understanding of color can be aligned with science, such as with the traditional farm coloration in Scandinavia. Due to the abundance of red pigments, barns typically were painted this color. White, on the other hand, was far more expensive, and was reserved for the farmhouse. The rare color blue was only found in altar-pieces in churches due to its exclusive character. Only later, in the 1930s, was blue available as synthetic pigment and then used to signify progress in architecture. In that sense, architecture brings together culture, science and the arts in the multiple readings of colors.

Although it can be argued that readings of color are cultural and not universal, we propose that there are ways of perceiving color as a part of the design process. With this project, we create one strategy to help navigate through color choices. In developing our approach, we opted to work with the Natural Colour System (NCS), a perceptual color system that also has a pigment component to it and proves to work well within an architectural context. A number of color systems are used to communicate color information. Each has its advantages and limitations. Selecting the NCS color system above others might identify our biases toward perception and pigmentation. For this reason, and to clarify why the NCS was selected for this project, a description of various color systems follows.

<u>Color Systems: Cultural Biases Reflected</u>

The discrepancy between color perception and pigmentation is evident already in the early 1700s. When Newton identified the seven colors spectrum of light (Image 1)[2], artists quickly followed the scientific development and created their color circles[3]. Claude Boutet's 1708 painter's circle is based on Opticks[4], Newton's color system. However, he switched the color labels 'oranges' and 'violet.' Also, due to the difficulty of matching pigment to Newton's light colors, Boutet added two reds as opposed to Newton's two blues (Figure 2)[5].

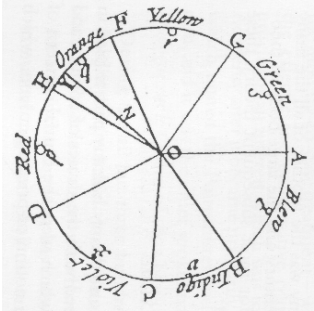


Image 1: Newton's color wheel.

Perhaps most influential in the teaching of colors, the poet Goethe introduced his Farbenlehre, or Theory of Colors in 1810[6]. As opposed to Newton who finds the origin of color in light, Goethe defines color in the polar interaction of light and dark. In parallel with Goethe, the German artist Runge also developed his color system (Figure 3)[7]. In that sense, several theories of color were introduced. Again, the cultural interpretation of color is apparent: Runge insisted on metaphysical relations to colors, claiming that blue referred to God the Father and red to God the Son.

Image 2: Boutet's color wheel with the two reds.

Furthermore, he extended this theory to include gender attributes[8]. In his 1809 diagram, he correlates the ‘cool’ colors violet and blue with the feminine, and the orange and red side of the circle with the masculine. While Goethe and Runge were and, in many ways,still are influential in arts and sciences, many other theories have since developed.

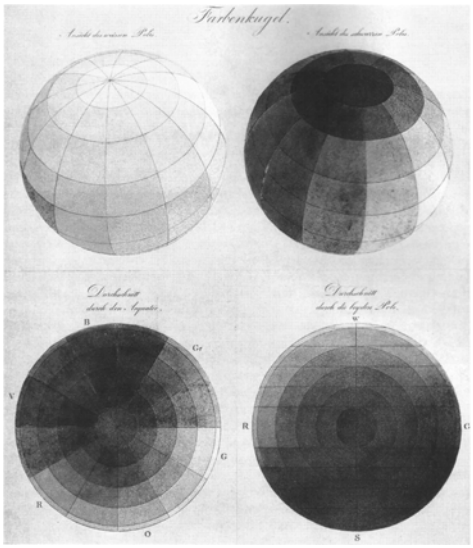


Image 3: Runge's color systems.

The Natural Color System

One of these systems is The Natural Colour System (Images 4, 5, 6, 7)[9]. This system identifies color the way it is perceived. Rather than understanding color in the way it is mixed, or from its originating pigment, NCS takes departure in how the human eye actually sees color. By organizing color numerically in respect to its hue and saturation, the NCS system allows us to move away from the more dominant psychological approach to color and to handle color in terms of physics. This approach eliminates a color discussion that includes color description with personal connotations, such as “apple green” or “plum black”. We can begin, by way of NCS, to use a color vocabulary that is liberated from the emotional descriptions we normally use when describing color.

