# How should I present my images? 

## With added @ rabbit holes

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## That's not what I mean



## Someone asked...

## How do I decide which images I show as DPIs and which as prints?

## Someone answered...

## How do I decide which images I show as DPIs and which as prints?

"How long have you got?"

## Someone else answered...

## How do I decide which images I show as DPIs and which as prints?

"I print loads and then decide"

I thought...

## How do I decide which images I show as

 DPIs and which as prints?
## There has to be a way of narrowing it down

I thought...

## How do I decide which images I show as

 DPIs and which as prints?Some of this may be controversial

## Why print?

- You think only a print is a real photograph

> "The negative is the score, and the print is the performance."

Ansel Adams

## Why print?

- You think only a print is a real photograph
- You think the print may last longer than you will be able read the digital file



## Why print?

- You think only a print is a real photograph
- You think you may be able to use a print longer than you will be able read the digital file
- You want something to hang on a wall



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- You want something to put in a photo album



## Why print?

- You think only a print is a real photograph
- You think you may be able to use a print longer than you will be able read the digital file
- You want something to hang on a wall
- You want something to put in a photo album
- You want to boost the size of the print entry in the internal competition


## Process



## Resolution



1,600 * 1,200 $=1,920,000=1.92$ Megapixels


$$
\begin{aligned}
& 16 * 300=4,800 \\
& 12 * 300=3,600 \\
& 4,800 * 3,600=17,280,000=17.28 \text { Megapixels }
\end{aligned}
$$

## So why does resolution matter?

## Detail!



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## Aspect ratio

Poor use of available projected resolution

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Poor use of available projected resolution


## Why all this resolution?

300 dpi is recommended for prints...
...but you can get away with less...
...or even a lot less
depending on how you will view it


## Why all this resolution?

This image was taken on a 3.2 megapixel Olympus C-3020Z in 2002 at maximum resolution of $2048 \times 1536$ pixels.

Then cropped to about $1700 \times 1260$ pixels (about 2.2 megapixels).

Then printed at $13.5^{\prime \prime} \times 10^{\prime \prime}$, i.e. about 125 dpi


## Projection - when to downsize?

Your 20+ Megapixel image has to be downsized to 2 Megapixels.

1. If we project a 20+ Megapixel image the software used for projection would have to do the downsizing.
2. Or, you could downsize the image in your photo editor, then we can project it with little further processing.

In a recent discussion someone claimed that 1) produces better results which is against traditional thinking, but even if he's right:

- In 2) we can handle smaller files
- In 2) you are in control particularly of the downsizing mechanism and sharpening


## Downsizing

If the club laptop does the downsizing there is a risk, however slight, that you don't like the result. If you are in charge of downsizing then you can't complain. You get to decide:

- Which photo editor you use
- Which interpolation mechanism you use, e.g.:
- Linear
- Cubic
- Some people (used to?) swear by resizing in two or more steps (this may or may not have been hocus pocus, but if someone believes in it they can do it)


## Sharpening

Sharpening doesn't make a blurred image sharp, but it does play with the contrast at edges within the image.

Some people will recommend some initial light-touch sharpening of the original image, but certainly if you are going to use sharpening you need to do it on the image at its final size for output.

## Sharpening



Original image


This loses or at least changes the effect of the sharpening


You can control the effect of sharpening at the final resolution whether it will be printed or projected

## Dynamic range

How far apart are the blackest black and the whitest white.
In photographic terms "how many stops range?"
Devices differ, but let's say:

- Projector: 300:1 (about 8 stops)

- Monitor LED / OLED: 2000:1 / infinite (11 stops +)
- Inkjet Printer / Chromogenic Printer: 64:1 (6 stops)

Cameras have a theoretical range of 10-14 stops, but actually achieve $8-12$ stops

## Dynamic Range

The dynamic range of a projector is higher than a print, but is it usable?

- A low key image may be degraded by the light the projector emits where there are blacks, or worse by any stray light in the room at the time of projection
- It may take time for viewers' eyes to become accustomed to high or low key images
- In particular a projected high key image can be a shock to viewers, particularly when shown immediately after a low key image



## Colour gamut

Color gamut is the range of colour a device is capable of producing: hue, saturation and lightness. By their nature reflective (subtractive-CMYK - e.g. print) media have a narrower gamut than emission (additive - RGB-e.g. monitor or projector) media.

Devices differ, but let's say:

- Projector: sRGB-ish
- Monitor LED / OLED: sRGB-ish (some may achieve significantly more)
- Inkjet Printer : CMYK narrower than sRGB, increased by using other colours and multiple blacks
- Chromogenic Printer : Narrower than sRGB What about Adobe RGB?


## sRGB vs AdobeRGB

- AdobeRGB
- Has a wider range of colours
- It improves upon sRGB's gamut primarily in cyan-greens
- The recommendation is to use aRGB for printing
- ...but...
- If you shoot in RAW the camera setting is irrelevant
- sRGB is the standard colour space for displaying images online
- sRGB has the same number of colours, just in a reduced range
- If $a R G B$ is blindly converted to sRGB the colours will be dull
- aRGB can represent more colours but at the cost of precision
- Most competitions demand sRGB for DPIs
- You must be sure every stage of your workflow supports it
- Few output media can use the extended colour range
- ...and...
- Do all your editing in a standard working space such as Adobe RGB or sRGB, not in a printer profile
- For publishing you need CMYK



## Touchy-feely stuff

A projected image will be seen differently:

- By you at home
- By the judge at home
- Projected at the club

A print will look different in different lights, but it is fairly predictable.
However:

- You can choose the method of printing (inkjet or chromogenic)
- You can choose the type and texture of the paper (more choice with inkjet)
- You can choose how it is mounted


## Conclusion

Things to consider:

- Fine detail requires higher resolution, which may suggest print
- Projection supports higher dynamic range, but to what extent is it usable?
- Projection may support a wider colour gamut
- It takes more effort to prepare a print
- The way a print is seen is more predictable
- Some people think it has to be a print to be a photograph


## Why I don't own a printer - beware opinions!

- I don't print very often
- Unused inkjet printers get clogged up and are more trouble than they are worth
- My wife has a very basic inkjet printer which I use for printing documents
- The commercial service I use produces chromogenic prints more cheaply than I could produce inkjet prints
- The chromogenic process provides me the choice of gloss and lustre prints which is enough for me
- If I wanted a special quality print I would seek out a higher-end service
- While Ansel Adams said "The negative is the score, and the print is the performance" things have changed. The RAW file is now the score, the jpg is the performance and the print is just a mechanical output.


## The End

