

# FUNCTIONAL COLORS IN NATURE



U.GÜNTHER  
PREPRESS

YOUR HEAD START IN PRINTING

In spring, nature is beautiful with all those color shades. Have you ever considered that we can only see colors because the sun is shining? Now we think we can see all colors, but that is not the case. Part of the sunlight is invisible to us. That part that we can perceive is what we call the visible light. In this whitepaper we will take you into the world of color theory. Nature's way and how we can use this in our daily practice as graphic experts.

## Head start in printing

As we experience daily as graphic experts in practice, printing the right colors is a job in itself. Matching colors buildup from CMYK or Pantone colors are a daily challenge.

The effect of the colors as intended by the marketing are well thought out and have meant an emotional effect on the purchasing behavior of the consumer.

Achieving the correct densities of ink in CMYK and the correct key values in the print plate is very important to achieve the end result of the marketing idea.

Nowadays flexo printing plate techniques help with that! For example, the solvent-free flexo printing plates. These have the great advantage that the dots on the plate do not swell. The digital dot is also the dot size in the plate. The buildup of the color is printing as intended and shown in the color proof. Less dot gain in the printing process gives the printer the opportunity to print with

the perfect pressure. Not only the color is spot on, also the printers will experience fewer specific print disturbance during the printing run. It will give you a head start.

## Color theory and nature's way

White light consists of all colors together. The moment that white light is broken by a glass or a raindrop; we see the colors separately. The colors of the rainbow are therefore hidden in white visible sunlight.

Colors play an important role in reproduction in the plant and animal world and that sometimes goes much further than at first sight. A beautiful



example in the plant world is the spindle tree. In the fall the yellow berries are hanging on the bush. Yes, you will say that is more common. But the spindle tree has something special. The purple-pink box of fruit splits open around this time and the yellow berries hang underneath. That is what makes the spindle tree so special. Because we are dealing with complementary colors here. These are colors that are each other's opposite. The yellow berry appears to be brighter in color due to the purple environment. Very special and therefore the berries have a great attraction for birds. Also take a look at rosehips. You can also see the red-green combination there. This contrast makes the rosehips stand out more.

But how do you determine that green is the opposite of red? And yellow from purple and orange from blue? There is a very simple test. Everyone knows the red-light lamp we use when we have muscle aches. If you turn this on, your environment will be completely red. Point the lamp at your face and close your eyes. (Do not look into the lamp!) After a few minutes, turn off the lamp and take a look at your surroundings. It will be now completely green for a while! A very strange sensation, because you can't do nothing about it. What happened? Your brain got too much red color to process. That is not natural. Balance must be restored. The brain makes a counter-color itself! Just until the balance is reached again. If everything comes back into balance, you will see

everything back to normal. It also works the other way around.

This is how they discovered complementary colors. As we can see in the famous color circles. These colors have another characteristic: they reinforce each other. And now we are back at the spindle tree: the yellow berry looks brighter in color because of its purple surroundings. Vincent van Gogh understood this all too well. By coloring the starry sky in the painting "Café terrace at night" not black but purple, the color of the warm yellow terrace becomes much stronger. Look around us for example at the farms. Many objects at farmers were painted red and green. It looked bright and the tools were easy to find in the green yard because of the bright red accents. And pay attention to many high cranes in the construction industry. Many are red or orange. That contrasts sharply with the blue skies.

Nature is full of surprises and temptations. Pay attention to beautiful portrait photos. They usually have a green-blue background. For a reason of course. Because in the skin color there is a component red that comes out a bit stronger and so the person in the photo looks a bit handsomer.

## Color theory in print

Where in the past flexo printing was still dismissed as simple and only for line work and Pantone colors and ideal if you, as a customer, set less stringent requirements in terms of brilliant color. There is a lot to be gained today in the field of flexo printing.

As stated, the brilliant color spectrum and the possibilities for this have been greatly improved. Color management for flexo printing has made enormous progressions. Together with today's inks and printing plates, the options can be compared to gravure printing. The importance of brilliant colors in printing goes without saying for many, but this is certainly a combination of the above components. CMYK buildup prints gives a "dirty" color impression at low densities. And with this you lose

the brilliant appearance of the color proof. Clean inks and certainly a printing plate that delivers the correct amount of ink is the key element.

In our portfolio we have several flexo printing plate types that can be used for this topic. One is the solvent-free Kodak plate. Kodak Flexcel NX Ultra shows us that it is possible to print the correct density with the ideal pressure. This plate utilizes a flat-top dot structure for superior ink transfer control. Colors come to life because the plate prints the intended dot size. More information about the eco-friendly, solvent-free plate and our total plate portfolio check our website: <https://www.guenther-prepress.com/en/flexo-plates/> or check <https://www.guenther-prepress.com/en/kodak-nx-ultra/>