The NCS is based on a system of six elementary colors: white, black, yellow, red, blue, and green. To define a color within the system, one uses a percentage to indicate the blend of the colors. For example, orange is a visual blend of red and yellow, so the notation for the hue would be Y50R. Another example would be an orange hue that is more red as in Y70R.

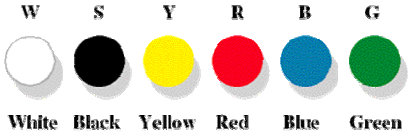


Image 4: The six pure colors are the basis of the natural color system. The natural color notation is based to the degree of resemblance a specific color has to one or more of the elementary colors, which is further clarified in images 5-7.

In addition to being an analytical tool, NCS also has a pigment component, so that the visual charts are readily usable for mixing paint. In that way, there is a direct link between theory and implementation.

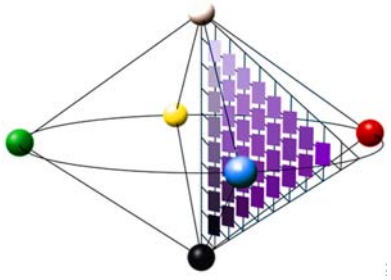


Image 5: All imaginable surface colors can be placed and given an exact notation in the Natural Color System's three-dimensional model.

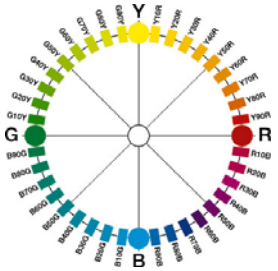


Image 6: The NCS color circle is a horizontal section through the middle of the color space where the four chromatic elementary colors are placed like the points of a compass. Each quadrant between two elementary colors has been divided into 100 equal steps.

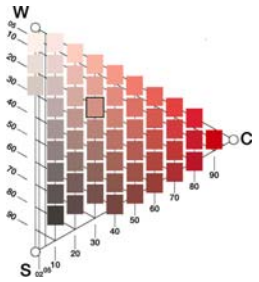


Image 7: This one dimensional image depicts a vertical section through the color space. The base of the triangle is the grey scale from white (W) to black(S) and the apex of the triangle is the maximum chromaticness (C).

II. Color, Architecture and the Environment

Color is central to the identity of many memorable cities. Italy's city of Siena has its name from the raw sienna pigment found in its soil. Siena is also identified by its facades that dominate in a range of yellows[10]. The coloration of the city is influenced by the Mediterranean light as it filters through the buildings' ornamentation to create the great range of shades of yellows (photo source: www.europeforvisitors.com/europe/articles/bls_siena_info_intro.htm).

Image 8: Siena, Italy.

Boston's skyline is marked by the green glass of the modern Hancock Building and the grey and blue of the Prudential, but it is the brownstones that give a distinct reddish brown character to the walking experience and city image (photo source: www.gobostoncard.com).

Image 9: Beacon Hill, Boston, Mass.

Another city with a distinct color identity, which is situated at a northern latitude, is Bergen, in Norway. Not long ago, its building code called for terracotta ceramic tile roofs to create a relatively homogeneous image of the city when approaching by sea (photo source: http://helmer.aksis.uib.no/allc/bergen-f.jpg). While terracotta roofs are no longer required, they still make a tremendous mark on the city's color profile, as illustrated in this photo. On foot, the city is experienced differently. Older commercial structures are painted in ochre and reds. Other parts of the city are also painted in vivid colors – to be enjoyed in the dark season.

Image 10: Bergen, Norway city center.

