Black & White Photography

The Print

The Print

- The goal in printing is to make a full scale print (Rich blacks, many shades of gray, brilliant highlights)

- Evaluating the print requires understanding two distinct controls **density and contrast**.
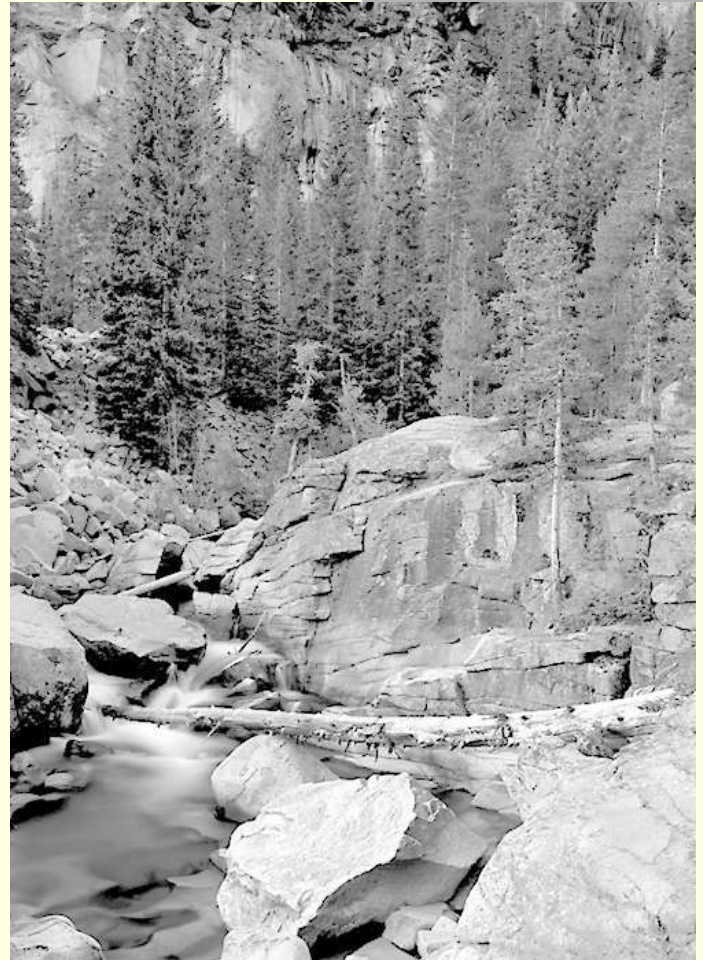
Density

Density

- Density is the overall lightness or darkness of the print. (or negative)
- It is controlled primarily by exposure, or how much light is given to the paper during printing.
- The more light given, the more silver density is exposed building up in the darker the areas of the print.
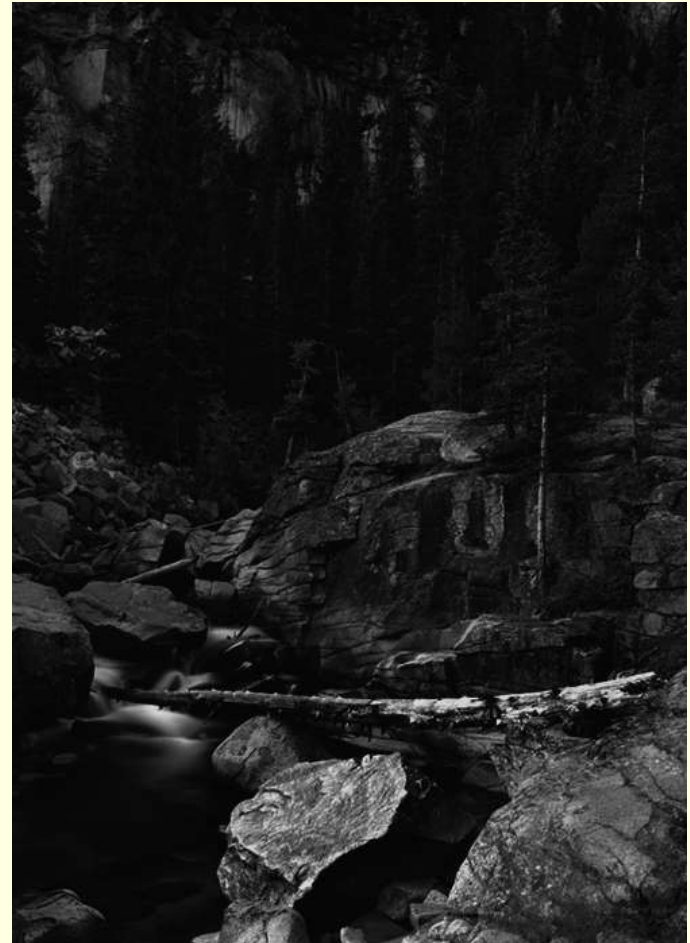
Insufficient density

