ETTR – Expose To The Right

Om sensorer och exponering

LITE BAKGRUND

- Alla digitala kameror gör en bild i raw-format

- Alla kameror med elektronisk display gör en jpg-bild att titta på

- Telefoner, plattor och de flesta kompaktkameror lagrar jpg-bild i sitt minne eller på sitt minneskort

- Systemkameror och avancerade kompakter lagrar jpg och/eller raw

- Jpg använder 2^8 = 256 nivåer per färg per pixel

- Moderna sensorer har 2^{16} = 65536 möjliga nivåer men använder kanske 14 bländarsteg = 16384 nivåer

SENSORER

- Ögat och film har någon typ av logaritmiskt beteende. Ögat är väldigt adaptivt för ljusstyrka och ljusfärg

- Kamerasensorer är linjära. Dubbelt så mycket ljus dubbelt så mycket spänning att processa

- Sensorer har en röd, en blå och två gröna kanaler för att efterlikna det mänskliga färgseendet

LINEAR GAMMA

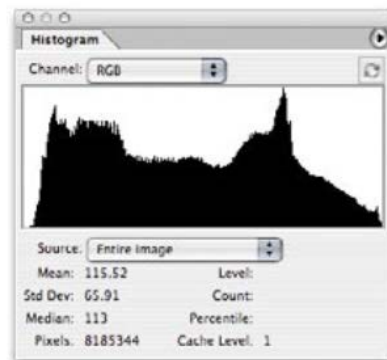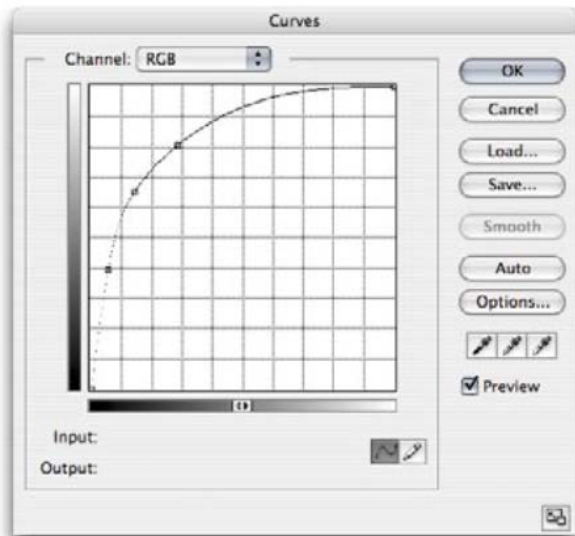Linear processed raw captures look very dark. But all the data is there in the image.
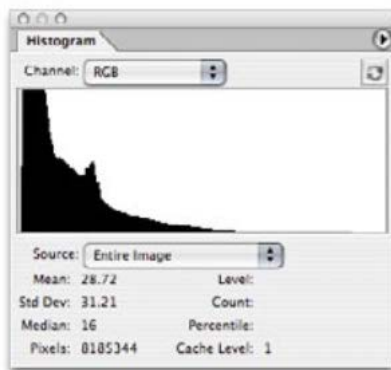
The histogram of the linear capture shows the vast majority of the data clumped toward the darker end.

Adobe White Paper:
Raw Capture, Linear Gamma, and Exposure

TONE CURVE

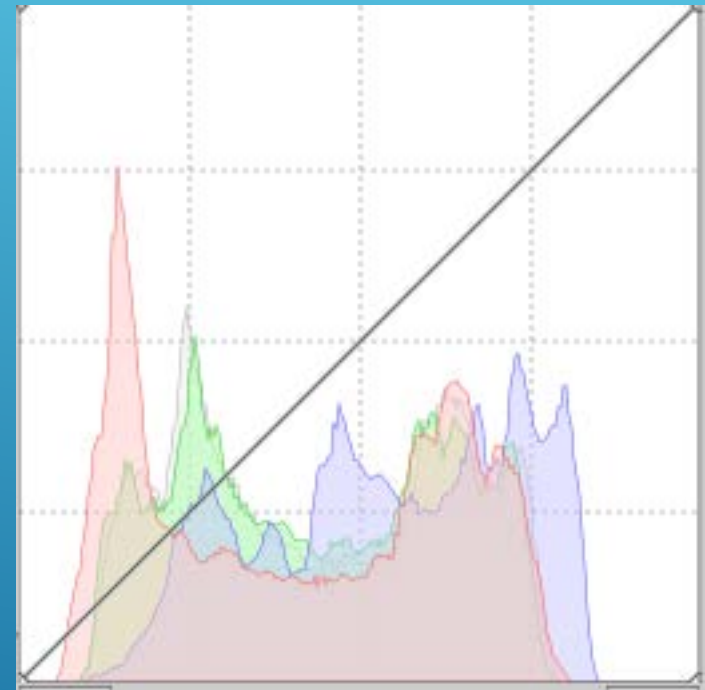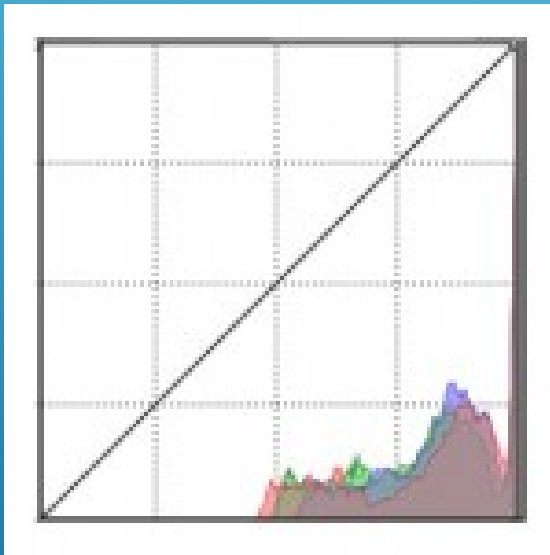The same linear processed capture with a tone curve appears normal.

