

A RAW Development Workflow

Presented by

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2017

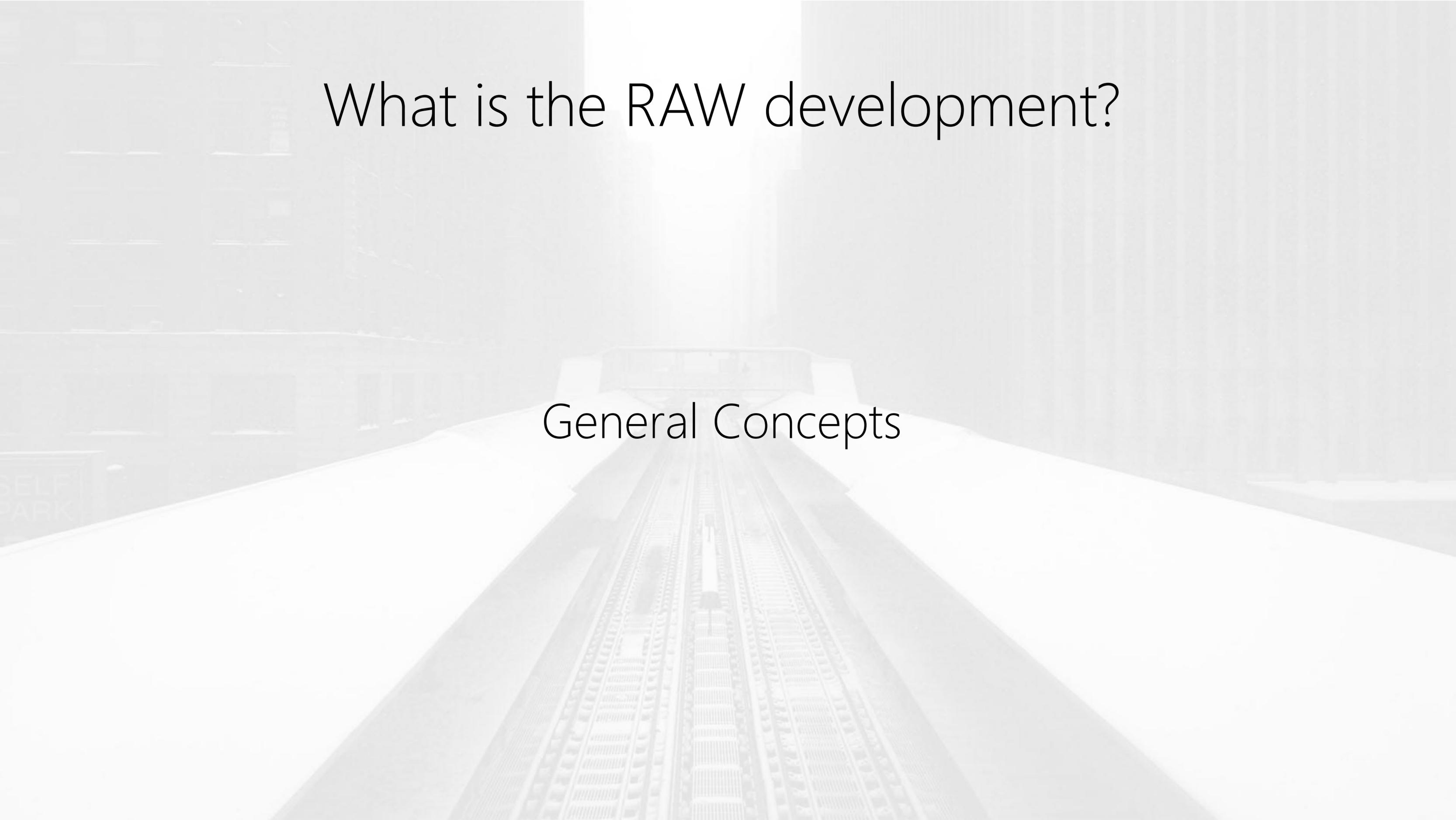
Who I am?

An enthusiastic photographer



- I'm French and installed in Montreal for a bit more than a year
- I work on the software engineering for the audiovisual industry
- This is my 2nd year as a member of MCC
- I'm doing photography for a good 35 years
- I'm mainly acting in landscapes, architectural, cityscapes, abstracts and Urbex

<https://www.facebook.com/david.rouchet.photography/>



What is the RAW development?