Usually, cities that enjoy an identity enhanced by a memorable color image developed the image slowly over time. A precedent study valuable to this research is the coloration of the town of Longyearbyen on the island of Svalbard, Norway. Its color image was achieved relatively rapidly, over 10 years. Longyearbyen is a privately owned mining town. The company's board of directors commissioned Grete Smedal to create a color plan for the various buildings and installations. The project took into consideration "the ever-changing light, the extreme climate, the colouring of the landscape, and the great influence the building environments have on the life and well-being of the inhabitants…"[11] Grete Smedal used the NCS in her analysis and application. Her approach was to give each part of town its own unique identity that reflected function. In some instances, building colors were chosen to contrast with the environment while others were blended into the environment. What distinguishes Smedal's work in Longyearbyen is the advantage of a single owner and the latitude to change the color of all buildings. This enabled her to create a comprehensive color plan and implement it relatively quickly. When the first buildings were painted, many inhabitants were skeptical. The overall vision was quickly evident, however, so that the focus on individual buildings and their color was secondary to the total impact of the color plan on the town[12] (photo source: www.home.online.no/~okleven/longyear.html). What also differentiates this case study is the uniform architecture of the existing buildings and the organization of the town, which is not densely developed, and lacks the characteristics of urban sprawl. This means that while the Longyearbyen study is useful in informing this research, another approach is required for more complex urban settings, such as in Anchorage.

Image 11: Longyearbyen, Norway.

Anchorage is a frontier city surrounded by stunning natural beauty. The outstanding setting, however, contrasts vividly with its built form. Its architecture and urban form reflect the history of a young city that has experienced dramatic economic flux, a transient population, and an urbanity designed around the automobile. Anchorage's physical attributes, combined with its dramatically changing northern light, comprise a challenging and inviting framework in which to study urban color.

Image 12: A view of the Chugach mountain range from Midtown, Anchorage, Alaska.

During the planning process that led to Anchorage's comprehensive plan, *Anchorage 2020*, residents articulated a number of urban design goals and objectives. They included: to improve the aesthetics of Anchorage, to design in harmony with the natural environment, to link the city's character to its northern context, to express the distinct character of the city and its neighborhoods and to enforce design standards and guidelines to enhance the economic viability of the city,.[13] There are a number of urban design strategies that could and should be used to achieve the community's future vision. Color is one possibility. The subject of color, however, is often overlooked, neglected and ignored in planning because it is complicated, controversial and difficult to regulate. Still, color exists in our environment and cannot be avoided. As development now occurs, color is controlled by developers, corporations and large land-owners. The local, state and federal governments also influence the coloration of a city through its buildings, installations and public infrastructure. The effect is usually uncoordinated and often discordant. Color planning is a strategy residents can employ to combat these influences and exert control over the aesthetic quality of their community. Anchorage's potential for an urban transformation makes the city an attractive research subject. Its relative youth and sprawling quality will allow for significant infill and redevelopment over the next 20 years. As development and redevelopment occur, Anchorage could provide an interesting case study for continuing observations about the possibilities and limitations of color as a design strategy in a large urban context.

III. Color Analysis Examples

What is exciting about the idea of using color to reinforce a cognitive understanding of place is that the local environment guides the chosen palette and differentiates that palette of colors from those selected in another community. This holds equally true when comparing warm and cold climates communities, and when comparing communities within a region with a similar climate. The conference presentation will include additional visual analysis, but for this paper, we are constrained by the document size to the number of examples we can include.

One variable in these examples is the quality of the digital photographs with which we are working. The light in an image is defined by the camera settings. If this study is used as an aid to select colors for architecture, it can be used as a point of departure more so than a specific guide. Additional methods of color registration are necessary.

Shown here are examples that identify colors in two separate urban conditions in Anchorage. Given the extreme changes of light and weather conditions in northern latitudes, it is particularly interesting to consider a comparison of colors in the summer contrasted with those in the winter. We have chosen to present the colors as a range rather than definite colors, since it enables us to perceive a field of colors rather than specific instance. Historically, a precedent for describing a range is found in Chevreul's 1864 gradation color wheel[14].

Coastal Trail – Summer and Winter

In the summer view looking back at Anchorage from the Coastal Trail, the city is framed in rich tones of green and yellows. Saturated colors in the foreground emphasize the lighter grays and blues in the background. Of the high-rise buildings, the Captain Cook stands out in its yellow tones tying back into the summer landscape.

In the winter image, taken on a clouded day, grays dominate the entire color field. Only minor hues are possible to identify. In the summer image, blues dominate in the background as well as pale coloration in the foreground. In both of these examples from the Coastal Trail, the background colors are blue and gray hues whereas the yellow and red tones are in the foreground.

Images 13 and 14: Anchorage viewed from the Coastal Trail in summer and winter.

