The Color of Experience

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As a design principle and element, color often suffers from brief pedagogies in most first year design experiences. An approach anchored in serial exercises and the acquisition of an invariable lexicon often leaves the spirit of color undiscovered in terms of the dynamic experience it brings to surfaces, materials, objects, environments and human engagements. A recently redesigned First Year Program at the Ontario College of Art & Design (OCAD University), places color in the context of culture, environment, and dimension. While color terminology remains intact, it is the introduction of sensory exposures to color in context that will begin to shift color studies away from existing, conventional curriculum to a more engaged and critically aware investigation of this crucial design element.

In an introductory color studio, an attempt to address six distinct programs (Industrial Design, Environmental Design, Graphic Design, Advertising, Illustration and Material Design) may seem daunting as a pedagogical stance, but it is one that deserves attention as color serves as a mediating common ground amongst design disciplines. While it is not the place of any one studio to replace and integrate disciplinary specificity, the proposed course *Color in Context* seeks to afford students an experience of color that crosses dimensions, manifestations, and cultures.

The inclusion of a bias system – cultural, dimensional, and environmental – in a studio framework is pedagogically significant as each bias has haptic dimensions that shape the human experience of color. Climate, geography, light, and topography serve as initial perspectives to situate color in relation to the specificities of different contexts. Yet, the very phenomena we experience as color is both physiological and psychological – it is of the body and the brain. The relationship between the external and internal realities of color is hindered by a static lexicon, and necessitates a shift to a new territory of experiential learning. The integration of a bias system into a more holistic pedagogy of color provides a more relevant experience of color for emerging designers. Beyond the existing lexicon of color terms, the flatness of color wheels, swatches and rubrics of color interaction, is a new approach that is rooted in context. An approach that investigates how our bias to color influences how we interpret, use, and come to understand why our color choices are appropriate, effective and meaningful.

Color in Context challenges students to look beyond the lexicon of color theory and serial exercises to discover the effects of the external world. The construction of a broader, more inclusive point of view, in tandem with an investigation of our internal reality as sensory beings, forms a rich base for the initial and continuing education in color. Using context as the primary filter, a discussion of newly designed projects will interrogate an experiential pedagogy of color that will demonstrate how interdisciplinary links between practices and intrinsic biases foster deeper, more meaningful and relevant practices of color to design outcomes.

A Legacy of Changes

OCAD's first-year color content has, over the past three major curriculum revisions, changed very little. While new color terms, technology and processes have been inserted into existing syllabi, delivery and content have remained intact for fifteen years. In 2002, with the shift of degrees to a Bachelor of Design, when OCAD's most recent curriculum adjustments were made, faculty teaching first year color were asked to join the existing two-dimensional design principles course with the then current color course. This collapse of contact hours and content was necessitated by the need for more room in first and later years for Liberal Arts courses to satisfy BDes accreditation. Prior to this request, color, and two-dimensional design, were stand-alone courses taught over thirteen week semesters. When the two courses merged, color and two-dimensional content were reduced to fit one twelve-week semester. When the newly formed course was mounted, color vocabulary dominated most of the subject matter. The combined *Color and Two Dimensional Design* course contained the following content and topics for students to acquire through 9 to 11 projects in a 12-week semester:

1. Introductory color principles; physics and dynamics.

2. Basic theory of human perception regarding color and form; physiology.

3. A color deficiency/color blindness test; Ishihara.

4. Basic color vocabulary and applied color terminology.

5. An introduction to two-dimensional design; form exploration, spatial principles and vocabulary.

6. An Exploration of color media and methods; serial exercises.

In the fall of 2010, after careful evaluation of First-year curriculum, the Color and Two-dimensional design course was deemed insufficient to address both subjects well. The Curriculum Planning Committee deemed the merged course unsuccessful in terms of developing appropriate color decision-making and two-dimensional design facility. When fourth-year skill sets and basic knowledge were informally assessed, the feedback revealed that many senior students were weakest in two dimensional design skills and applied color practice. Many senior students expressed they had a grasp of appropriate vocabulary and principles, but were unable to choose colors well, and identified this inability to make informed color decisions as problematic. Senior students wished they had acquired relevant, appropriate color understanding and processes to apply intelligently to their design projects. While color terminology was retained, students, more often than not, could not answer the question "why" in the selection or determination of their color palettes for project work. While the language used to describe and give basic parameters to the nature of color was still part of students' vocabularies, their ability to iterate appropriate color decisions was markedly different than their ability to iterate two or three-dimensional form.