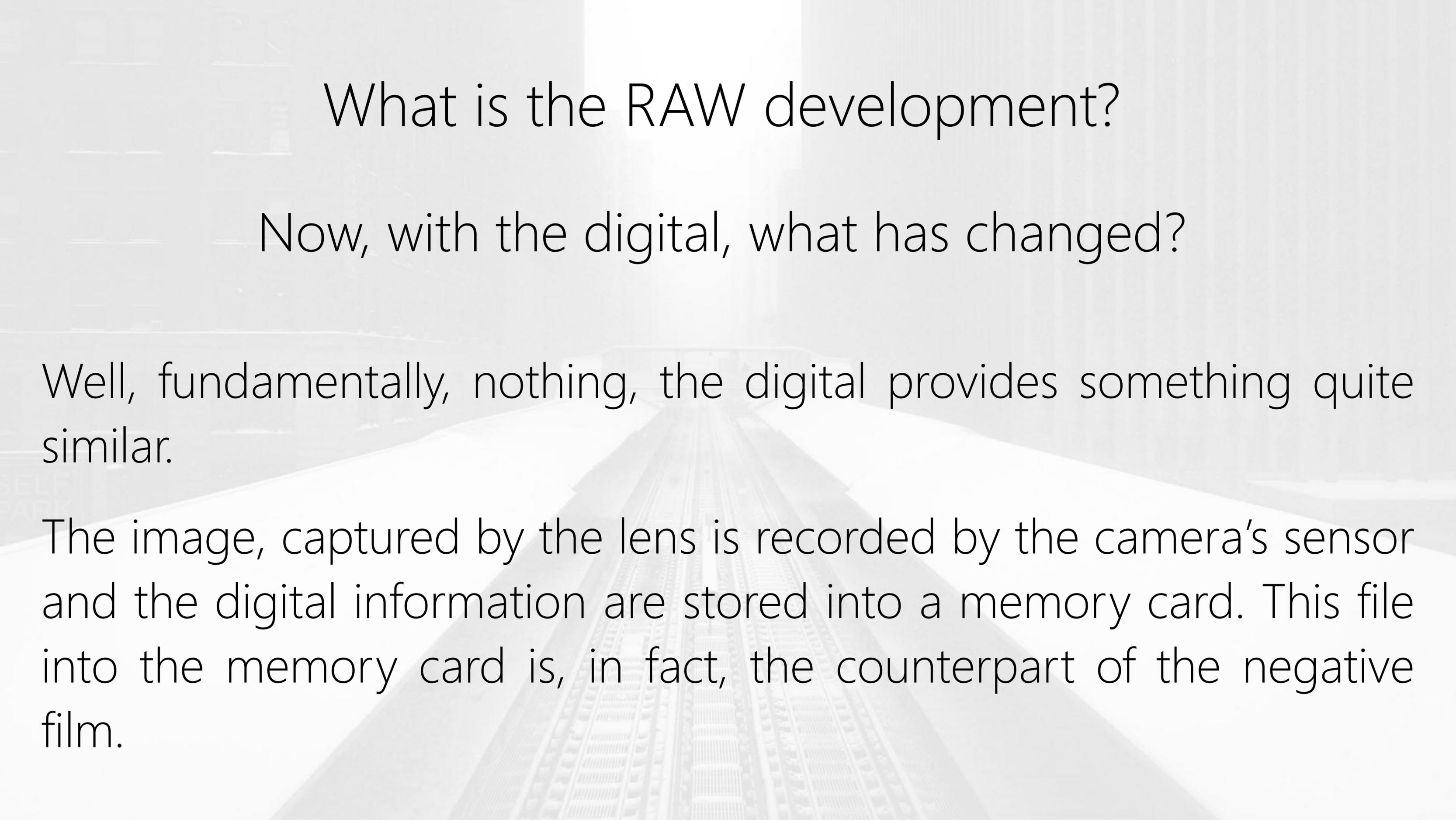
General Concepts

What is the RAW development?

During the film era

- There was the negative or sometimes the slide (positive) on which during the shooting, a latent image was recorded (non visible and fragile)
- The film needed to be developed, often on the form of film roll
- Eventually, a paper print was exposed

During these two last phases, it was possible to intervene on the rendering, changing chemical parameters and lighting while the paper was exposed



What is the RAW development?

Now, with the digital, what has changed?

Well, fundamentally, nothing, the digital provides something quite similar.

The image, captured by the lens is recorded by the camera's sensor and the digital information are stored into a memory card. This file into the memory card is, in fact, the counterpart of the negative film.

What is the RAW development?

So, what the development is about?

Developing a digital RAW image, consists to apply the appropriate treatments to the data, in order to produce a final display on a screen or on a print.

But before all, the approach is to try to reproduce on the final display, what we've perceived during the shoot and not what the camera has recorded

This is the role of RAW image development software



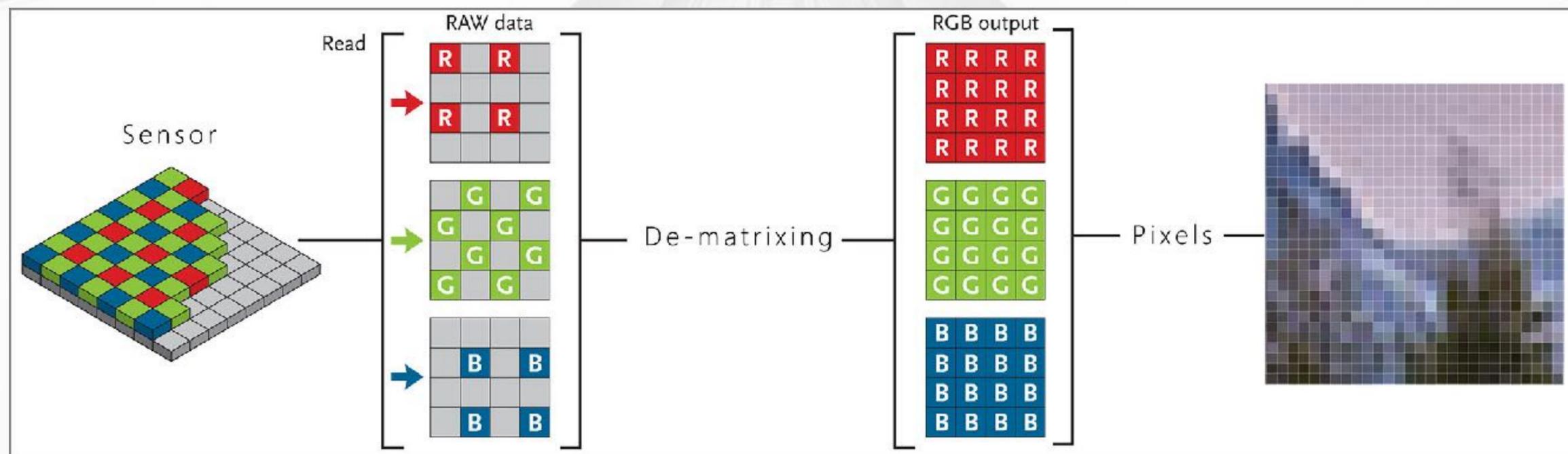
The RAW format

The best source of information

The RAW format

The best source of information

The RAW format is the primary form of the data recorded by the sensor, before any processing. These data are not yet an image (composed by pixels), but photosites, a type of latent image (very similar to the negative film), which needs to be de-matrixed.



The RAW format

So, why RAW vs JPG

The quick answer is that the RAW image contains much more information than the JPG image, and moreover untouched data, hence provides the maximum freedom in the development process.

