

Synopsis of Contents

by DAN MARGULIS



Foreword

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How Chevreul changed my life as well as that of many artists, and why the book is not as often referred to as it deserves to be.

From 1855: a Review

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The *Edinburgh New Philosophical Journal* discusses the newly published English-language version of this book, which has remained the only one available for 165 years. The reviewers welcome the exposure of Chevreul's ideas, but blast the quality of the translation.

Avant-Propos

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Chevreul's own introduction to the work.



A General Note on Chapter Structure

All content written by Chevreul appears in the same order in which he offered it in 1839. The way he micro-managed the presentation of his topics, however, was confusing. As it happens, his organization falls neatly into a simpler pattern. So, these chapter titles and divisions are mine; his have all been stripped out. Chapters written by me are in their own typeface and are identified below. Those identified as being written by him mean that measured by word count over 80 percent of the content is his. Otherwise, I show his percentage of the content.

1 *The Law Defined*

Authorship: Chevreul

2

Optical facts of life, how objects reflect light, and Chevreul's classic statement of the topic of the book. The key concept of complementary colors is fleshed out with numerous examples that can be used as a drill if you're at all uncertain.

Complementary colors defined • Five Notes on the Book's Structure • experimental proof that the phenomenon exists • a convincing grayscale graphic • when two unlike colors meet: seventeen scenarios • two definitions of, and several troubling questions about, the law of simultaneous contrast • a color adds its complementary to a second color to which it is juxtaposed • the only graphic from the 1839 edition that appears in this one • the juxtaposition of a color with black • the theory of red, blue, and yellow as primary colors, followed by a comprehensive list of color pairings and their effects.

2 *The Law Meets the Photograph*

Authorship: Margulis

14

Cameras don't view a scene as humans do. This chapter discusses digital retouching moves that are considered *corrections* rather than *artistic decisions*.

How simultaneous contrast appears to change hue in a landscape • when retouching is not considered an artistic decision • Manet's *Luncheon in the Grass*: what is the contrast? • on highlight and shadow • I add color to a Renoir portrait of Julie Manet • enhancing shadowy areas: the Hall of Mirrors in the Palace of Versailles • assigning more contrast to a white dress in a Whistler painting—and a modern photograph.

3 *The Law Expanded*

Authorship: Chevreul

21

Chevreul distinguishes simultaneous from successive contrast, speaks of their impact on commerce, and goes over previous attempts to identify the phenomena. To me, this is the least useful chapter, unless you are interested in the history of science.

Another drill: the effect of successive contrast on many different color combinations • Chevreul's discussion of successive contrast contradicts his own statements on complementaries but is quite in line with today's theories • how the impact of successive contrast causes buyers to make decisions they later regret.

4 *On the Harmonies of Color*

Authorship: Chevreul 75%

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The chapter gets off to a slow start, with an outline of what is to come followed by definitions of several terms. Then comes a discussion of a (hypothetical) color hemisphere to be used as a reference by artists. It's not of much current interest, as better color wheels are readily available. Suddenly, though, the chapter becomes precise and informative, as Chevreul lays out his five cases, and six harmonies, of color. These lead to eleven specific propositions on how to combine colors. Excellent!

Chevreul defines his primary colors • each color has a unique tone at which it is most intense • introduction of his color hemisphere • the Munsell color tree, which is a direct descendant • a color usage quiz: what are the odds that a certain color will appear in a national flag? In a corporate logo? (Quiz, Page 34, answers, Page 47.) • color offers a pleasure unrelated to design • Chevreul presents his six harmonies and I start showing examples of them • the harmony of range: works with a limited hue palette, with examples of a logo, a Mucha poster, and an advertisement for Scotch whisky • the harmony of nuance, illustrated by a van Gogh portrait of Paul Gauguin: similar hues, similar intensities • the harmony of a dominant

color: Picasso demonstrates how a green guitar can be made to seem brown • the harmony of hue contrast: Signac's *Woman with an Umbrella* • the harmony of tonal contrast in a record cover and a Renoir • the harmony of color contrast: Toulouse-Lautrec and the Can-Can danceuse • the value of the background color, as shown by the development of the NeXT logo • arrangements of colors with white • do we not use black enough because of its association with mourning? • gray makes all primaries seem more brilliant • Chevreul's eleven propositions • on knee-jerk responses.