Image 15: Coastal Trail summer color separation.

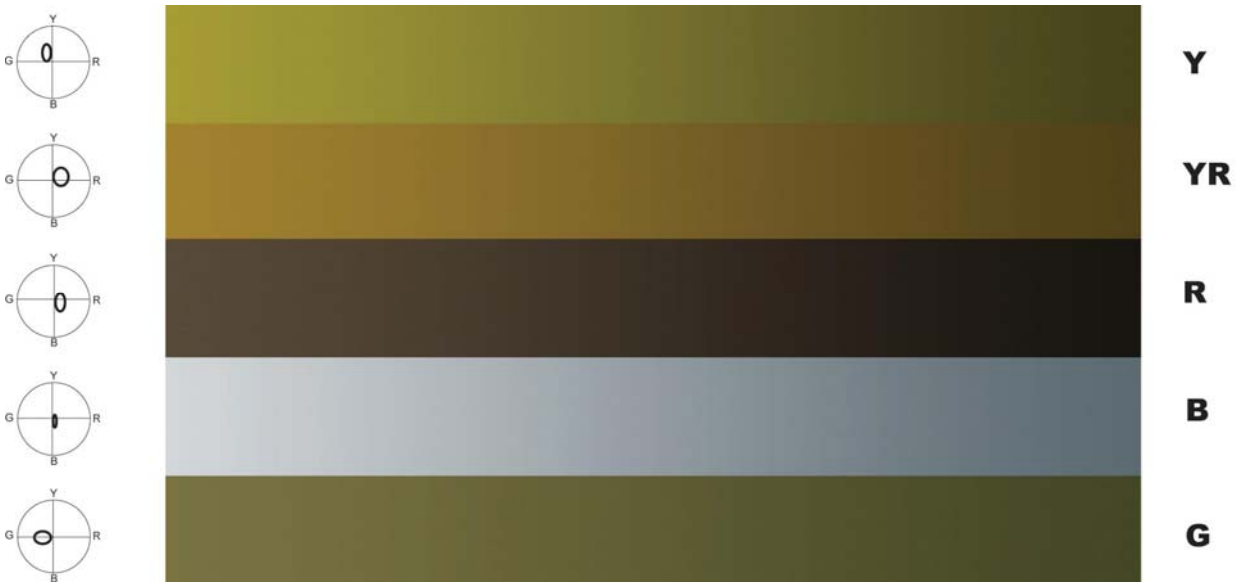


Image 16: Coastal Trail summer color swatches.

Image 17: Coastal Trail winter color separation.