<- Actual data quantity ratio (x64)

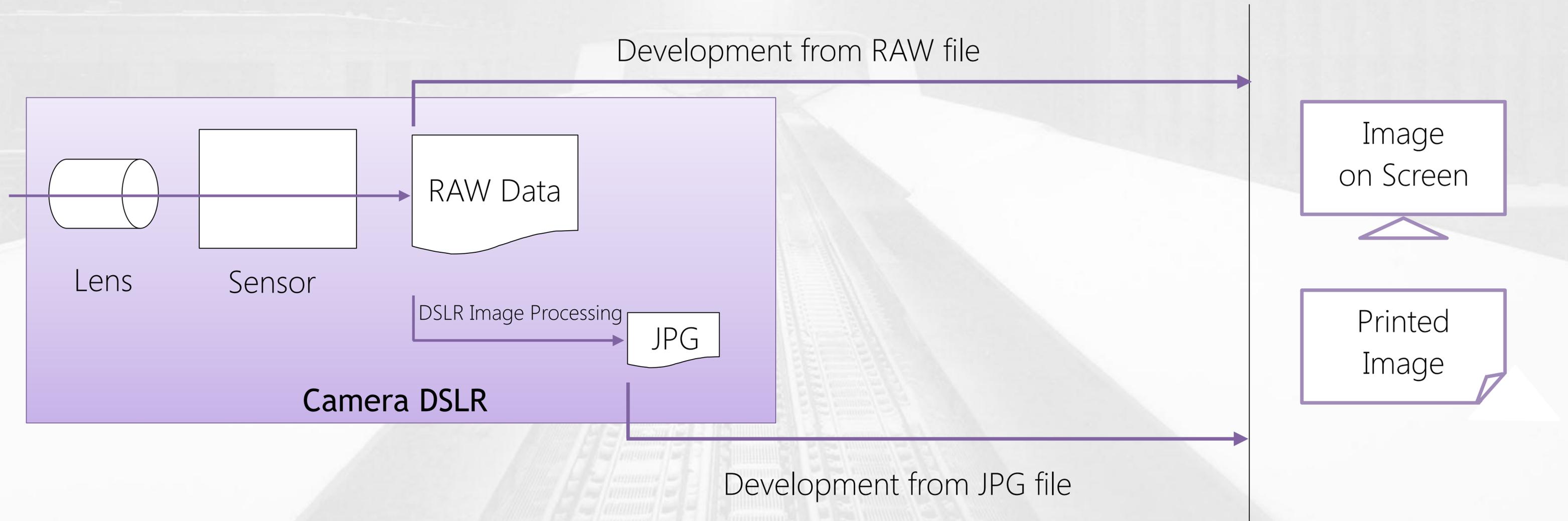


JPG - 8 bits	RAW - 14 bits
256	16384

Number of tones per color (R/G/B)->

Image journey from the sensor to final display

Your camera is also a development software, this is how the camera produces pre-developed JPG images. However, the JPG images have already been drastically altered



So what RAW brings over JPG?

- Uncompressed data, therefore no loss due to compression
- A significantly bigger quantity of information
- Un-touched data, holding all the details your camera/lens can possibly generate
- Unset white balance, allowing to be defined afterwards
- Shadows and highlights recovery capability
- But more space used on your hard drive
- And more work to obtain the final image

Development Workflow

Conventional step by step adjustments

Development Workflow

Conventional step by step adjustments

- ▶ Analysis of the histogram

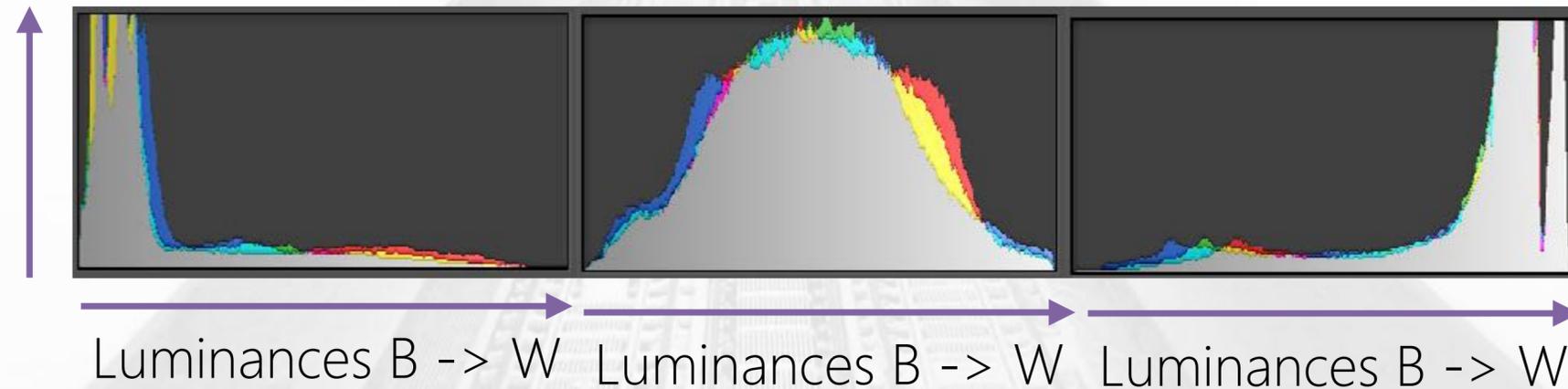


Under-exposed or
mainly dark subject

Well-exposed

Over-exposed or
mainly bright subject

Quantity of Pixels

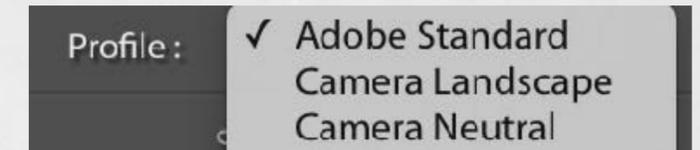
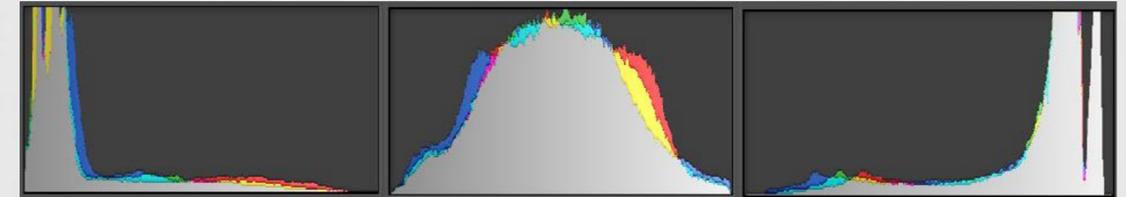


