



DIGITAL  
CAMERAS

# CAMERA METERS & HOW THEY WORK

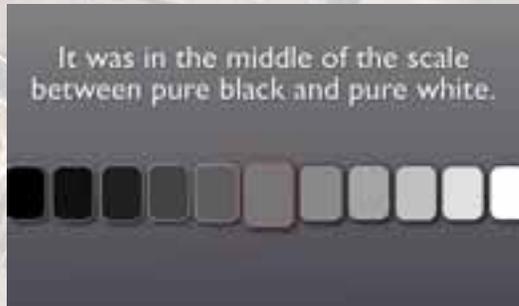
Michael Kellogg

# Zone System

- Zones are levels of light and dark
- Developed in 1941 and introduced to large audiences in 1948 by Ansel Adams in second volume of his Photographic Series, titled The Negative
- Intended for photographers shooting B&W film in large format cameras
- Zones numbered from 0-10
- Zone 0 is black, Zone 5 is 18% gray and zone 10 is white
- Each zone is an f/stop apart

# Zone System Description

- How do I figure out what zone to use for exposure?



Zone System Description	
Zone	Description
0	Total Black. Complete lack of density. Should appear as total black in the print
1	Near black, not detail. Effective threshold. Slight tonality, but no texture
2	Dark gray black. First suggestion of texture. Very dark detail in shadows.
3	Very dark grey. Dark textured bark on shadow side of tree. Average dark materials. Good texture can be seen. This is where you want the shadow details to be
4	Medium-dark gray. Average dark green foliage, shadow side of skin, dark stone, landscape shadow. Details are plainly visible. This is where you want the shadow side of Caucasian portraits in sunlight
5	Middle Gray. Standard 18% gray card reflectance. Clear northern sky, dark skin, grey stone, average weathered wood. Excellent detail visible
6	Rich mid-tone gray. Caucasian skin in sunlight, light stone and sand, shadows in snow in bright sunlit snowscapes. Sharp fine detail visible
7	Off whiter or bright light gray. White with texture, very light skin, silver hair, weathered white paint, snow with acute side lighting. Highest zone that will still hold good details
8	Almost White (not blank white). Textured snow in sun, reflected highlights on Caucasian skin. Delicate texture and some gradation exist, but no detail
9	Nearly pure white without texture (must be compared to pure white to tell the difference). Glaring white surfaces, snow in flat sunlight. No detail or significant texture visible
10	Pure white. Specular highlights, glares or light sources in the picture.

# Zone System

- With digital cameras the zone system focuses more on understanding how digital cameras respond to levels of light and dark
- This is the basics of understanding the Photoshop's curves command and histograms
- Matrix (Nikon) and Evaluative (Canon) meters incorporate the zone system into them automatically

# Camera meters

- Basically camera meters try to turn what they see into zone 5
- If you meter a bland white wall it will come out 18% gray
- Conversely if you do the same with a black wall it will also come out 18% gray
- Most meters in normal modes average out all the highlights, mid tones and shadows that it sees to come up with an exposure

# Camera metering modes

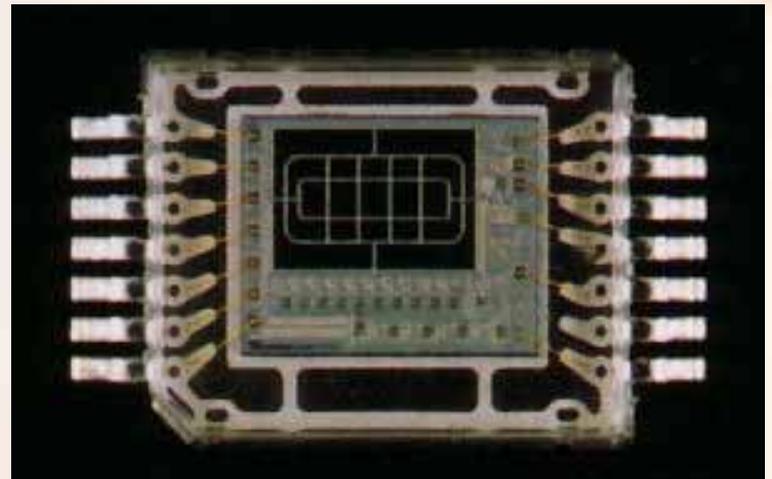
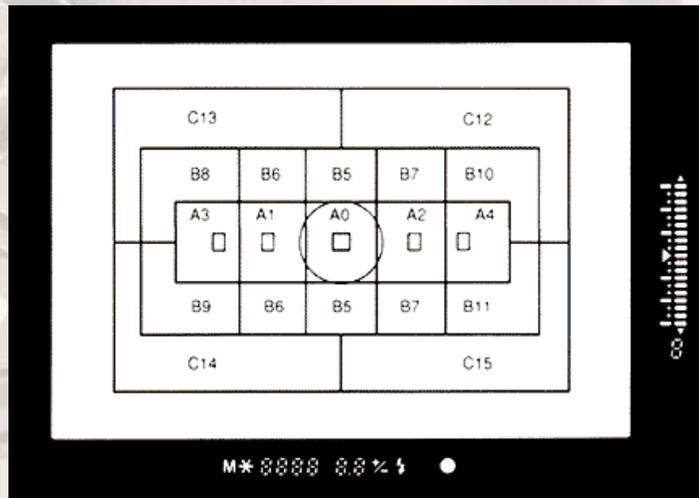
- Matrix or Evaluative metering
- Center-weighted average metering
- Partial or Selective metering
- Spot metering
- Fine spot metering
- TTL flash metering

