

Metamerism in Action

by Margie Deeb
May 2007

Have you ever bought two garments in a store that matched, only to find that when you went out into daylight they didn't match at all? Or maybe in the bedroom you put on what you thought were two matching socks, but when you got to the kitchen you saw that one was blue and the other was black. The visual discrepancy was probably not because you were tired or hung over. This was metamerism in action.

Have you ever noticed that the colors in your printed photos look great under daylight from a window, but freakish under fluorescent or incandescent lighting? What were clear blue skies are now purple, and your beloved's beautiful face is now an orange tone uncomfortably reminiscent of Halloween. Even the neutral grays may look goulishly green.

This is metamerism, and its attendant frustration, in action.

Metamerism occurs when you see two colors match under one light source and not match under another.

Metamerism is often an issue when buying carpet, trying to match clothing color, drapes, fabrics, and paint. Colors appear to match in the store but they look completely different in the lighting in your home.

If we didn't have many different colors of lighting in everyday life, metamerism would not be an issue. It boils down to the difference between how an object affects light, and the color it appears to our eyes.

Lighting affects the way we perceive color. We buy bulbs advertised as "natural" to improve the appearance of people and objects in our home. These bulbs attempt to simulate full spectrum light. Sunlight or daylight is considered full spectrum, meaning that it contains a relatively even distribution of every color in the spectrum from violet through red: all are present at nearly the same intensity. This is the definition of "white": the presence of all colors at once.

Most artificial lighting, such as fluorescent and incandescent, has an uneven, "spiky" distribution of wavelengths. Each color in the spectrum is not represented equally. Fluorescent lighting has a large green component and is deficient in red, making it (and what it illuminates) look green. Conversely, incandescent lighting has a larger red component and is deficient in green and blue, making it (and what it illuminates) look orange.

If you want to witness this in a controlled experiment, grab a number of identical swatches from



but they all
matched
at the store!!!



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For more of Margie's Muse, visit
[http://margiedeeb.com/html/
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MARGIE'S MUSE

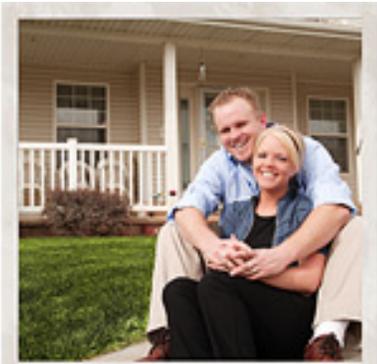
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The Bead Artists' First, Only, and Complete Source for Color Mastery

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Seen under full spectrum



as seen under incandescent



as seen under fluorescent

Colors in photos appear vastly different according to the light they are viewed under

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the paint department and go to the lighting department of a major home improvement store. They usually have a bank of lights with dividers in between. Place one identical swatch under each light. Study how each light affects the sample.

Lets go back to the sock example mentioned above. The bedroom lighting is incandescent, which contains little light in the blue wavelengths. This makes it harder to distinguish blue colors. The fluorescent light in the kitchen emits more blue light, and thus the dark blue can be more easily distinguished from black. In incandescent light, the socks are a

“metameric match.” In fluorescent light, they do not match. The differences in the wavelength distribution between the incandescent and fluorescent lights interact with the differences in the spectral reflectance of the socks to make them appear the same in one light source and different in another.

It is possible to reach an acceptable match that is pleasing to the eye. If a match viewed under both fluorescent and incandescent lamps is acceptable to your eye, most likely it will be acceptable under almost all conditions.

Other than reaching acceptably pleasing matches, there's nothing you or I can do about metamerism. We have as much control over it as we do the spectral distribution of sunlight. But understanding metamerism makes you feel less crazy when you stare at the frightening combination you know matched beautifully at the store yesterday.



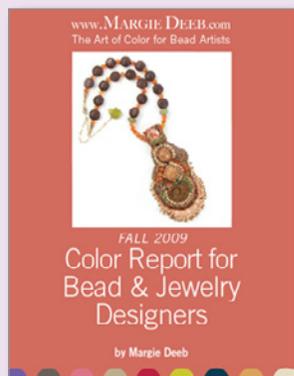
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You'll never get a perfect match when working with fabrics, wallpapers, and paints because both their materials and their colorants are different. Each item will interact differently with its colorant, and with the light that illuminates it.

For more of Margie's Muse, visit <http://margiedeeb.com/html/muse.php>

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Each season the *Color Report for Bead & Jewelry Designers* will expand what you can create in any medium - by introducing you to color combinations you've never used or even seen before. These seasonal PDFs contain over 40 palettes, descriptions, photos, gemstone and Delica bead suggestions, and ideas based on Pantone's fashion color report.

One of the most fun aspects of creativity is color: using new colors and harmonies. If you're like me, your beadwork soars when you're challenged and inspired. And it becomes exponentially more fun.

It thrills me to work with colors I've never seen or tried. Watching how the hues interact with each other and how I interact with them gives me such joy. And I want to learn more, go further, reach higher and create more.