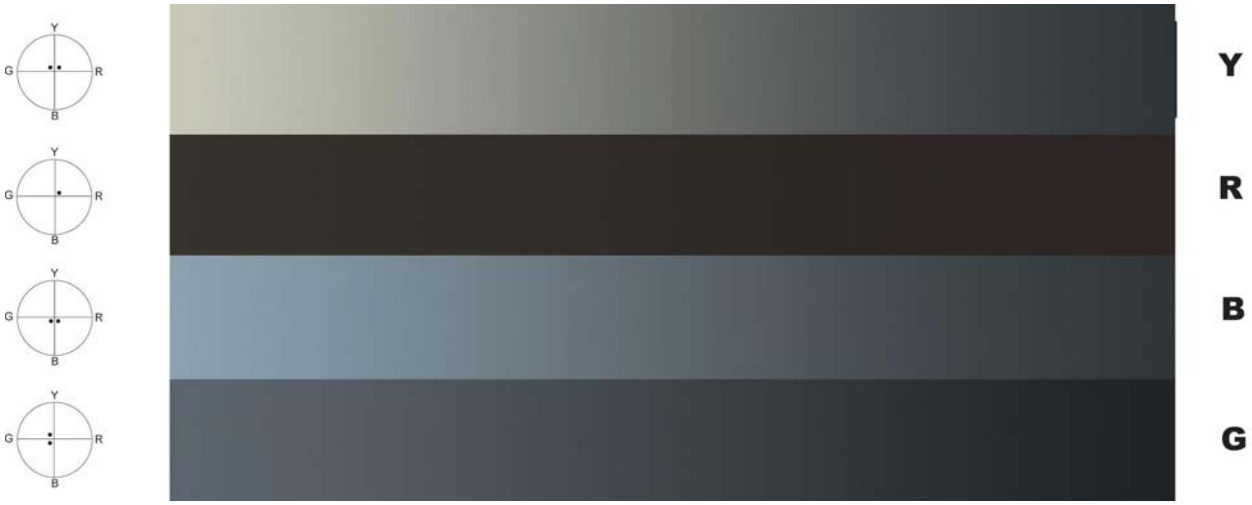
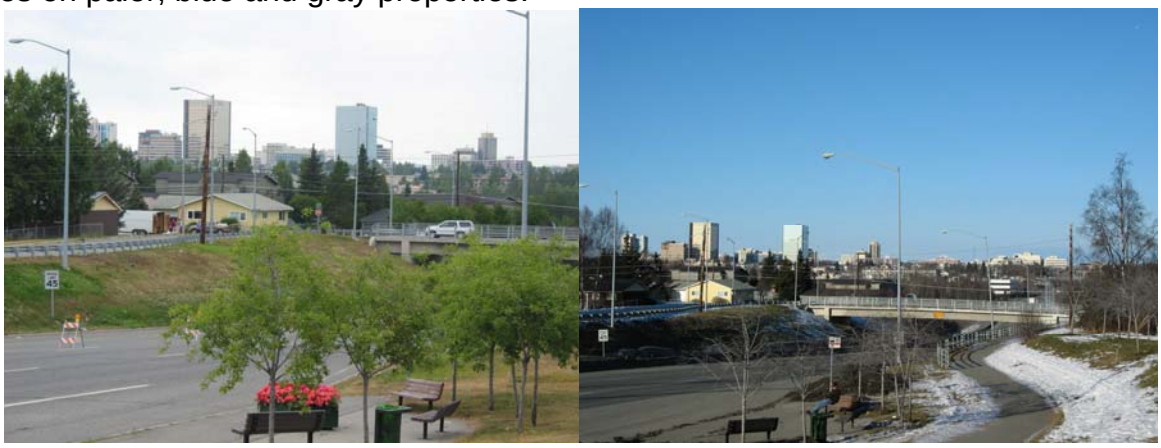


Image 18: Coastal Trail winter color swatches.

Midtown – Summer and Winter

This particular summer afternoon view of Midtown, Anchorage, (with the downtown in the background) shows a full spectrum color range. Most colors are located within the more black-triangle of the color triangle. In that sense, none of the colors stand out and dominate the picture. In the winter image, taken on a rather bright winter day, pale yellows and clear blues are dominating the picture. In these two examples, the color detail, or the foreground, is the most saturated part of the images. The background takes on paler, blue and gray properties.



Images 19 and 20: Downtown Anchorage viewed from Midtown in summer and winter.

Image 21: Midtown Summer color separation.