This lack of comprehension regarding color was identified as being notable in all design programs at OCAD University: environmental, industrial, material, advertising, graphic, and illustration. Design students identified this lack of color understanding and expressed interest in a studio that took a pragmatic approach to the strategies behind selecting, applying and integrating color. What seemed lacking was a process oriented to the selection of color, not merely its generation and description – students wanted to be able to justify and value their color decisions. In place of a vaguely informed guess of what colors might be appropriate, students need comprehension of the context

and intelligence of color choices in applied design.

A New Pedagogy

As OCAD U progresses in terms of structural and programmatic complexity, the demands placed on design basics are understandably increasing simultaneously – this circumstance presents an opportunity for innovation from within the context of the push and pull of different pedagogical demands. In the face of complex and divergent needs, our understanding of color basics requires a more responsive and immersive delivery to maintain curricular and professional relevance. While the design disciplines at OCAD U still benefit from the flatness of serial exercises with wet media such as gouache or acrylic, a broader set of haptic experiences – both practical and theoretical – need to supplement and expand this beginning.

Two central perspectives constitute the core shift from existing color pedagogies at OCAD U: i) an engagement with the haptic nature of materiality, texture, volume, and the spatial implications of environmental applications of color, and ii) a renewed influence of external biases seen through the lenses of climate, geography, light, topography, and internal biases such as culture, serve to ground color fundamentals in a pedagogical territory far removed from isolating and static lexicons. These perspectives attempt to undermine the privilege given to the eye in color fundamentals. The immediate impact of color on the human senses is at once cerebral but simultaneously haptic.[1] The neurophysiological and psychosomatic effects of color are well documented, playing a large role in hospitality and wellness design.[2] In revisiting a phenomenological perspective to more deeply understand color as an experience rather than a swatch, students from first semester onward gain abilities with color that cross dimensions, media and most importantly disciplines.

The common ground of color pedagogy is not to be seen as necessarily flat in form or lexicon. The common ground for students in design programs regarding color is the need to develop facility with the interpretation and selection of color as an essential design element and principle. The focus of traditions passed into many basic studios in color focus almost exclusively on the isolation of color from its external context. The fundamental nature, or physics of color, and the physiology of its perception serve to distance students from the investigation of what color is as a subjective, not objective experience. Whether looking through the work of Johannes Itten or Joseph Albers, it is clear from the language and sequential nature of these treatises that what is presented is valued for its detachment, and its engagement with a singular lexicon used to describe color as a thing, less so an experience. The seven color contrasts described in Itten's *The Elements of Color* remain useful in their description of a particular physical reality of color, but from the student perspective do they build towards a facility with the selection and evaluation of contextually appropriate color?[3]

While the basic parameters of a Bauhaus-derived approach may remain a valued beginning, it is certainly not an end. Herein lies the difficulty; within the dense frameworks of first year programs how does one carve out yet more space for color beyond what the basic introduction of a limited descriptive lexicon imparts in the current best-case scenario, one dedicated studio. A comprehensive answer is not forthcoming, but initial curricular change and problem definition are beginning to reframe color pedagogy around a common set of learning outcomes across disciplines. These outcomes establish the initial roots of study that can become fertile ground for later interdisciplinary work, and further study in color practice and theory. The initial focus is relevant to three scales of design practice: surface, object and environment. At OCAD U, these scales outline the programmatic areas of

Communication, Industrial, Material, and Environmental Design. As currently defined, the learning outcomes for the course *Color in Context:* upon completion of the studio students will be able to:

1. Apply color through systematic design processes;
2. Employ a basic vocabulary of principles relevant to color as a field of study;
3. Integrate color into surfaces, objects and environments;
4. Identify and respond to contextual issues that shape the perception of color;
5. Document and organize systematic investigations as part of studio practice.

