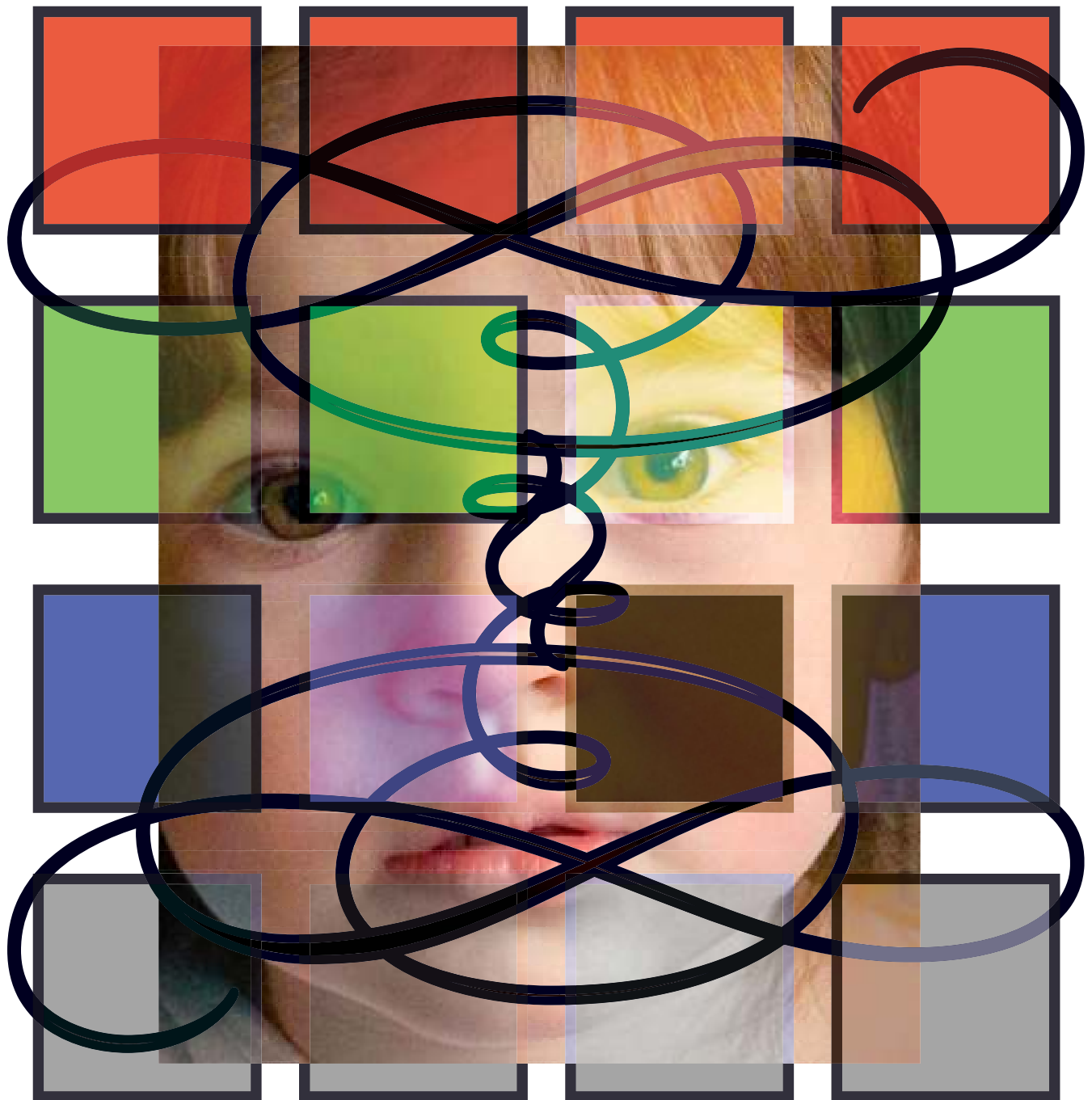# Transparency
Blend Modes

Introduction

Documents created and stored on computers are accessible to people through hardware and software. The user interface most often is a metaphor for some other, more direct, way of viewing the world - "Windows", for example.

With the advent of more hardware processing power, more capable monitors, more sophisticated software etc. the metaphors become increasingly complex and nested within other metaphors that are accepted as if they describe an actual, not virtual, reality. Eventually a simple process can become a Byzantine mental exercise that does not produce predictable results until the tyro passes through enough alleyways to become and adept of an arcane and mysterious knowledge.

Transparency Blend Modes are a shibboleth for the Gnostics of Photoshop, Illustrator, InDesign, and other applications that allow users to burn, lighten, dodge, hard mix, flatten and otherwise combine metaphorical layers of images into metaphorical files that can be printed to actual paper.

All of this begins with a pixel. A pixel has three defined numbers, limited to three for the sake of this argument (and some semblance of clarity), that determine its color. There are several three color models that could be used but we will limit this discussion to two: RGB (Red, Green and Blue) and HSL (Hue, Saturation, and Luminance).
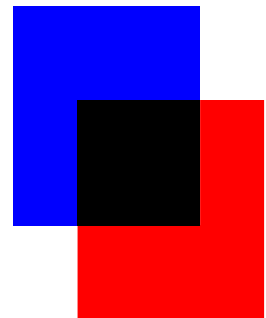
The value for each of the three pixel numbers must be between 0 and 255. RGB white is 255, 255, 255; black is 0, 0, 0; red is 255, 0, 0; green is 0, 255, 0; blue is 0, 0, 255; neutral grey is 128, 128, 128.

The blend modes 1 through 17 use mathematical functions to formulate the value of a result of blending two sets (layers) of pixel values. The determinate factor is which pixel, hence value, is on top and which is underneath (another metaphor). The summing, subtracting, multiplying of values is based upon the relative position of the layer the pixels are on.

Blend modes can be said to be dynamic (or live), that is they are non-destructive and can be altered or completely changed until the file is processed either by printing, exporting or flattening within the creator application.