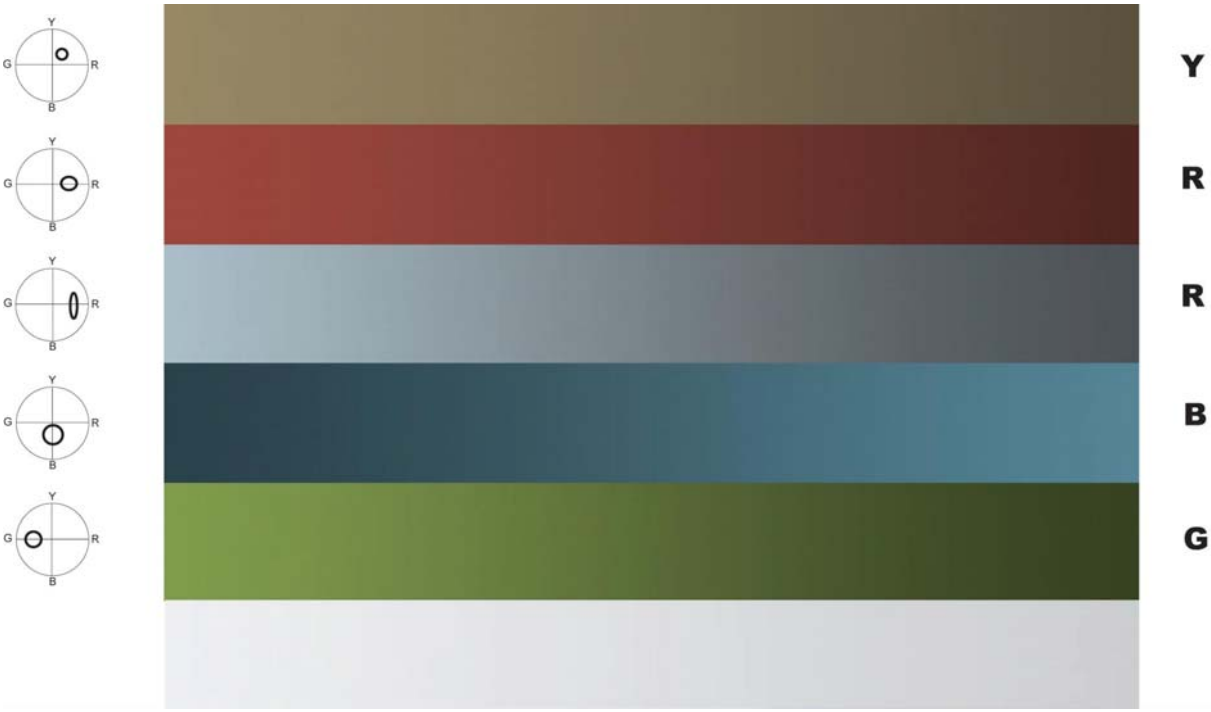


Image 22: Midtown summer color swatches.

Image 23: Midtown winter color separation.

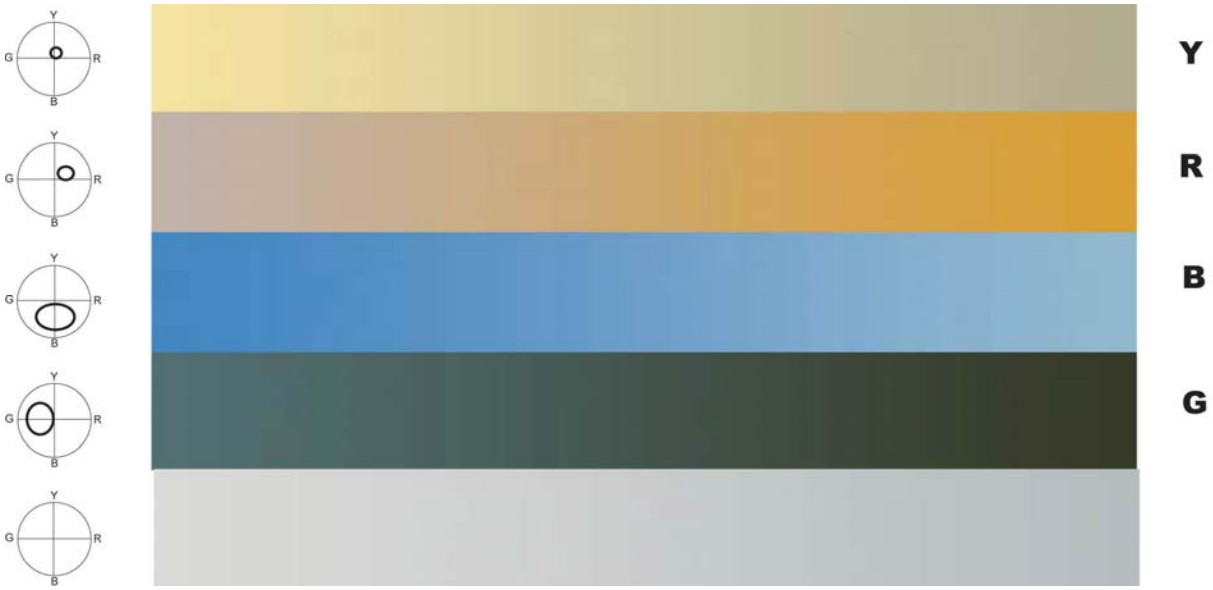


Image 24: Midtown winter color swatches.