- Print appears washed out with any significant detail

- No detail in shadow areas when highlights are printed correctly

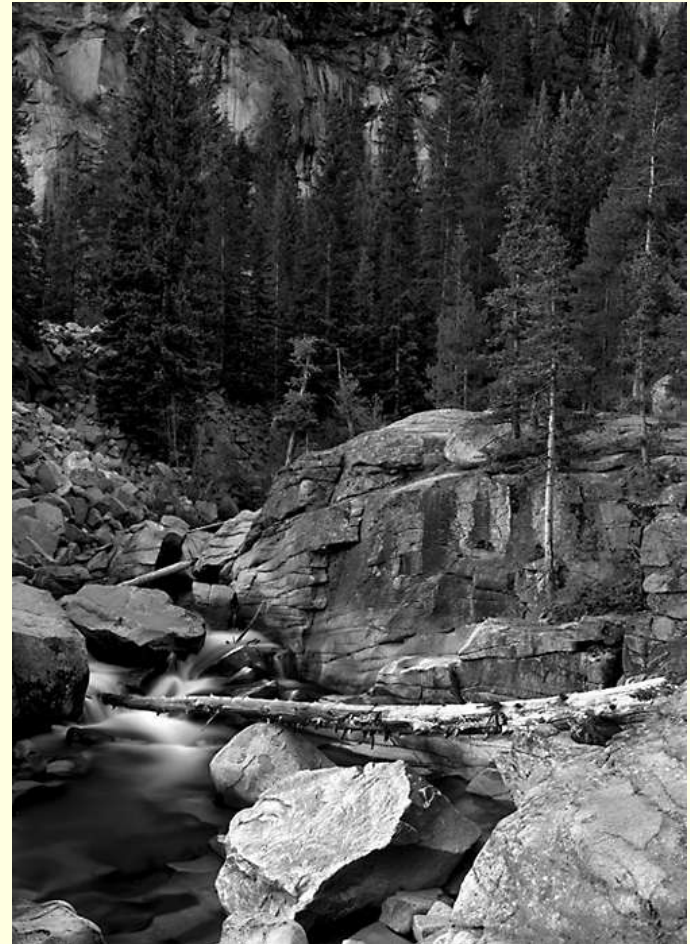- Overall feeling of gray without any tonal variations

Too much density

- Highlights areas are much too dark to see detail
- Shadow areas are dark
- Image is obscured and of little use

Sufficient density

- Detail in shadows and highlights
- Overall feeling of print richness and tonal separation

How density is created/controlled

- Printing paper is a positive medium coated with an emulsion containing light sensitive compounds.

- As light is passed through the negative in printing, different amounts of light effect the sensitized coating.

- Through processing the density of exposure is revealed and fixed.

Controlling print density

- The clearer areas of the negative which received less light during initial exposure, let more light pass through during printing making those areas darker in the print. (*Shadows*)

- The denser area of the negative which received more light during initial exposure, allow less light to pass through during printing rendering those areas lighter. (*Highlights*)

- The wider the enlarger lens aperture (more light) and the longer the enlarger light strikes the negative and paper,(more light) the darker the overall the print will become.

Controlling print density

- If the print is too dark (too much light striking the paper) chose a smaller lens aperture and/or use a shorter printing time on the enlarger timer.

- If the print is too light (not enough exposure to make the paper dark enough) choose a larger aperture or use a longer exposure time on the timer.

Controlling print density

- Adjust the aperture F-stops

- Adjust the actual enlarger timer

Evaluating density-workflow

- Make a test strip
- Chose a small unit of time on the enlarger timer. 3 seconds is the norm.
- Carefully expose a small portion to 3 seconds, the next portion to 6 seconds, the next portion to nine, etc., until you use all of the strip of paper.