HISTOGRAM

Källa:
Richard Zimmerman Photography
rezphotos.com
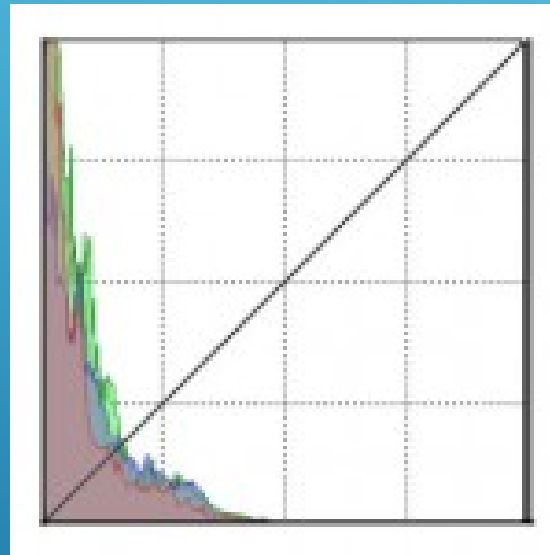**Histograms and Expose to the Right**

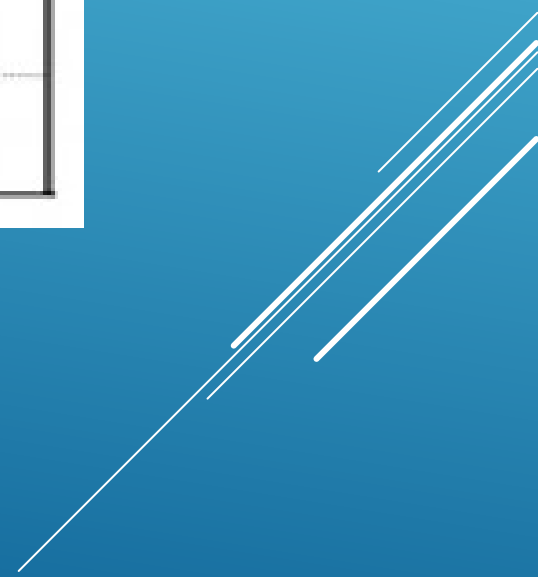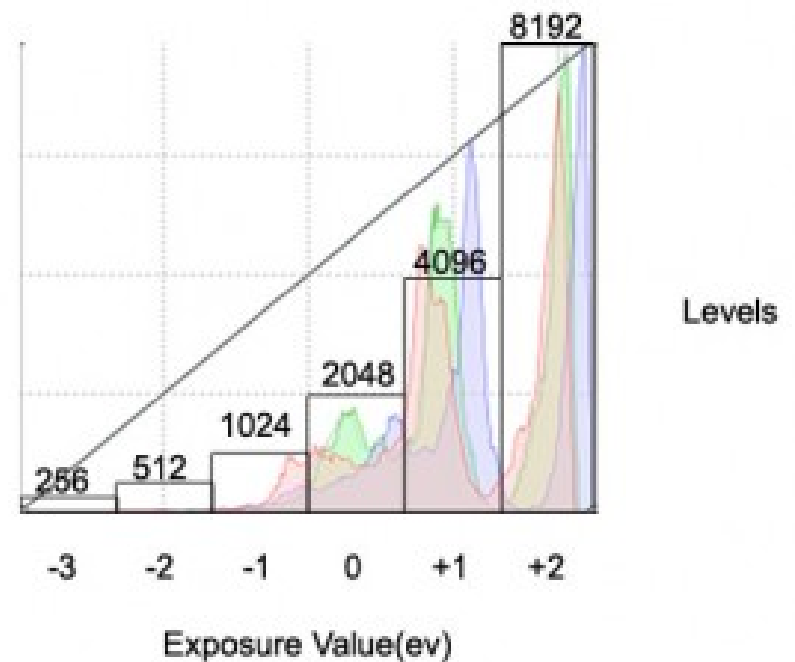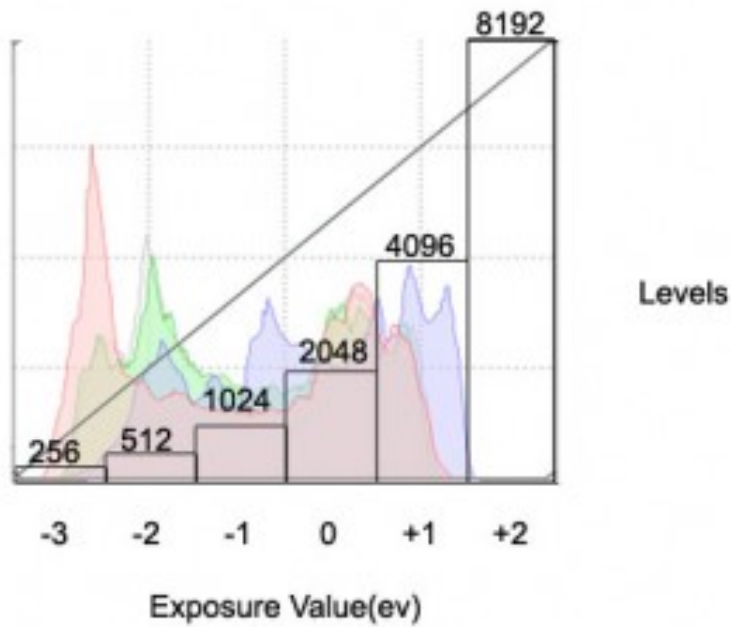- Visar bildens fördelning av ljus och mörker