Both the Coastal Trail and Midtown summer findings are similar in their saturation, whereas the winter images best illustrate the relationship between light and color. The Midtown picture is taken on a considerably brighter day, with more saturation, whereas the Coastal Trail image is signified by its darker properties.

One of the challenges Anchorage and other contemporary northern cities face is to subordinate the drabness of the grey concrete that is used abundantly as a building material in buildings, infrastructure and even in public amenities, such as in fountains and seating areas in parks. In this example, we show how pigment can be added to change the color of the overpass to create greater harmony with the environment. In this example, we chose a red hue from the summer color analysis shown above, which we believe also fits well into the winter context. This design strategy is used in other places, such as in New Mexico and Colorado, where the pigmentation in overpasses ties the structures into the pigmentation of the soil.

Image 25 and 26: Summer and winter views before changing the color of the overpass.

Image 27 and 28: Summer and winter views after changing the color of the overpass.

IV. Conclusion

In this paper we have provided background information on color theory and the development of various color systems to articulate the complexity of addressing the issue of color. Regardless of its complexity, color exists in urban environments and impacts our daily experiences. In many cities, color is used as an asset and we provide examples that are meant to illustrate this point and inspire a vision of possibilities for Anchorage.

Considering Anchorage's context, we give two examples from urban settings to demonstrate how color registration and NCS could inform future color decisions to reinforce a local vernacular and enhance the city's image. While this work is informed by the Longyearbyen model, a comprehensive color analysis requires a methodology that takes into consideration the additional complexity of a large, contemporary urban context. We conclude here by outlining the methodology we devised to provide a

thorough color analysis to achieve both visual cohesion and diversity in the built form and to create a dialogue between the man-made and natural environments. It involves documenting “perceptual” and “local” color, which takes into consideration background, middle ground and foreground color from a multitude of viewpoints. Following our recommended methodology we suggest non-prescriptive and prescriptive strategies to incorporate color into the built form.

Methodology

1. Color Surveying and the Documentation Process.

   The color documentation consists of two different color groups: “perceptual color” and “local color.” Perceptual Color is the most specific group of colors. They are colors found in and around Anchorage. Local color is identified to emphasize an activity or a particular relation in a specific area. The subsequent explanations and descriptions will expand on these concepts.

   1.1. Surveying Layers of Perceptual Color.
   The process of registering color in and around Anchorage is best described through the example of photography. Imagine using a camera with a great zoom lens with three main settings: background, middle ground, and lastly, foreground.

   1.2. Color Setting or Background.
   At a distance, the image will capture the entire city of Anchorage with its surrounding landscape. When studying the color setting in summer, the mountains appear purple while the hillside is a lush green. This creates a contrasting background to Anchorage’s architecture. We must ask what colors we see in order to describe the background. Are the mountains really purple or is it a shade of brown? In our study, we will situate these colors perceptually by using the NCS system that defines color by their hue as well as their component of black and white.

Image 29: In this example of color setting, Anchorage is dwarfed by the purple-cast Chugach mountain range.

   1.3. Urban Color or Middle Ground.
   Then, still looking through the camera lens, zoom in on a particular section of the city. When the city is viewed from a car driving at a certain speed – or when streets and buildings are viewed as a pedestrian – we are studying the middle ground. Important questions to consider are what colors are found in this environment and how the speed of the car impacts the way in which those colors are perceived.

Image 30: Anchorage in the middle-ground.

1.4. Color Detail or Foreground. With the zoom lens adjusted to the foreground setting, we can distinguish the color details of urban features which, when viewed from a distance, can blend in our perception. For example, we can identify the varied and colorful alpine vegetation that blends in our perception at a distance and causes the Chugach mountain range to appear purple.

The color documentation spans the scale from near to far, from background to middle ground to foreground. In addition to examining colors at the various scales, the color setting, urban color and color details were studied in different seasons to observe how the specific colors operate in the disparate light conditions in Anchorage.

Image 31

Image 32

Image 33

Image 34: The Chugach mountain range at mid-range is accompanied by close-up photos of the fauna in late summer (Images 31, 32, 33).

1.5. Developing Palettes of Local Color.
Local color could identify a cultural aspect (i.e.: an ethnic orientation) or a particular activity (i.e.: airplane activity at Merrill Field). By emphasizing an existing characteristic of place through the use of color, local environments can be enriched.