This is a graph, this is NOT representing the image itself, on a spacial standpoint

Development Workflow

Conventional step by step adjustments

- ▶ Analysis of the histogram
- ▶ Camera profile adjustment (Flexibility depends on the software)

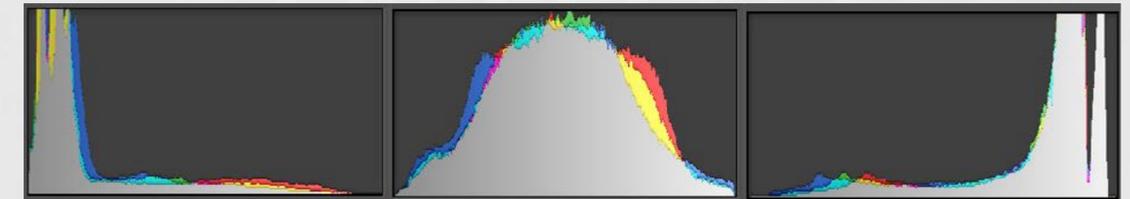


➔ This represent the image styling that you have in-camera, Picture Control for Nikon, Picture Styles for Canon. This profile is automatically applied to JPG file in the camera.

Development Workflow

Conventional step by step adjustments

- ▶ Analysis of the histogram
- ▶ Camera profile adjustment (Flexibility depends on the software)
- ▶ White Balance (sometimes expressed in °K (kelvin), higher the cooler)



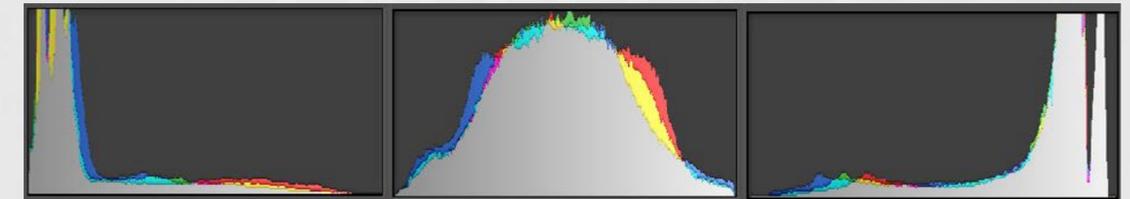
➔ Probably the more difficult to adjust because it has to be judged

This is a question of taste, and subjectivity even more than other adjustments, unless the image is a reference for a specific usage, example: paints or objects reproductions

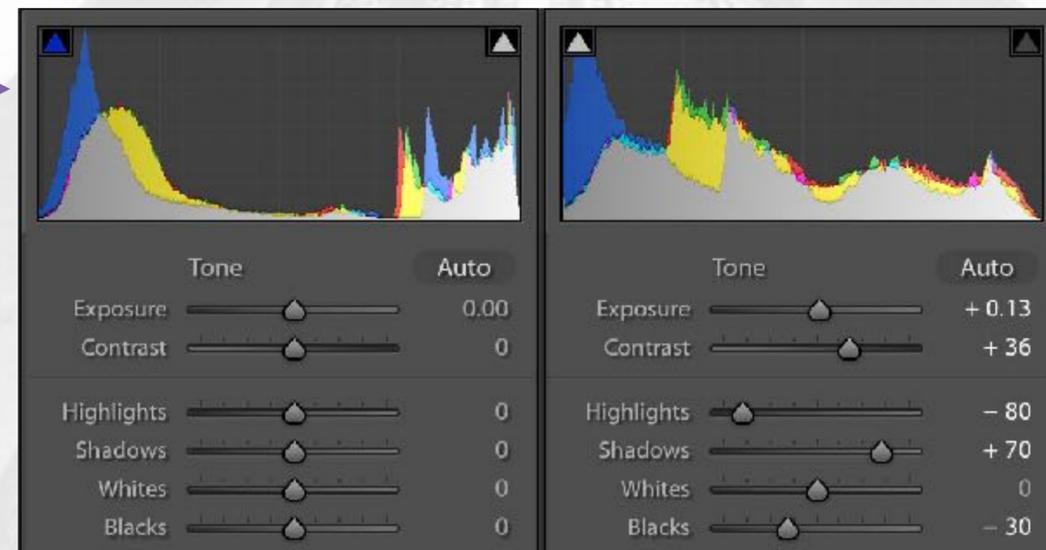
Development Workflow

Conventional step by step adjustments

- ▶ Analysis of the histogram
- ▶ Camera profile adjustment (Flexibility depends on the software)
- ▶ White Balance (sometimes expressed in °K (kelvin), higher the cooler)
- ▶ Tones (Exposure, Contrast, Highlights/Shadow, Whites, Blacks, Tone Curve...)