5 *The Law and the Painter* 49

Authorship: Chevreul

Emulating the effect of natural lighting. Lots of drills and repetition of the effects of different colored lighting in the first half, followed by a series of useful prescriptions for painters in the second, with stern warnings as to what happens if they aren't followed.

A comprehensive listing of the effects of each type of colored light • Caravaggio's *St. Francis in Ecstasy* • Delacroix's *Liberty Leading the People* • an artificial golden light source in advertising photography • in a photo with religious overtones • on the theory of two different light sources • an object of a uniform color may not seem so depending upon the lighting • the importance of the position of the viewer • how to get something that *appears* white against a colored background, as opposed to something that *is* white: two wrongs can make a right, thanks to simultaneous contrast • linear v. aerial perspective • why models in paintings and photographs always appear to be looking at the viewer • when painters merit the name *colorist* • "It is almost always so that accurate, yet exaggerated coloring is found more pleasing than absolute fidelity to the scene," • on the introduction of casts, agreeable and otherwise • certain colors are inherent in the scene but the painter can alter others • on fleshtones of various races • on the introduction of secondary light sources • making a background more interesting to divert attention from foreground objects • avoiding similar ornaments on different objects • perfection is the enemy of good enough.

6 *The Impressionists Buy Into Chevreul* 68

Authorship: Margulis

Fifty years after the original publication of this book, the greatest painters declared themselves students of Chevreul. A tour through time explains why it took so long, why the development of Impressionism was a unique event in cultural history, the stunning role of the critics, and the importance of borrowing techniques from other masters.

Before and after Chevreul: the Mona Lisa, Caravaggio, Velázquez, and Picasso • the heavy-shadow style of Caravaggio applied to a photo • history's judgment: the Impressionists were the foremost painters of their time •

the Monet sunrise that gave the school its name • characteristics of the Impressionist style • a photographic sunrise altered in the style of Monet • Ruskin and Blanc make the case for exaggerating color • Géricault's *Raft of the Medusa* • examples of Pointillism • the smoking gun that proves Chevreul's influence • the indirect evidence of his impact on Impressionism: how one country comes to dominate a certain art form • why Impressionist painting was an artistic anomaly • the limits of conspicuous superiority • why Delacroix could not serve as a model • the French Revolution was very unlike the American version • Carlyle, Hugo, and Robespierre try to explain the Reign of Terror • why France is the most political nation • when times argue against use of bright colors • the critic who signed death warrants, and his portrait of Napoleon • political correctness and pretty girls: Manet and Whistler get thumbs down from the 1861 critics but thumbs up from the Emperor • the similarity of the names *Manet* and *Monet* provokes a feud • Zola is fired for applying an ugly term to Monet's competitors • Monet's *Garden at Sainte-Adresse* • Monet-like flower effects in a photograph • the insult that gave the Impressionists their name • Whistler sues Ruskin for libel, and wins one farthing • Monet borrows an idea from Signac, and wins \$110 million • Blanc, James, Ruskin, Shaw and Zola all turn against the Impressionists • when critics are afraid of seeming intolerant • Delaunay names a painting for Chevreul.

7 *On Photographic Impressionism* 93

Authorship: Margulis

How Chevreul's recommendations affect the editing of photographs (other than portraits, which are treated in Chapter 12).

The categories that are amenable to color changes • the bluest lake in the world • color wheels and complementaries • choosing a background for equally important objects • when the background color can't change but its tonality can • artificial darkening of a sky, and of the background in food shots • adding artificial casts to photos—and to movies • six takes on a Venetian sunset • the alternate reality of the movie theater • Scarlett O'Hara and Dick Tracy run up the production budget • Delaunay's rainbow of an Eiffel Tower • color clichés in modern movies • when everything is colorful then nothing is colorful: a photo of a casino • Impressionist tricks in a landscape photo • the separation of greens in a photo and a Renoir • translating Dante as an art form.