While certain outcomes may seem germane to any first year color studio, it is the integration of systematic expectations in process and documentation (outcomes 1 + 5), with contextual issues (outcome 4) that makes this studio a pedagogical departure at OCAD U. The nature of the contexts under investigation cross the threshold between the external: geography, climate, topography; and the internal: culture, and psychology. At the first year level, this presents a rich and challenging discourse for students to engage – the long-term goal being that the experience is carried forward not only in other studio practices, but also into future color minors and majors at OCAD U. The current courses that will eventually be integrated into *Color in Context* present color as its own context, as self-referential, which makes the linkage between an individual student's particular experience of color, and specific contextual circumstances difficult. Given the diversity of students from different ethnic, educational and geographical pasts, it seems vital to embrace contextual difference as an opportunity for understanding and enrichment, rather than for the delivery of a restrictive lexicon.

The Role of Bias

The curricular opportunity before us needs structure to draw forth what it is that we do when we look at color. How we look is largely shaped by external and internal biases – normative perspectives we accept without real acknowledgement. Before any discourse or project can commence regarding the selection of appropriate colors, students conduct an investigation of personal history and life experiences, thus given the opportunity to recognize how geography, climate, topography, culture and psychology play an important role in our personal color bias. Through the acknowledgement of how these areas of investigation influence us, we learn how to use this knowledge to both employ, and break our biases to make appropriate and informed color decisions. Such an approach covers much ground, but gives structure and personal significance to our relationship with color. Perhaps before we ask what the relationship of one color is to another, we might ask what the nature of the relationship is of one color to ourselves? Any introductory color studio aimed at constructing an accountable, flexible process for students to adapt to their needs must first address the color education students already have when they arrive for their first session. They arrive with nothing short of expertise, though short on vocabulary, and also lacking an understanding that they have built-in preferences for color that belong as much to their experiences as to their environment.

Geographic Bias

Physical location on the planet plays a large part in the foundation of a geographic bias, as geology, vegetation, wildlife, patterns of historical development and succession all influence what is apparent as a dominant color palette.[4] While this is a broad stroke, it does encourage an engagement with the physical

reality of place as a determinant in local color palettes and color dominance, which may be defined and understood a ever smaller and more intimate scales: provinces, counties, cities, neighborhoods, streets, buildings, rooms. Primary species of flora, rock and earth composition, adaptations in fauna and the integration of these elements in local urban development all influence our perception of what is meant by color names and terminology. While students are limited to the geography of Southern Ontario, there is a rich tradition of local geography being the subject of native and settling artists, craftspeople, architects and designers. Tom Thomson's iterative approach to lighting conditions and seasonal shifts in color captures specific hues and tones unique to Georgian Bay and northward to the exposed geology of the Canadian Shield in Algonquin. [5]

Climatic Bias

Climatic bias may be understood as an interaction with geographic bias, as climate alters the environment in an ongoing process of continual change. Seasonal variation in the duration and intensity of light, and predominant weather conditions shift the available color range perceived and interpreted by a population. [6] The interaction between climate, flora, fauna and dominant forms of habitation and development make specific patterns of seasonal color possible and prevalent.

Topographic Bias

Altitude, and contrasts between major topographical formations cause significant biases to influence color perception. Moraines, drumlins and other geological features in Southern Ontario, in tandem with historical patterns of agricultural development cause specific patterns of color to occur in concert. Exposure to repetition in the color of the landscape creates visual expectations, associations and levels of comfort.