# Matrix or Evaluative Metering

- Multiple zone meter system
- Determines main subject by focus point
- Breaks frame up into multiple segments
- Each segments brightness level is measured separately
- Information compared to a database of scenes stored in the cameras computer to determine which pattern fits best

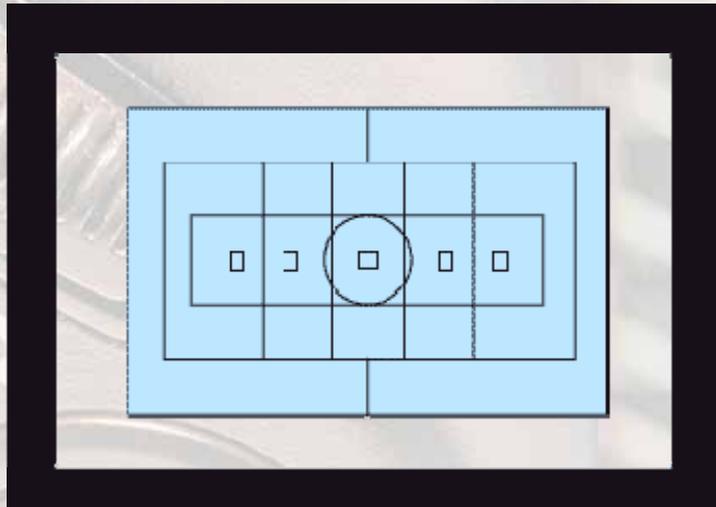
# Matrix or Evaluative metering

- Works best with scenes with a wide brightness range, but where there is roughly equal amounts of bright and dark tones
- Best used when you are unsure exactly which metering system to use



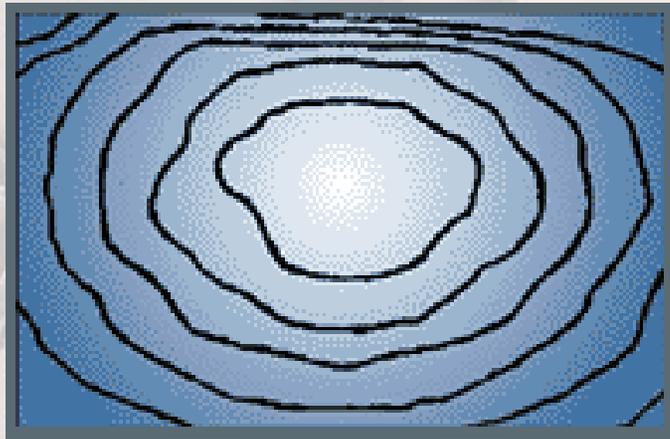
# Matrix or Evaluative Metering

- This metering mode is used for most imaging
- This mode estimates the main subject size and surrounding conditions



# Center weighted averaging

- This system will average all the light and dark areas in the frame, but then weights this reading more towards the brightness level predominant at the center of the frame

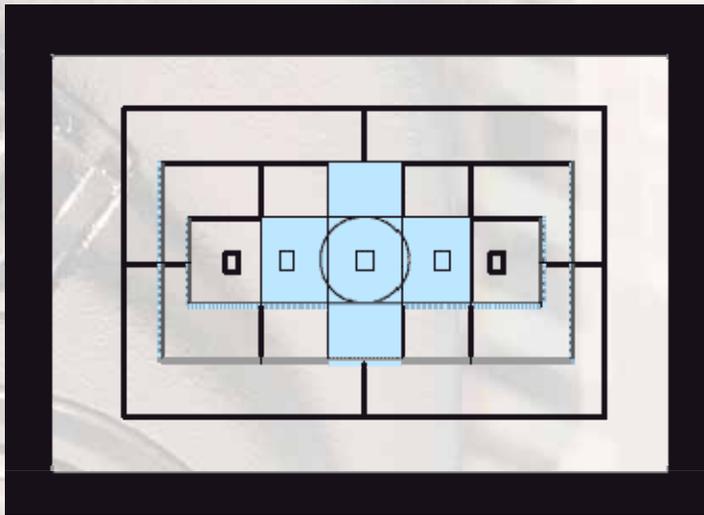


# Center weighted averaging

- This is an excellent system for general wildlife and people portraits where a centrally weighted average is required
- However do not use it if you do not know how to use your exposure lock on your camera
- Subjects that are not centrally located in the frame or backgrounds that are very dark or very bright will give an inaccurate reading