8 *The Law and the Visible Pixel* 105

Authorship: Chevreur 75%
Chevreur moves into his own specialty with a discussion of art forms where, unlike painting and photography, the individual threads or other components can be seen easily: tapestries, fabrics for upholstery, carpeting, mosaics, and even stained-glass windows. A fine chapter with many applications for today's work, even though many specific processes being discussed are obsolete. Lots of commentary and graphics from me to connect these dots.

The arguments for contrast in fabric design • how to mix primaries for maximum brightness, and a foretaste of what is now called the Helmholtz-Kohlrausch Effect • the impact on workflow of a process that does not permit corrections except by starting over • a lengthy intervention by me (with help from Signac and the Basilica of Santa Maria dalla Salute in Venice) illustrating the consequences when pixels are large • how artificial limitations can enhance the artistic effect, with a photograph of a reflection and a digital illustration • the importance of the background in a fabric featuring floral designs • artwork for mass-market carpeting v. that for cases where cost is no object • a poster and a colorized photograph of Sarah Bernhardt show how art can be based on flat tints • the dangers of overestimating the taste of the general public • Chevreur proposes a "simple and foolproof" method of mixing colors that I retort is anything but • the special characteristics of mosaics • the striking artistic effect of light entering through stained glass • a stained-glass window is a veritable transparent tapestry • we study color problems for their own sake: Chevreur acknowledges the artistic merit of stained glass, but "I nevertheless suggest that this art form should not be strongly encouraged." Outraged, I offer counterexamples from Sir Edward Burne-Jones and Louis Comfort Tiffany.

9 *The Law and the Print Process* 125

Authorship: Chevreur 60%
After an interesting discussion of how colorant and substrate relate in designs stamped on fabric comes the worst-organized part of Chevreur's text. First he turns to ornamental wallpapering and wall hangings, with a long section that purportedly deals with framing but in fact has nothing to do with frames. He goes on to promise discussion of several points about color typography and then forgets to follow through, requiring me to fill in. He gets back on course with a useful discussion of charting and mapmaking.

The influence of the substrate • why Chevreur recommends using complementaries in fabric printing • does printed wallpaper have a future? • Chevreur as referee when a designer asserts that gray ink is not gray • a formal experiment: what is the best background for metallic

gold? And for flat paint of a golden color? • I rail against Chevreur's writing style and offer part of the 1854 translation, which is a more literal rendering of what he said • William Morris shows how the choice of background color is harder for wallpaper or fabric prints than for a photograph • the best choice of type and background for ease of reading, given several scenarios • a record cover's type choices as a case study of right and wrong coloring • the relation of purity of each color to its darkness, with a graphic representation • why black type on a white background is easy to read • optimal colors for penmanship/handwriting • limitations on the use of colored type in offset printing, as shown by an official specification book that presents incorrect advice • on the use of color in maps • how to present data in a color graphic, with a U.S. electoral map as an example • how proper graphic data presentation can surprise even the experts.

10 *The Law and the Large Object* 144

Authorship: Chevreur 75%
This longest chapter covers interior and exterior decoration in churches, apartments, museums, and even theaters, including everything you'd ever want to know about the roles of carpets, furniture, curtains, and walls. An extended discussion of framing makes clear the analogies to modern work that has no formal frame yet is affected by its surroundings in a way reminiscent of having one.

In view of Chevreur's preoccupation with Gothic cathedrals, I add several pages defining their particular characteristics and those of other architectural forms for temples, with images of religious structures in Peru, Spain, Italy, France, and Germany • why Gothic architecture can dispense almost completely with color • how lighting through stained glass impacts the style of paintings • condemnation of the overdecoration of a cathedral for the coronation of Charles X • differentiation between a piece of furniture to be admired in its own right and one seen as part of an ensemble • long discussion by both of us of the proper relation between wood and fabric • the use of hiraloom sharpening of furniture photos • the danger of excessively ornate frames: how a sofa upholstered in Beauvais fabric and a portrait by Velázquez were ruined by just such frames, apparently forced on the works in order to make them more expensive • on the insertion of a colored border between frame and artwork • summary: the principles of choosing the proper frame for artwork, suggesting that artists paint based on the framing that is expected • I respond with a story of how Michelangelo did exactly that, followed by the crucial point: place a photograph on a white background, and you have in effect chosen a white frame. And many forms of art have quasi-frames: large seemingly irrelevant areas whose color nevertheless impacts the rest • I offer the basic rule for dealing with such quasi-frames, supported by an advertising image of an office at night • stained glass as promoting prayer • on

museums: criticism of ornamentation that distracts from the objects on display • how best to display sculpture • there is also a simultaneous contrast of size • on choosing colors for the interior of a theater, with a view to flattering the fleshtones of the patrons • Toulouse-Lautrec intentionally makes theater patrons look bad by using a color scheme that Chevreul condemns • general interior decoration: the walls • on wall hangings and how they relate to the wainscoting • interior decoration for either a lively or a somber feel.