These three external aspects of bias – geography, climate and topography – have immense influence on our perception of daylight, and our use of man-made sources of illumination. The distance sunlight travels through the atmosphere increases as we move north from the equator, and follows a daily range according to time of day. The effect the change in the distance light travels has on color is further enhanced by local atmospheric conditions of pollution, and weather patterns.

Cultural Bias

Though a massive and contentious field of study, cultural anthropology offers insight into the adoption of color, material and object into ritual, clothing, food, and religious practices. Interior furnishing, daily routines and recreation all contribute to specific and repeated exposure to patterns of color both in isolation and in combination. How students orient themselves to their culture of origin, or their adopted culture is a significant influence to acknowledge in color bias.

Psychological Bias

The immediacy of family, nuclear and extended, early schooling and environment all shape and direct color preferences and memories. Our ability to manifest associations from specific colors to both memory and emotion makes each of our minds unique. "A green color stimulus may trigger thoughts about nature, maybe about a walk in the green countryside or a particular experience. The thoughts continue working, and can lead to the areas of memory, which in the end have nothing to do with the triggering "green stimulus."[7] Perhaps the most difficult bias to navigate, psychological preferences being intensely personal deserves great attention to distinguish between patterns of decision making that are made for personal reasons, in comparison to those decisions that are made for the benefit of a design issue or problem.

All biases, cumulatively or in part, lead us to specific patterns of color selection, and while bias is always active, some may be more prevalent than others in any given individual. The point to thinking of bias as a fundamental perspective is awareness to acknowledge the specificity about the origins of color preference and or prejudice. It is not the place of any single studio course in color to claim complete comprehension and facility with the issues of contextual color. However, the following sequence of content and proposed exercises builds both the scale and complexity of contextual biases to offer an opportunity to build basic awareness from which more sophisticated processes of color decision-making can evolve through further application and integration in disciplinary studios.

Proposing Methods

The proposed course *Color in Context* commences with the most basic reality of color perception – that nothing can be seen without light, and that light is not a singular color, whether it is from the sun, human-made, direct, indirect or ambient in our environment. Through demonstrations students will be exposed to varied light sources to show that natural or human-made light is biased warm or cool in its color temperature. A first assignment will be an observational study of light, shade and shadow to visually document how color temperature bias influences the exterior and interior environments we inhabit everyday.

Next, students will be introduced to the science and physiology of seeing though binocular eyes. How our eyes develop in infancy from achromatic sight to full, "normal" trichromatic sight. This overview includes color deficiencies of color blindness experienced as protanopia, deuteranopia, tritanopia, and other ocular issues inherent to sight and perception.

From light to sight to temperature bias, students then address the language of color. Primary, secondary, and tertiary color, contrast, hue, tint, tone, nomenclature (naming of color), temperature, simultaneous contrast and color terminology are all introduces as essential to color discourse. Included in this lexicon of color terms is a further investigation of color biases that are inherent to every single hue, tint or tone. Classic color theorists such as Munsell, Itten, Albers, and other theorists are introduced at this juncture in the course. The content within the studio, as well as the larger structure of biases moves students from a largely empirical and objective experience of color to the more personal and perhaps theoretical.

As a threshold between the acquisition of the basic facts of color and a more robust contextual reality of color, a simple question frames the difficulty of beginning a more complex investigation of color as a fugitive element of visual perception: *what is red?* A possible answer from a given text may be "an external visual stimulus with a wavelength of 628–720nm".[8] Of course, this does not qualify red, nor truly describe it for anyone but students of physics. Further, to add that from the personal point of view; "red is an internal process that is either dependent or independent or a physical event. Here, independent means that color can be imagined even without external stimulus…color not only depends on stimulus from the world outside, but also on the power of our own imagination."[9] To commence the study of color without looking at color is impossible, as we see in color, whether that color vision is biased, inhibited or enhanced by psychology, physiology or environment. However, through the simplest of means available, to ask for a definition of color can initiate two independent processes in the respondents; an assessment of their immediate external environment for a visual cue, and an internal reflection on potential associations that may provide adequate parameters for a response. To initiate a process that asks as much of our environment as it does of our internal reality is a first step in acknowledging the larger scope of color as a study of context and response.