Photo by Edward Wang   http://www.nikonfans.org

Evaluating density

- The test strip should be made in the areas of the print were the most important information is contained.

- Choose the exposure that produces the best highlight (white or light areas) with sufficient detail.

- If the dark areas are not completely correct you can adjust with contrast control later.

Test strip after development
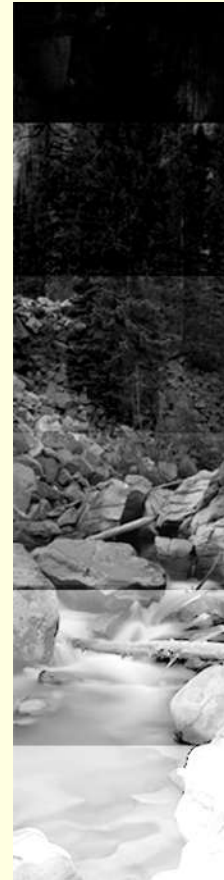
18 seconds

15 seconds

12 seconds

9 seconds

6 seconds

3 seconds

(all at F8)

Contrast

What is contrast?

- Contrast in printing is the visual difference in tonal scale between the darkest areas of the print and the lightest areas of the print.

- Even more important is the difference between the lighter and darker areas of the print that have sufficient detail or texture that can be examined.
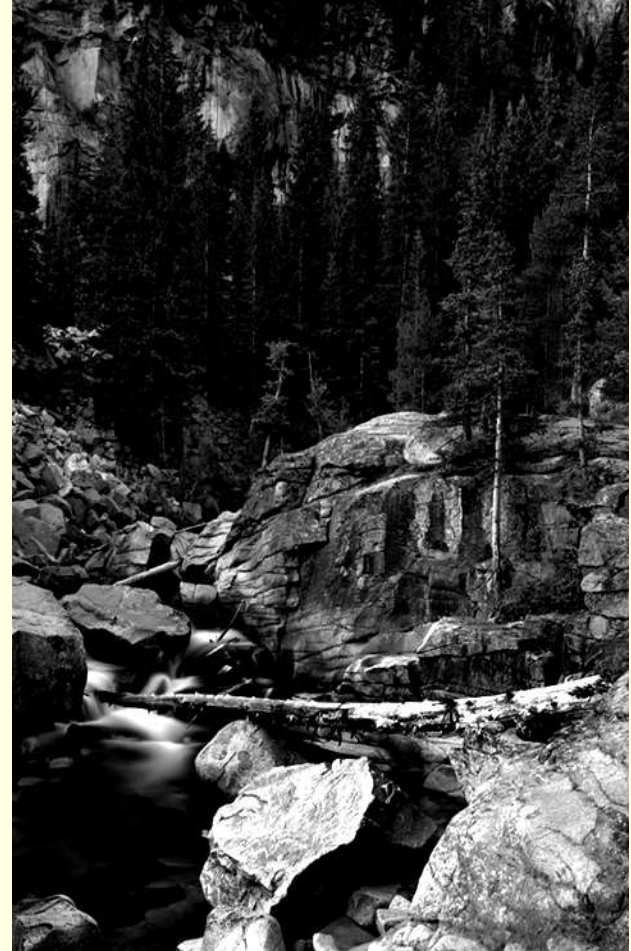
Low overall contrast