11 *Fashion, the Soldier, and the Law* 168 *Authorship: Chevreul 65%*

Chevreul divides his fashion chapter in a surprising way: for men, it will be military uniforms; for women, how to dress for a portrait sitting. The female portion is even more relevant than in Chevreul's time, since photographers face certain problems that painters did not. I therefore add a lot of content, and continue with the topic in my Chapter 12. As for men, designing a uniform is a stalking horse for any number of corporate identity projects. Chevreul continues Chapter 4's discussion of effective color combinations, but with the added practicalities of dealing with fabric that people have to wear.

Why clothing lasts longer with contrasting colors • blue and scarlet are an excellent combination, illustrated with the two most iconic uniforms in their respective professional sports • a comic colonel calls out a critical color combination that Chevreul forgot • uniforms in somber colors to fool the enemy • how to help suppress stains • nine corporate logo designs so successful that the names need not be present • the relation of clothing to skintone • what's right for brunettes may not be so for blonds • Rhett Butler expounds on the best color for green-eyed women • seven pages of comparison graphics and advice from me on the best colors for women of any ethnicity • my rule on skintone modification • on the effect of headwear • color recommendations for darker-skinned women • what if the painter wishes to enhance or to downplay the color of the skin? • Whether light or dark skin is trickier to work with depends on whether you live in Chevreul's time or ours.

12 *Portraits, Painted and Photographic* 184 *Authorship: Margulis*

I pick up where I left off in Chapters 2 and 7 with a discussion of the most flattering ways to portray a human face.

Pissarro and Picasso use backgrounds to create positive or negative impressions of their subjects • why such moves are uncommon in photography • considerations of background in a portrait • on brightly colored but apparently irrelevant objects, with my suggested rules for when they are desirable • lessons from a fast-food restaurant advertisement • Manet struggles with a colorless scene

in his last and greatest painting • a similar solution in a wedding photograph • simultaneous contrast in a photographic portrait • the most disciplined wild animals: two weird portraits by Matisse • his secret strategies revealed, and applied to photos • symmetrical and asymmetrical methods of correction defined and listed • the role of the averaged color • dangers, obvious and concealed • why the color judgment of machines is unreliable • simultaneous contrast meets the algorithm • experiments with Renoir's *Theater Box* • Mucha presents the greatest promotional piece ever produced for a printer • comparing symmetrical and asymmetrical techniques with a Renoir family portrait • Renoir's trickery applied to a family photograph • guiding the viewer to the most important areas • high dynamic range: when the background is as important as the person being portrayed.

13 *The Law and the Formal Garden* 207 *Authorship: Chevreul*

Chevreul's own favorite topic: page after page discussing species after species. Consequently, I've made more cuts than in any other chapter. Much useful content remains, as rules for floral displays also work for any kind of still life, particularly food.

"Color is assuredly therefore the most prized of all qualities" • adjusting flowers in a photograph depends on their distance • the virtues of white flowers • colors that clash when viewed close up can be attractive from farther away • one photo of flowers and four of food to illustrate how the principles work in real life • planting recommendations, month by month • attacks on other authors on gardening • on planting large groups of vegetation • the applications of Chevreul's rules to a large formal garden consisting only of cactus and other desert vegetation • how meticulous must the planning be? • the principles of planting summed up.

14 *The Law and the Ultimate Destination* 223 *Authorship: Chevreul*

A strong chapter, a defense of the discipline followed by how color choices are affected by intended use. Some repetition of the discussion of flat tints in Chapter 8, but the author is now in high gear as he starts to create a unified theory of art.