- Ljust åt höger

Överexponering   Underexponering

Hälften av nivåerna finns i ljusaste EV!

Why?

Well, there is the story of Willy Sutton the famous American bank robber. When he was finally arrested, he was ask, "*Willy, why do you rob banks?*" Willy answered, "*Because that's where they keep the money.*"

The reason why we want to expose every shot that we take with the data as far to the right of the histogram as possible is because *that's where the data is*! It also is where the visible noise isn't. The visible noise is lurking in the darker stops.

There is actually more noise in the brighter stops, but because there is such a high signal level any noise is rendered invisible because of the superior S/N ratio.

A colleague measured his Canon 5D MKII and reported the following…

"*My 5D Mark II has a noise level of ~70 units at its maximum highlight level of 16,383 (on a 14-bit scale), and a noise level of ~30 units at a much darker signal level of 16 (i.e., 10 stops darker). The highlights appear clean because the SNR is good (16,383 vs 70). The shadows appear gross because the SNR is dismal (16 vs 30) – in fact, the signal is buried in the noise.*"

ZONE SYSTEM URSPR: ANSEL ADAMS CA. 1940
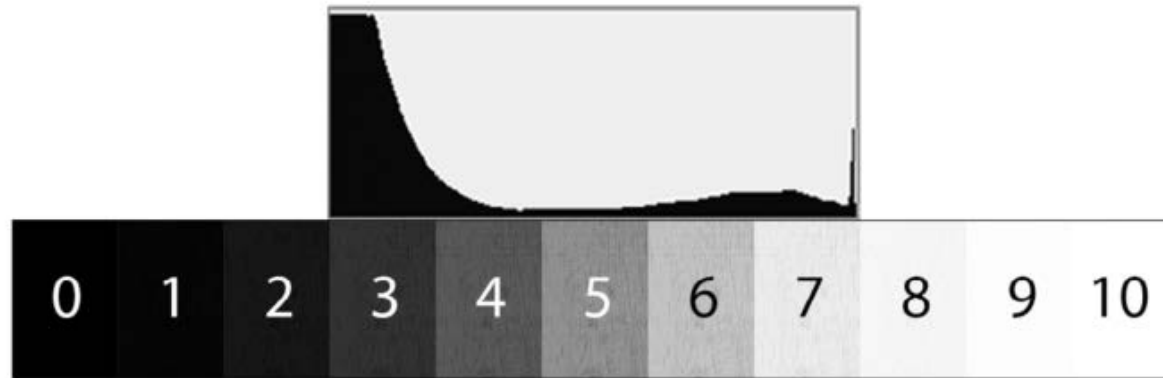
Källa:
Michael Frye
michaelfrye.com
When Old Meets New:
Understanding the Zone System
Photograph #4, Craft and Vision

The histogram on a typical DSLR shows about five
Zones: Zones 3 through 7.

Kamerans jpg på displayen

ATT LÄSA SJÄLV

Utgivare	Författare	Titel	url
Craft & Vision	Martin Bailey	Striking Landscapes	Pdf-fil
	Martin Bailey	Why Expose to the Right (Podcast 381)	http://www.martinbaileyphotography.com/2013/07/29/why-expose-to-the-right-podcast-381/
	Michael Frye	When Old Meets New: Understanding the Zone System	Pdf-fil, Photograph #4
The Luminous Landscape	Michael Reichmann	Expose Right	https://luminous-landscape.com/expose-right/
	Michael Reichmann	Optimizing Exposure	https://luminous-landscape.com/optimizing-exposure/
RawDigger	"IEXA"	Exposure for RAW vs. Exposure for jpg	http://www.rawdigger.com/howtouse/exposure-for-raw-or-for-jpegs
Adobe	Bruce Fraser	Raw Capture, Linear Gamma, and Exposure	WhitePaper
		The Lightroom RGB Space	WhitePaper