- Appears gray and weak with no strong blacks, no brilliant whites
- Produces a grayish veiling of the print
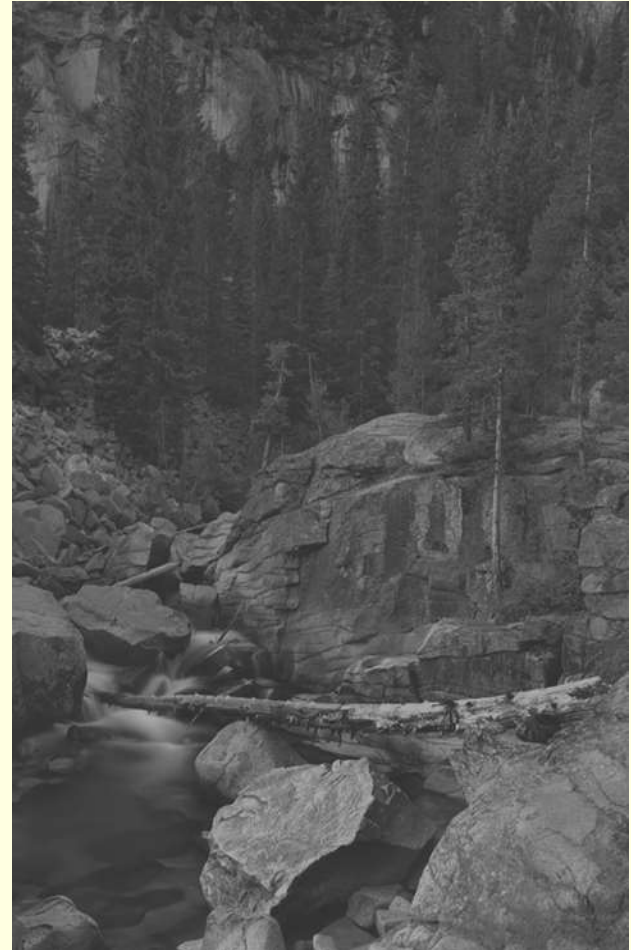
High contrast print

- Print appears harsh with too much contrast
- Too many areas print as solid black with no detail
- White areas are without texture and detail is missing

Sufficient contrast

- There are details in the shadows and detail in the highlights
- The print appears clean with good separation of the middle shades of gray
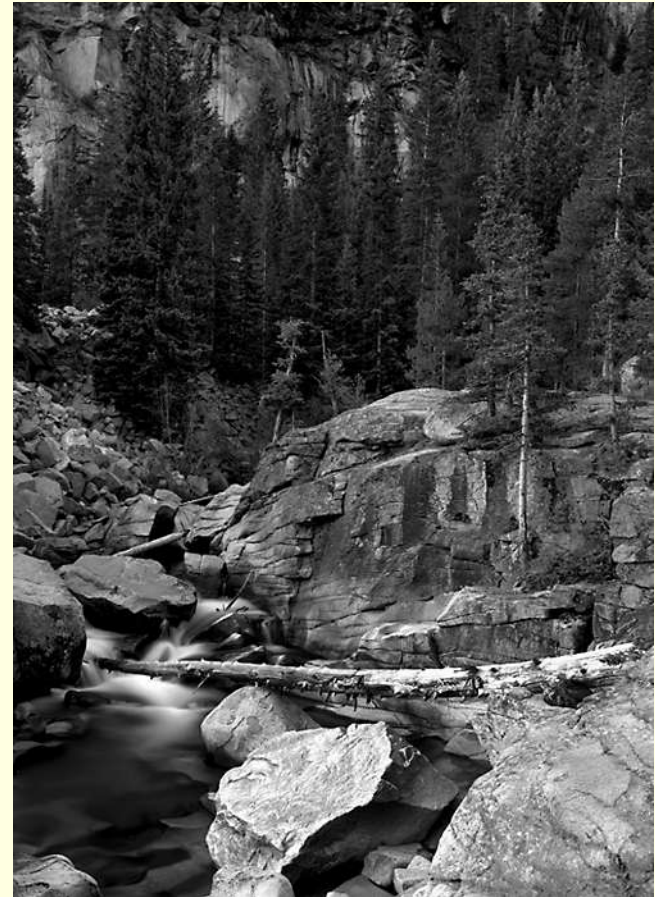
Controlling contrast

- Adjustment can be made to the contrast level of a print using variable contrast paper (VC).

- Filters or filtration we use in the enlarger, ranging from light yellow (low contrast) to deep magenta (high contrast) react differently to white areas and black areas causing the contrast or range of tones to decrease or increase.

Poly contrast filters

- Low contrast filters start at grade 00 (light yellow) and progress in 1/2 step increments to grade 2.

- Grade 2 is considered normal contrast for a normal negative

- Above grade two filters become more magenta and end at grade 5 or high contrast

Filtration light heads

■ Many enlarger light sources now have dials that change the level of contrast as you make adjustments. These are called variable contrast heads. These light sources have filtration similar to the poly contrast filters you change manually.