Histogram shows a lack of mid-tones

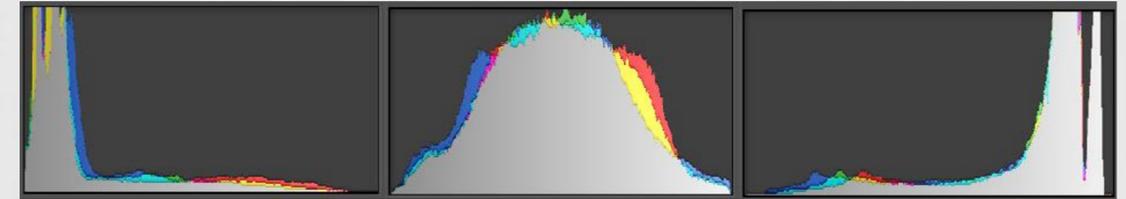


Histogram after basics adjustments
Exposure and contrast gives the base
Bringing down the HL and opening the shadows spread the tones
Black and White points set the full dynamic of the image

Development Workflow

Conventional step by step adjustments

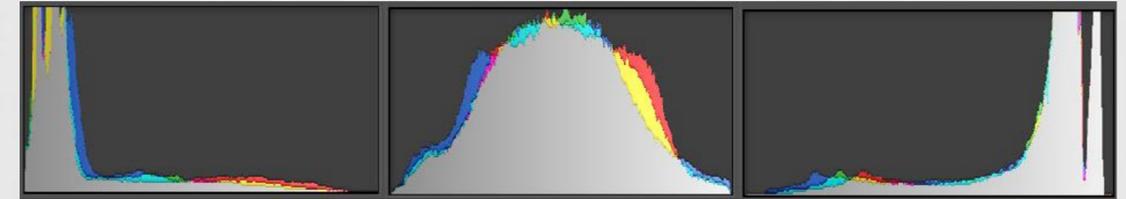
- ▶ Analysis of the histogram
- ▶ Camera profile adjustment (Flexibility depends on the software)
- ▶ White Balance (sometimes expressed in °K (kelvin), higher the cooler)
- ▶ Tones (Exposure, Contrast, Highlights/Shadows, Whites, Blacks, Tone Curve...)
- ▶ Colors (Hue, Saturation, Luminance, Vibrance) or Black&White Conversion
 - ➔ Brings back colors from the RAW information, and alternatively correct or change certain colors to better match the desired aspect of the image.



Development Workflow

Conventional step by step adjustments

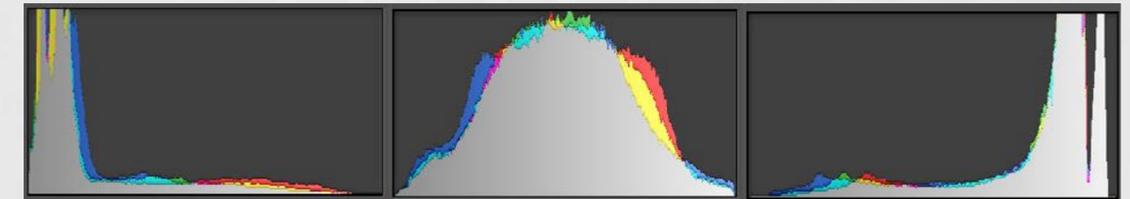
- ▶ Analysis of the histogram
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 - ▶ White Balance (sometimes expressed in °K (kelvin), higher the cooler)
 - ▶ Tones (Exposure, Contrast, Highlights/Shadows, Whites, Blacks, Tone Curve...)
 - ▶ Colors (Hue, Saturation, Luminance, Vibrance) or Black&White Conversion
 - ▶ Clarity (emphasis of micro-details) or De-haze adjustments (haze removal/increase)
- ➔ Watch out Clarity and De-haze as a global adjustment, be gentle



Development Workflow

Conventional step by step adjustments

- ▶ Analysis of the histogram
- ▶ Camera profile adjustment (Flexibility depends on the software)
- ▶ White Balance (sometimes expressed in °K (kelvin), higher the cooler)
- ▶ Tones (Exposure, Contrast, Highlights/Shadows, Whites, Blacks, Tone Curve...)
- ▶ Colors (Hue, Saturation, Luminance, Vibrance) or Black&White Conversion
- ▶ Clarity (emphasis of micro-details) or De-haze adjustments (haze removal/increase)
- ▶ Optical Corrections (Chromatic aberration, distorsion et vignetting)



more...

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry

- ➔ These adjustments, by nature global, are limited in most of the RAW development softwares, but generally enough for most images.

If more geometry adjustments are needed, an Editing Software, such as Photoshop is required (Free Transform tool and Adaptative Wide Angle filter is PS, to list a few)

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry
- ▶ Dust cleaning, spots removal, small elements removal, red eyes, etc...
- ➔ Like for geometry, these adjustments, are limited in most of the RAW development softwares, and/or can be tedious to use (spots removal in Lightroom for example).

If a bigger job is needed, an Editing Software, such as Photoshop is required (Spots healing and patch tools is PS, to list a few)

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry
 - ▶ Dust cleaning, spots removal, small elements removal, red eyes, etc...
 - ▶ Local adjustments
- ➔ Almost all the previous adjustments that we have seen can be used, but instead of applying them to the entire image, they will be applied selectively on the areas that you deem the most appropriate.

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry
- ▶ Dust cleaning, spots removal, small elements removal, red eyes, etc...
- ▶ Local adjustments (Almost all adjustments from previous slide)
- ▶ Noise Reduction (Depending on ISO settings)
 - ➔ If you shoot below 400 ISO (value depending on the camera), you don't really need to reduce the noise, which as a side effect, destroys the micro-details of the image.
Applied with 1:1 Image inspection

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry
- ▶ Dust cleaning, spots removal, small elements removal, red eyes, etc...
- ▶ Local adjustments (Almost all adjustments from previous slide)
- ▶ Noise Reduction (Depending on ISO settings)
- ▶ Sharpening
 - ➔ In Lightroom, a formula that I use often, is to set the Sharpening at 100, minus the value set for Noise Reduction (i.e 100/0, 80/20 or 70/30).

