

# Documentary choices

camera and codec

# Camera design & ergonomics

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There's also the question of weight, it appears that you're all wimps 😂

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C200 - I like this camera a lot, great internal VB raw recording, the best AF available with a really responsive touch screen. Really an under camera unless you want to double the cost!

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However, it's not a camera for wimps as it's a lot heavier than the previously mentioned cameras and needs bigger batteries.

# Record formats

This is where we come to a slightly contentious area.

Simply put, there is no substitute for lots of data.

Your camera, whatever it is, is capable of creating an image with a lot of information.

The issues come when you try to record that information.

# Record formats

FS7 records 10 bit UHD at 250Mbps internally

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I know you can record raw externally on all of them but that's a pain!

# Record formats

HDSLR's have very limited internal recording capability

They have to discard a lot of your picture to be able to record it.

I mean a lot, repeat, a lot of your image is thrown away.

Here's why...

# Record formats

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UHD, 25fps, 8bit, 4:2:2 is **415Mbps**

Commonly used HD/SLR's record this at **100Mbps**

What are the consequences?

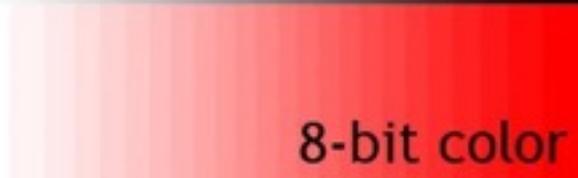
# Record formats

8 bit leads to banding

10-bit color



8-bit color



*8-bit video*



*10-bit video*

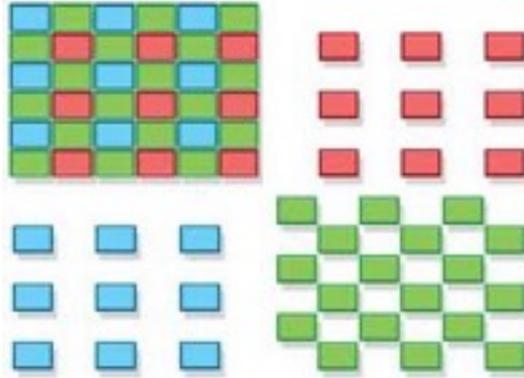
# Record formats

Compression is evil



# Lets jump back a bit

Your image starts as a Bayer pattern image



It's not 4K! There are holes in it! Its  $2K * 2K$  green and  $2K * 1K$  red & blue

Someone has to guess what the colours are in the holes!!

# Lets jump back a bit

So you take this already degraded image and throw chunks of it away!

That's what compression is

Yeah you can hide that with talk of algorithms but they are really throwing away bits of your image and hoping you won't notice.

# Lets jump back a bit

I had a great conversation with a guy in a bar at NAB

He seemed to know a lot about compression and told me that you could have mathematically lossless compression up to 3:1 beyond that it's "visually lossless"

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That guy was Ray Dolby

# RAW, log and rec709 are very different

Rec709 (HD-SDR) has about 7 stops DR it was designed to have 5 stops DR

Rec 2100 (UHD-HDR) has between 10 and 14 stops DR

Those are both gamma encoded formats designed for display not origination

The original log Cineon is 10 bit with 90 bits per stop or 11.3 stops DR

ARRI reduced the number of bits per stop to 80 to get more DR

RAW gives you ALL that your camera is capable of.

# RAW, log and rec709 are very different

If you record to an encoded format you are hugely limiting yourself

You'd better get the image exactly right when you shoot

Even then you're likely to get banding or other artifacts

Log will give you room to grade if you're working in HD and your project has no possibility of future sales

Even then you're chancing it

If you're working for a UHD finish only RAW gives you the flexibility you may need