Evaluating contrast

- The density test strip should have produced a nice brilliant white with good detail.

- To now judge the range of contrast from these whites-look at the dark or shadow areas on the chosen section on the test strip. Are there rich black areas with sufficient detail? If not adjust the contrast filters as follows:

Evaluating contrast

We start with enlarge filtration at between 2-3

- If the dark areas are weak, choose a higher lever of contrast grade 3 or above (more magenta in color)

- Make a new test strip to determine new exposure

- If the dark areas are too dark or muddy with no detail choose a lower contrast grade 1 and a 1/2 or below (more yellow in color)

- Make a new test strip to determine new exposure

Poly contrast filters
How they work

- The colored filters or light from the enlarger change contrast because the paper has different layers of emulsion or coatings. These layers are produced to be sensitive to different colors of light-some more sensitive to yellows, some more sensitive to magenta.

- As we change the colors the paper responds more to those specific areas of light and dark.

Final note on contrast/density

- Do not try to change density and contrast filters at the same time.

- It is very difficult to perceive which control is actually effecting the print in a desired manner.

- Even the most skilled printers seldom attempt this mode of guesswork.

Conventional Printing

Conventional Contact Printing

■ Contact prints: negative is sandwiched with contact printing paper and exposes to light to produce a positive print.

■ The size of the negative becomes the final size of the print.

■ Requires no enlarger, only a light source.

Conventional Enlarger Printing

- Enlarged prints: negative is enlarged by projecting negative image onto printing paper/easel using an enlarger.

- Enlargement can vary in size

- Dodging and burning easily accomplished

Enlarging Paper

- Variable Contrast or Graded papers

- Physical construction
  - Resin Coated or plastic paper
  - Fiber base

- Appearance
  - Surface
    - Glossy
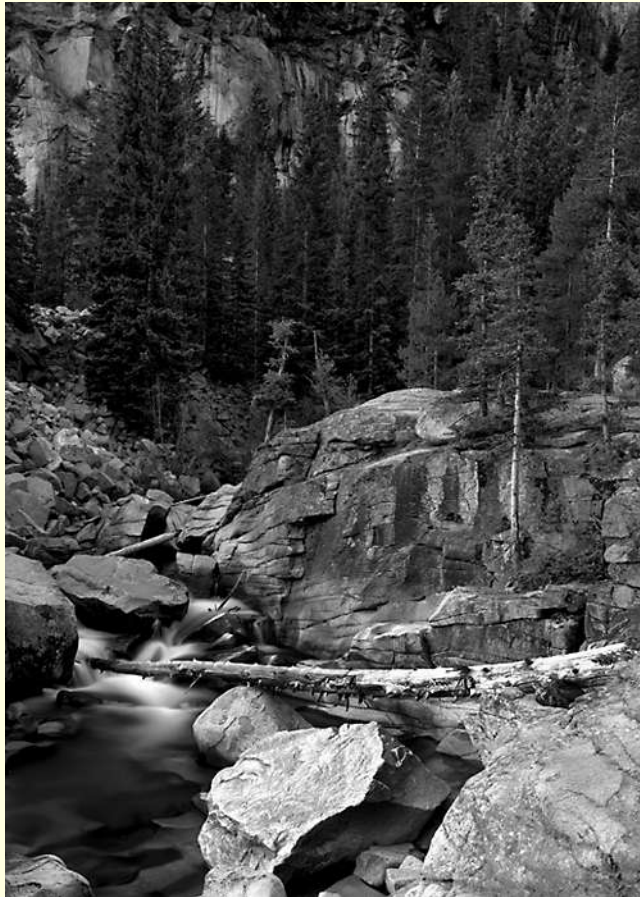   - Semi gloss
    - Matt
  - Color
    - Bright white
    - Warm tone

Printing/Processing Workflow

- **Developer**
- **Stop Bath**
- **Fixer**
- **Hypoclea**r (essential for fiber base)
- **Water rinse**
- **Wash** (5 minutes for resin coated, 20 minute to 60 minutes for fiber base)
- **Dry** (resin coated in dryer or hung, fiber base face down on drying screens)

The straight print

- Sufficient detail in the shadows
- Sufficient detail in the highlights
- Good separation of tones
- Overall feeling of luminosity
- Beginning of a good print