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Responses to Margie's *Color Report for Bead & Jewelry Designers*:

"I really like the color report - particularly because there are colors that I probably would not have considered or noticed and this gives new directions to travel. I also REALLY appreciated the listing of the gemstones."
- Kathy L.

"Very helpful. I tend to work in certain palettes over and over again, but seeing a different palette helps me move out of my comfort zone."
- Susan K.

"I appreciated the fact that you mentioned your initial reaction to some of the Pantone colors for this season and yet after exploring them, your reaction to them changed. It reminds me to be open to colors I might not usually consider for jewelry (or wearing)."
- Rosalynn B.

*"I know I will not care for every season's colors but *The Color Report for Bead Artists* still gives me an idea of what to look for when designing for the next season. It is very helpful knowing that what I make will work with what is in the stores for those months."*
- Betty



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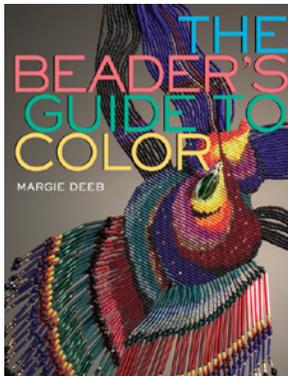
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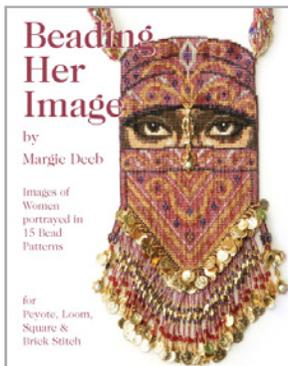


The Beader's Color Palette: 20 Creative Projects and 220 Inspired Combinations for Beaded and Gemstone Jewelry Gather from history, culture, and our planet to create stunning color schemes for beaded creations. (Paperback, 192 pages) \$24.95 US Dollars



The only book of its kind written specifically for bead artists, ***The Beader's Guide to Color*** teaches bead-ers of all levels everything they need to know about color to create unique and vibrant bead-work designs. Margie discusses psychological and symbolic color associations, and ways in which color can be used to create and accentuate pattern, rhythm, and movement. 21 color schemes are described and illustrated in detail with accompanying projects for all skill levels. (Paperback, 144 pages)

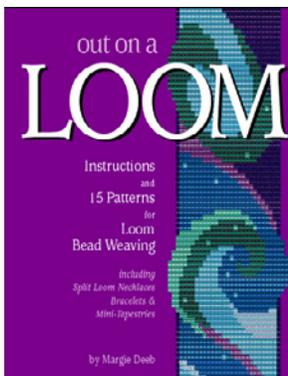
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Beading Her Image illustrates the power and beauty of the feminine in 15 seed bead patterns for **peyote, brick, square stitch, and loomwork**. Women from a wide range of times and cultures are woven into tapestries, necklaces, and bracelets. The stunning and gorgeous color palettes that artist Margie Deeb is known for adorn each piece.

Includes loom building instructions, finishing split loom necklace instructions, and peyote, brick, and looming instructions. (Paperback, 44 pages)

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Out On A Loom is a creative journey through color, design, and form for the beginning to intermediate level seed bead artist.

The soft cover book features 32 full-color pages of detailed instructions, patterns, illustrations, and diagrams for creating loom woven bracelets, mini-tapestries and split loom necklaces. Professional and creative finishing techniques are provided so each finished project can be a work of art. (Paperback, 36 pages)

\$19.95 US Dollars

Artist, designer, musician, and color expert



Margie Deeb is the author of several beading books, including the popular ***The Beader's Guide to Color*** and ***The Beader's Color Palette***. Her color palette book was named the **Best Craft How-To Book of 2009** by the prestigious Library Journal.

She teaches color courses for artists, interior designers, and bead-ers. Her free monthly color column, **"Margie's Muse,"** is available on her website. She produces a free graphically enhanced podcast, **"Margie Deeb's Color Celebration,"** available on iTunes.

Her articles have appeared in *Bead & Button* and *Beadwork* magazines, and she writes a regular color column in *Step-by-Step Beads*. She has appeared on the PBS show "Beads, Baubles, and Jewels" speaking about color. Visit Margie's website for her books, patterns, jewelry, inspiration, and more.

Margie's Blog:

colorforbeadartists.com

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WHY C-M-Y?
by Margie Deeb

Read the complete article

I encourage artists to learn and use the C-M-Y wheel, which offers artists in for what we've always known to be primary blue, and suggests kits in for red.

Yellow, red and blue have long been considered primaries because they are pure; there have no other colors in them, and in theory, all other colors can be created by mixing combinations of yellow, red and blue. However, one pure and suggests a base of blue and red, and the mixing of these primaries creates a broader and more numerous range of colors than the traditional yellow-red-blue primaries of the artist's wheel. It is difficult, if not impossible, to mix vibrant yellows and reds using a true blue and red pigment. Because mixtures to more numerous than red, using it as a primary rather than red greatly expands the red-cyan-purple range.

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"But Margie," you say, "we're not mixing colors! We're using beads, a pre-mixed 'medium'! I took the words right out of your mouth, didn't I?"

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