Development Workflow

Conventional step by step adjustments

...and more

- ▶ Cropping, Geometry
- ▶ Dust cleaning, spots removal, small elements removal, red eyes, etc...
- ▶ Local adjustments (Almost all adjustments from previous slide)
- ▶ Noise Reduction (Depending on ISO settings)
- ▶ Sharpening
- ▶ Resizing and accentuation for output image format adaptation (Screen, Print)

Development Workflow

Local adjustments versus Global adjustments

Development Workflow

Global adjustments

Well, as the title suggests, global adjustments are image adjustments which affect the whole image, on its entire surface

Initial RAW Image

Global Adjustments

Before



After

White Balance, Exposure, Contrast, Highlights, Shadows, Blacks, Whites, Vibrance, Clarity, Blues Saturation

Development Workflow

Global adjustments +

While a global adjustment affects the whole image, it doesn't necessarily mean uniformly. Here the blues de-saturation only affects the blues across the image. This is an edge case between the concepts of Global and Local adjustments

Global Adjustments

Parametric Adjustments

Before



After

Blues Saturation

Development Workflow

Local adjustments

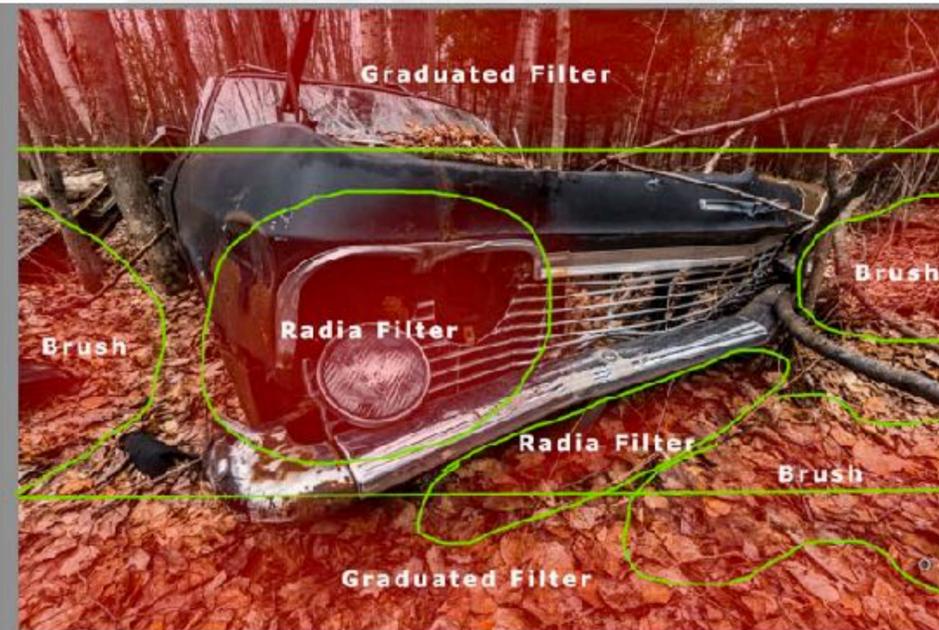
As opposed, local adjustments only affect a portion the image, they are designed to bring emphasis on specific areas in the picture. They are real expression tools for the photographer, to reinforce the message the photographer wants to deliver.