# Finally let's look at EI

The EI you use is a balance between highlight detail and noise

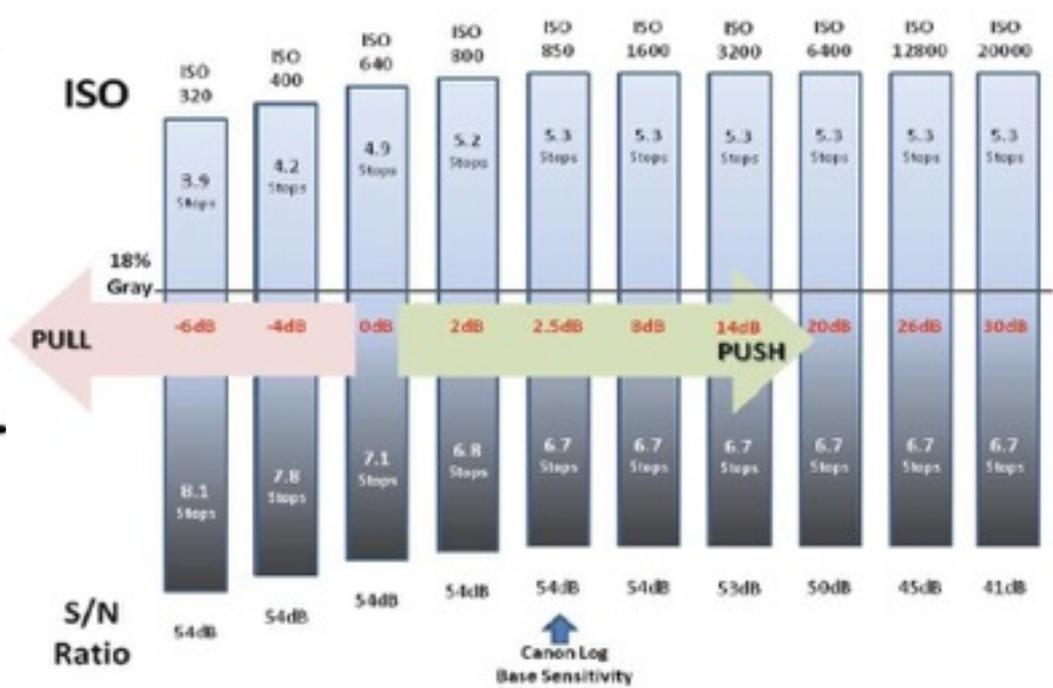
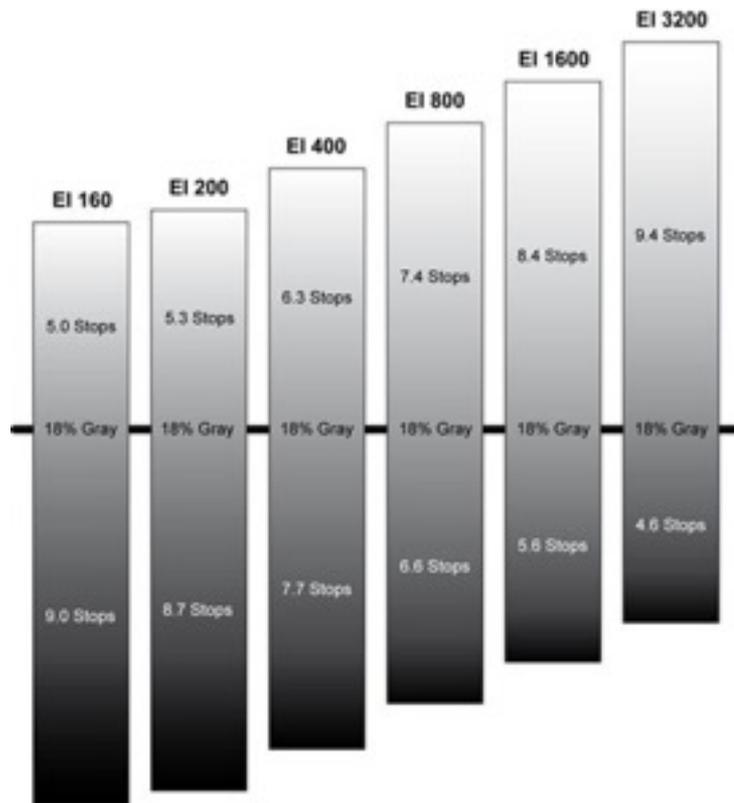
I generally like to put my exposures bang in the middle of the range and this means that I need to rate most cameras slower than the manufactures recommend.

Looking at the manufacturers charts this means  $+0.7$  with Canon and  $+0.4$  with ARRI

What happens when you change EI?

It depends on the camera...

# Finally let's look at EI



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Either approach works, they each have good and bad attributes

You need to know which one is used in your camera

# Finally let's look at EI