Chevreul's eloquent statement of why this field is worthy of study; his castigation of those who say that all humans see color differently: "As a matter of policy, I am disinclined to agree that we should refrain from studying a thing because it happens to present variable phenomena." • How simultaneous contrast interferes with our ability to judge colors in commercial products • the same color may appear as different when placed in multiple media • the influence of aging on artwork • choices for associations of two colors • the influence of the shape of the objects • the painter, the poet, the moralist, and the historian •

Michelangelo's *Last Judgment* • when to paint with flat tints • on serrated edges and anti-aliasing • the tapisserie and the painter.

15 *Ten Principles for All Forms of Visual Art* *Authorship:* Chevreul **236**

They sound simple, but these principles are fundamental, and often ignored by people who should know better. Worth re-reading several times.

The ten principles • on objects at rest • on objects in motion • the impact of size • functional v. decorative objects • the need for apparent stability • Chevreul at his best, a breathtaking equation of variety with beauty • the value of symmetry • on the suitability of an object for its destination • criticism of painters and architects for not understanding the conditions under which their works will be seen • Chevreul anticipates post-Impressionism! "When a certain group of painters, often called a *school*, has produced masterpieces, mediocrity always follows in its wake." • a visitor to Versailles: how mental associations change how we evaluate art • Chevreul tweaks the great Ampère • he reminisces on how he developed the theory • on the perils of publish or perish • there is more than one kind of beauty in the world.

16 *The Law Today: the Science* *Authorship:* Margulis **248**

Simultaneous contrast seen as a subset of a complex whole. Experiments with artificial graphics suggest that it isn't the "very simple law" that Chevreul enunciated in Chapter 1.

Why it is so difficult to prove anything about human perception • Chapter 1 revisited: is the simultaneous-contrast effect more pronounced in certain color combinations than others? • the Bezold Effect, and an unconvincing "proof" of it • the same color combinations produce different effects in two graphics, with five surmises as to why • how cyan strawberries can be perceived as being red • when tonal variation is enough to distinguish objects, there is no need to perceive hue variation • Chevreul's statement of the law amended • the Helmholtz-Kohlrausch Effect as a subset of simultaneous contrast • Chevreul denies that his father was an orang-utan • one fish, two fish, red fish, blue fish • birds and spiders who study Chevreul • a Darwinian take on simultaneous contrast • all colors are not treated equally • a critique of gray-centric color models • science, perception, and personal prejudice • on color-blindness and its ramifications • one photograph where the subject obviously needs a drastic exaggeration of simultaneous contrast, and another where it's not needed at all • when a camera cannot record important sensory stimuli: the case of Niagara Falls • two nineteenth-century landscape painters use similar techniques in their presentations of the falls.

17 *The Law Today: the Art* *Authorship:* Margulis **264**

When, why, and how should an artist exaggerate the impact of simultaneous contrast?

Aspects of perception, provable and speculative • how tastes in skintone change • overall exaggeration based on a certain area versus basing it on the entire scene • an upside-down smile and the importance of perceived shape • Chevreul, El Greco, Picasso, and unsharp masking • the four basic types of simultaneous contrast analyzed • the greatest portrait of the greatest portraitist shows his mastery of all four • warm and cool colors warrant separate treatment • the fifth type of simultaneous contrast • Chevreul in retrospect.

18 *The Law, Its Lessons, and the Future* *Authorship:* Chevreul 65% **281**

Saving the best for last, Chevreul sums up by exploring how contrast affects our lives in many ways, speculating on how other senses are like vision, and culminating with a scintillating analysis of how the human mind absorbs new concepts.

Why shadows are commonly blue • a contrast effect in size • *contrast of antagonism* defined • comparison of sound and color • Chevreul denies any simultaneous contrast in music and I set him straight with several pages of examples • on taste and smell • the role of memory in provoking contrast • new ideas tend to exclude older ones • too much familiarity with a subject can cause rejection of new concepts • the insistence that certain ideas are polar opposites • the eye and the brain work similarly.

The 105 Years of M.E. Chevreul **296**

Cultural, scientific, and political developments during his lifetime share billing with a review of his accomplishments.

Dramatis Personae **305**

Biographical information for each person mentioned in this book.

Notes and Credits **314**

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