Global Adjustments



Local Adjustments Zones

Dodge & Burning



Local Adjustments



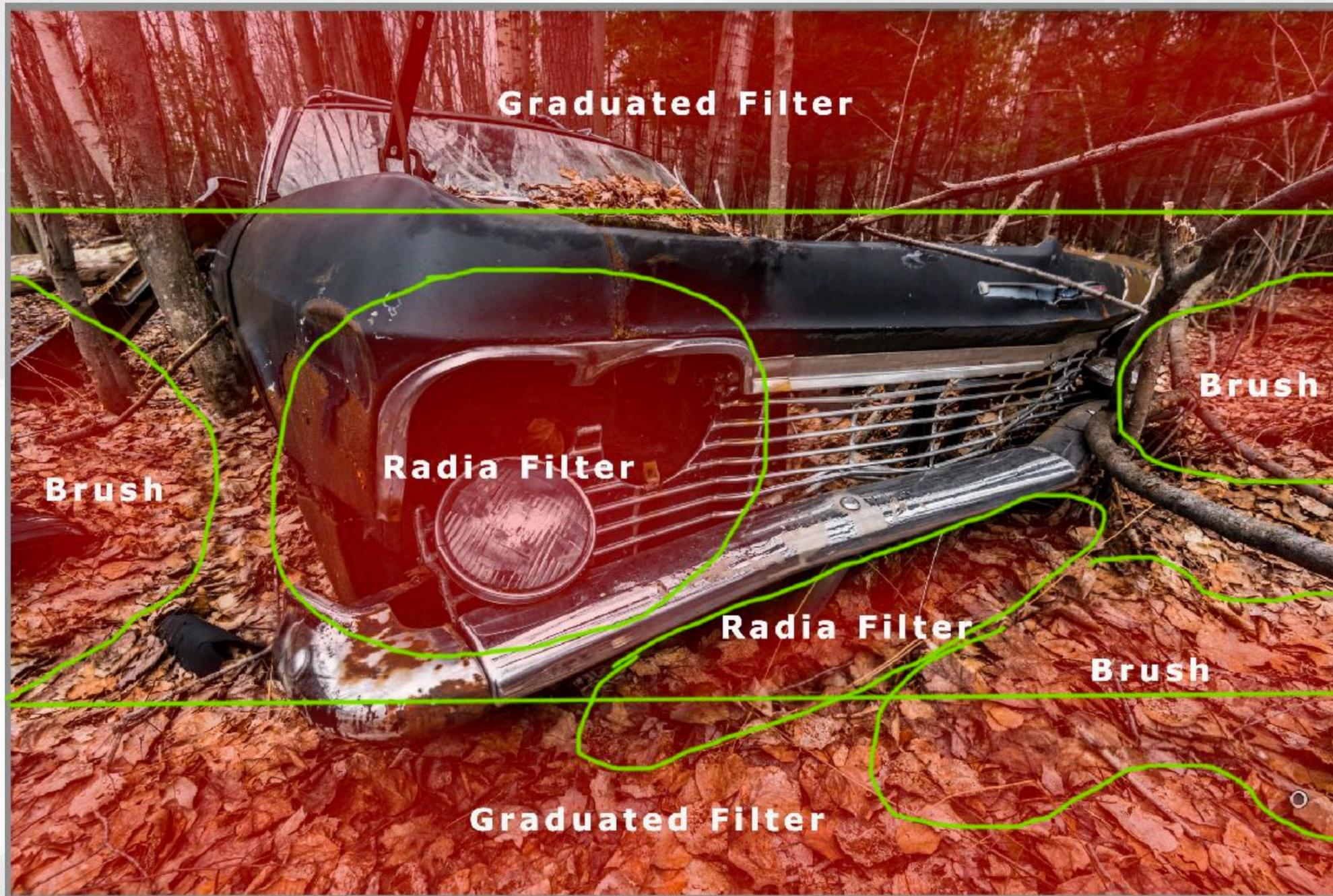
Before

After

Graduated filters, Radial filters, Brushes

Development Workflow

Local adjustments



Local Adjustments Zones
Dodge & Burning

Graduated filters,
Radial filters, Brushes



Final image with few more adjustments

Development Workflow

Examples of Before/After

Development Workflow

Ghostly Sunset, Bayous, Louisiana, 2015

Single RAW Image, Global and Local Adjustments in LR, Noise Reduction, Foliages Specific Work



Before/Initial RAW Image



After

Development Workflow

A morning on Miami river, Miami, Florida, 2016

Dual RAW Images, Processed Separately in LR and Assembled in Photoshop, Double Processing post PS in LR



Before/Initial RAW Image

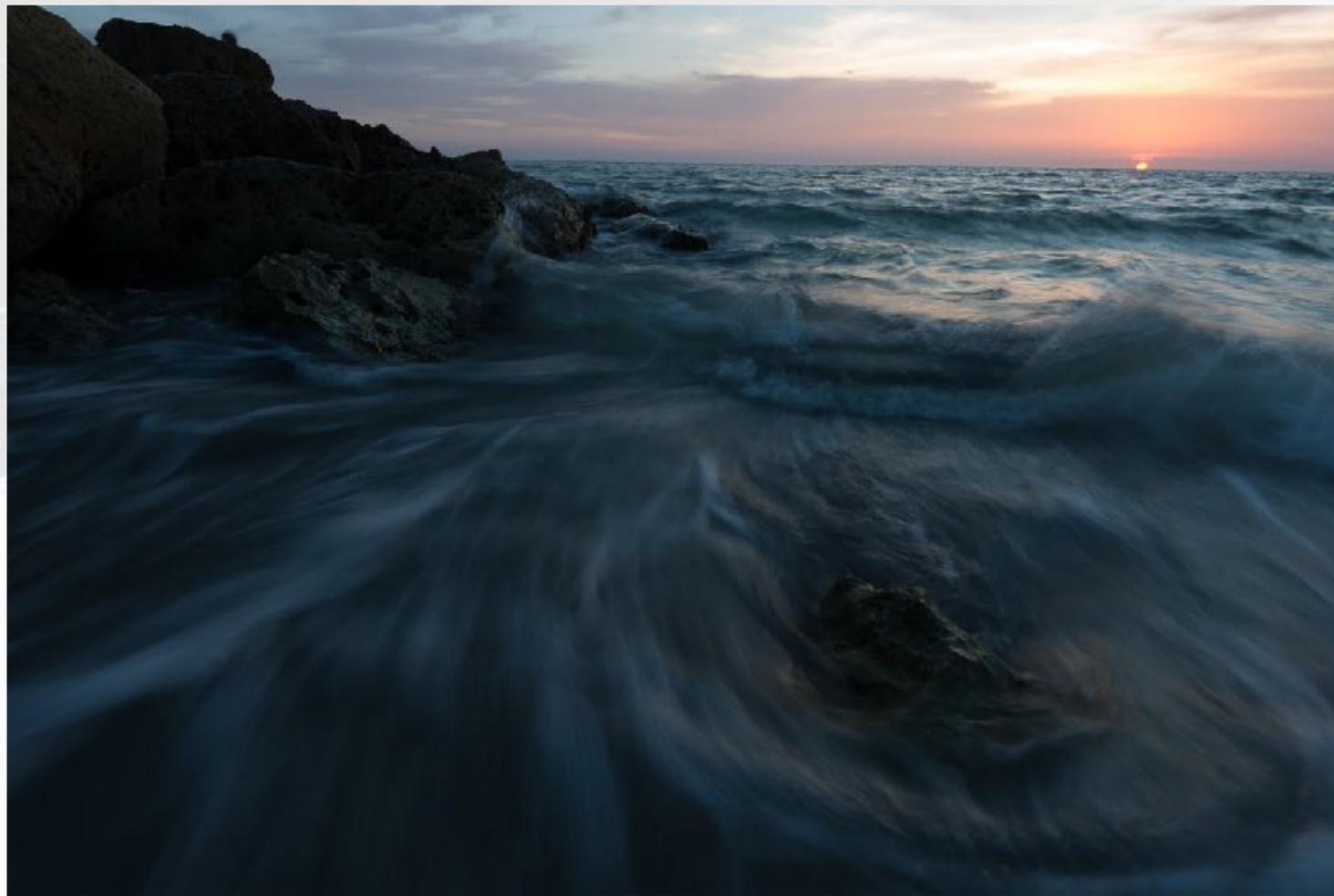


After

Development Workflow

Captiva-tion, Captiva Island, Florida, 2015

Single RAW Image, Global and Local Adjustments in LR, Water and Rocks Specific Work