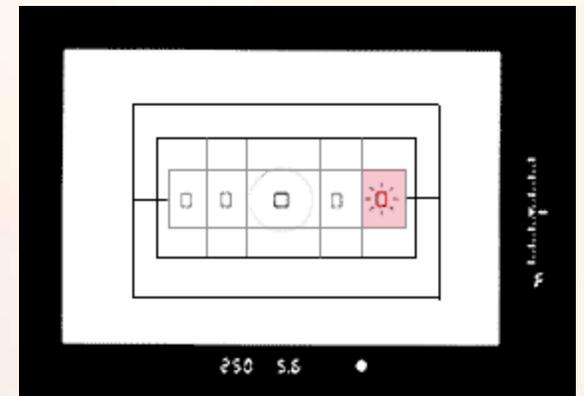
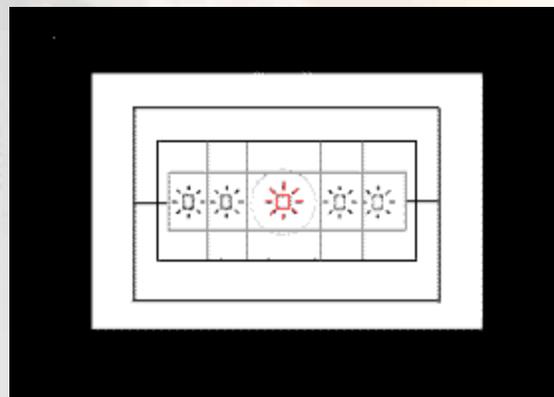
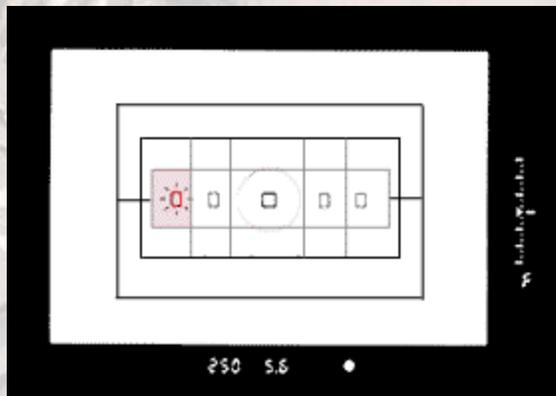
# Partial Metering

- This mode meters an area around 9-15% of the frame
- It is linked to the focus point
- Should be used when very dark or light areas are around your main subject



# Spot Metering

- The metering is concentrated on a very small area, between 2-4% of the total frame
- Use it when you have understood the principles of exposure control
- Great tool when shooting in manual mode



# Spot metering

- Remember the spot is giving you a zone 5 reading (18% gray)



# ETTL flash metering

- ETTL flash is linked to the focusing point
- Takes into consideration image size
- Also detects which mode camera is set to
- Can also adjust for exposure compensation
- May work with multiple flash units



# Metering Modes

- Evaluative Metering



# Metering Modes

- Center weighted averaging



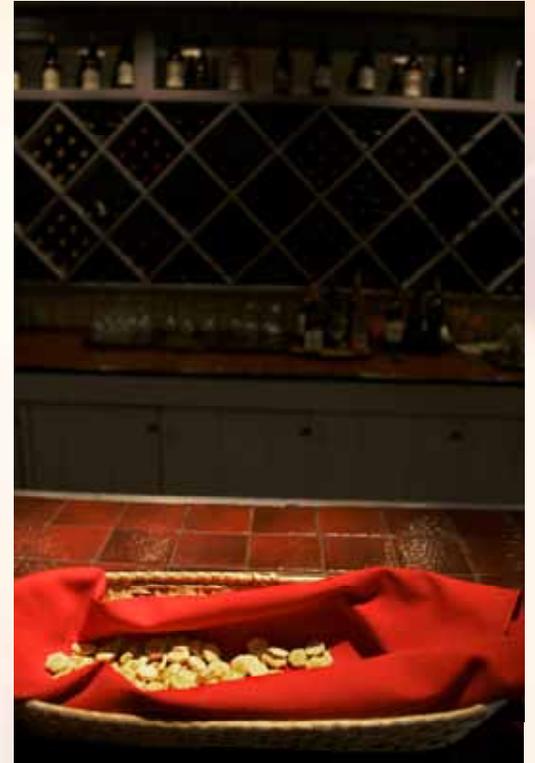
# Metering Modes

- Partial or Selective Metering



# Metering Modes

- Spot metering



# Metering Modes

- ETTL Flash metering