Image 35: The aircraft at Merrill Field provide color and activity for the neighboring area.

2. Analyzing Surveys

After surveying colors, the NCS system is used to systematize color findings. Here are three parameters that impacted how we registered color:

2.1. Seasonal Parameters.
Anchorage is located at 61° North, where light conditions change dramatically. The light oscillates from five hours of dim daylight at the winter equinox to 21 hours of bright light at the summer equinox. The light quality makes the study of color even more intense.

Substantial changes in climate also impacts surface color. For example, a surface can absorb or reflect light depending on whether it is wet, covered in snow, or dry.

The seasonal parameters lead to several important questions. How does the winter landscape and the summer flora impact the colorization of Anchorage? How does one perceive color differently in the dramatically changing light conditions? Is the blue building the same blue in summer as in winter? Light and color are, as Newton defined, inseparable. Color is a quality of light-waves. Therefore, it was crucial to our research that light and color are studied simultaneously.

3. Scale Parameters.

Using the example of looking at color through a zoom lens, we classify color in background, middle ground and foreground color. In the survey, we separate these three scales of color to identify them in the color taxonomy. The approach to the analytical study contrasts in that we are going to study how these color groups integrate to create a whole. It is known that color adjacency changes perception of color. We study this phenomenon to qualify through specific color identification how color perception changes.

4. Navigational Parameters.

Navigational parameters allow us to perceive color by way of cognition, which is defined as visual form and configuration. A landmark such as the Captain Cook

Hotel would be a typical example of a cognitive navigational building in the urban fabric.

Strategies to Incorporate Color

There are a number of strategies to incorporate color, including non-prescriptive and prescriptive approaches, which could influence the color profile of Anchorage and provide an interesting case study for continuing observations about the possibilities and limitations of color as a design strategy in a large urban context. These include:

- make available the color principles specific to Anchorage's context to the public and design practitioners.
- inform the business community about ways to promote excellent visibility and reduce visual clutter in building signage.[3]
- create voluntary guidelines for color palettes in specific districts, nodes of activity, or for linkages between districts or nodes[4]
- target particular forms such as government buildings, public facilities and infrastructure.
- regulate color palettes in particular districts where the greatest impact is desired, such as in the downtown district or in the Town Centers called for in the comprehensive plan.
- regulate the use of particular building materials. For example, the use of concrete is often limited in Central Business Districts.

Color palettes can offer abundant choices and any guidelines developed should encourage variation. Color palettes cannot supplant good taste, but they can allow color to become a unifying rather than dividing force in an urban environment. Color can, in this way, be used to respond to a number of goals and objectives expressed by Anchorage residents when they envisioned their future city during the *Anchorage 2020* comprehensive planning process. This research was undertaken to contribute to the effort to create a more beautiful and economically viable Anchorage, one where the urban experience provides as much incentive for living in the community as does the accessibility to wilderness experiences. It is also offered to inform other winter communities wrestling with similar aesthetic challenges.

[3] Anaheim, California can be used as a specific example to show how reducing the visual clutter of signage promotes better visibility.
[4] Turin, Italy developed Europe's first color plan when city authorities developed "chromatic paths" to emphasize main and secondary routes through the city.

[1] René Akre, Northern City Design: Celebrating Winter in Anchorage (May 2001), 1.
[2] John Gage, Color and Meaning (University of California Press, Berkeley, 1999), 136.
[3] Ibid., 117
[4] Ibid., 133.
[5] Ibid., 117
[6] Ibid., 170.
[7] Ibid., 171.
[8] Ibid.,.188.
[9] Natural Color System (NCS<http://www.ncscolour.com/engelsk/main.asp?menu=1&main=meny1/page1.asp)>, (December 2003).
[10] Lois Swirnoff, The Color of Cities (McGraw-Hill, New York , 2000), 131.
[11] Grete Smedal, Longyearbyen in Color: Status and Challenges (Eide Forlag, Bergen, 2001), 11.
[12] ibid., 37-39.
[13] Anchorage 2020 Draft Goals and Objectives, Department of Community Planning and Development, Municipality of Anchorage (December 1998).
[14] Gage, *Color*, 206.