A rapid continuation of trying to define a color through language is to define a given color through the combination of other colors. While Albers eschewed the use of wet media, an essential beginning for any student should be the recognition of difficulty in the act of matching color as a perceived experience, to color as mixed media.[10] The act of matching a given swatch of color through mixed gouache or acrylic paint initiates a systematic approach to tracking progress, and provides evidence of decisions made that resulted in greater or lesser accuracy. Such an exercise can easily be translated to an active engagement with foliage, fabric, clothing, wood, and other materials that require a judgment to be made as to "true color". Rather than removing the study of color from the surrounding environment, and make serial color studies that reference each other, as a basic exercise, this preserves the provisional nature of color as a fugitive visual experience.

The matching of color can be combined with an exploration of complimentary color in two objects or materials, integrating the simultaneous study of accepted color lexicons with a deeper engagement with the immediate reality of color manifested in objects. In tandem with *Color in Context*, first year OCAD U students will enroll in *Photography for Communication*, which will reinforce and extend basic principles of light and color study, but will also allow students to bring basic camera skills back into the color studio. As a documentary tool the camera can initiate an investigation of the range of possible expressions of temperature within one given hue. Within the greens of local flora, a range of available greens exists from those that tend towards yellow, versus those that tend towards blue. The use of the camera fixes moments of otherwise fugitive color – allowing students both the immediate visual experience, but also opportunities to later reflect on the nature of color through combination, opposition, and conversion to black and white.

The translation of color practices from the fundamental stage of identifying internal qualities of colors to a more advanced practice of selecting color for a specific purpose can be introduced again with the help of photography. Given basic parameters such as near/far, narrow/wide and high/low, students are challenged to alter our perception of a given space through the use of projected, reflected, natural and human-made light sources. An extension of this project-type is to maintain a chromatic quality or contrast through items of clothing. Both exercises expose the difference between our bias towards specific hues and palettes, and those hues that we need to employ in order to communicate. The projects continue to gain complexity in terms of the role bias might play in color decision-making. The purpose is not to overwhelm, but to deal with basic design principles as they relate to color, and the selection of appropriate color as they pertain to the given problem. The prototype projects engage a range of disciplinary scales and discourses to embrace how color operates as a communicative aspect of objects, surfaces and environments.

Conclusions

The pedagogy and curriculum fore-grounded provide a basis for revealing personal bias, and how such bias is manifest in the colors we gravitate towards as designers. The reinterpretation of color theory through the lens of bias unhinges color curriculum from insular approaches that fail to connect color to larger, more complex concerns such as culture and geography. While *Color in Context* is only one studio, as the curriculum in the Faculty of Design at OCAD U evolves, space will be made for the expansion of these basics into a minor stream of courses, and eventually a major course of study at the undergraduate levels. The opportunities for cross-disciplinary study in color as the foundation are numerous and necessary as research continues to unfold the influence color exerts on the mind and body.

Notes

[1] Kenya Hara, *WHITE* (Baden: Lars Müller, 2007), 3.

[2] Gerhard Meerwein et al., *Color Communication in Architectural Space* (Basel: Birkhauser, 2007), 115–124.

[3] Johannes Itten, *The Elements of Color* (New York: Wiley & Sons, 2003), 33.

[4] Shigenobu Kobayashi, *Colorist A Practical Handbook for Personal and Professional Use* (Tokyo: Kodansha, 1998) 73.

[5] Joan Murray, *Tom Thomson: Design for a Canadian Hero* (Toronto: Dundurn, 1998), 83–84.

[6] Kobayashi, Colorist, 67–81.

[7] Meerwein, *Color Communication*, 25.

[8] Meerwein, *Color Communication*, 25.

[9] Meerwein, *Color Communication*, 25.

[10] Jospeh Albers, *Interaction of Color* (New Haven: Yale UP, 1975), 6–7.