Before/Initial RAW Image



After

Development Workflow

The iconic Z, Everglades, Florida, 2015

3 RAW Images HDR, First Processing in LR, Finalized in PS (Geometry, Starburst), Double Processing post PS in LR



Before/Initial RAW Image

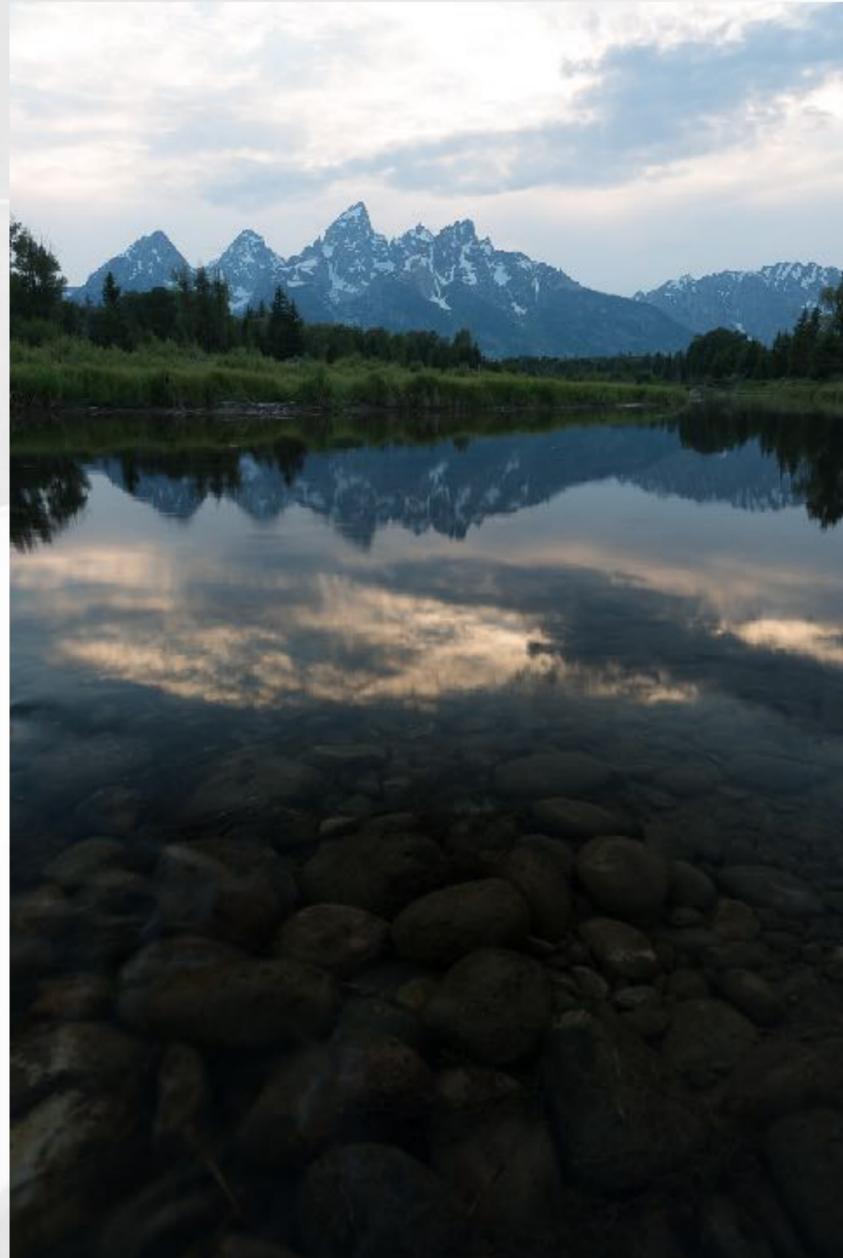


After

Development Workflow

Grand Teton Range, Grand Teton National Park, Wyoming, 2017

3 RAW Images HDR,
Global and Local
Adjustments in LR,
Water, Reflections and
Foreground Rocks
Specific Work



Before/Initial RAW Image

After

Development Workflow

Opening on South Pointe, Miami Beach, Florida, 2016

10 RAW Images Panorama, First Processing in LR, Finalized in PS (Geometry, Cleaning), Double Processing post PS in LR



Before/Initial RAW Image



After

Development Workflow

Look, I told you, Montreal, Quebec, 2017

Dual RAW Images, Processed Separately in LR and Assembled in Photoshop, Double Processing (B/W) post PS in LR



Before/Initial RAW Image



After

Development Workflow

Resources

RAW Development Softwares

- ▶ Lightroom / Camera Raw (Adobe - Windows, Mac Osx)
- ▶ DxO Optics Pro (DxO Labs - Windows, Mac Osx)
- ▶ Capture One Pro (Phase One- Windows, Mac Osx)
- ▶ Bibble Pro (Bibble Labs) -> AfterShot Pro (Corel - Linux, Windows, Mac Osx)
- ▶ Nikon Capture NX-D (Nikon - Free- Windows, Mac Osx)
- ▶ Canon DPP (Canon - Free- Windows, Mac Osx)
- ▶ Raw Therapee (Free - Linux, Windows, Mac Osx)
- ▶ Silkipix Developer Studio Pro (ISL - Windows, Mac Osx)
- ▶ UFRaw/Gimp (Application or Plug'in - Free - Linux, Windows, Mac Osx)
- ▶ DarkTable (Free - Linux, Windows, Mac Osx)
- ▶ Photivo (Free - Linux, Windows, Mac Osx)

Literature

- ▶ Le format RAW, Development and production workflow (French)– Patrick Moll – Dunod
- ▶ The DAM Book (Development and production workflow) – Peter Krogh – Eyrolles
- ▶ The Adobe Photoshop Lightroom CC / Lightroom 6 – Martin Evening – Eyrolles

Web resources

- ▶ Serge Ramelli (<http://photoserge.com/>) - Development/Image Processing
- ▶ Jimmy MacIntyre (<http://www.throughstrangelenses.com/>) - Guru of Luminosity Masks
- ▶ Thomas Heaton (www.thomasheaton.co.uk) - Get out and shoot experiences
- ▶ PHLearn - Aaron Nace (<https://phlearn.com/>) - Photoshop tutorials
- ▶ Adobe (<https://www.youtube.com/user/AdobeLightroom>) - Photoshop and Lightroom
- ▶ YuriFineart (<https://www.facebook.com/YuriFineart>) - Development/Image Processing

Development Workflow

Now, let's do a bit of practice using Lightroom...