

Images

Robert Casties, MPI for the History of
Science

Image workflow

- from scan/photo to research to publication (online or on paper)
- consider
 - technical aspects (formats, colour, scanning, ...)
 - metadata
 - archival aspects
 - usage targets – now and later

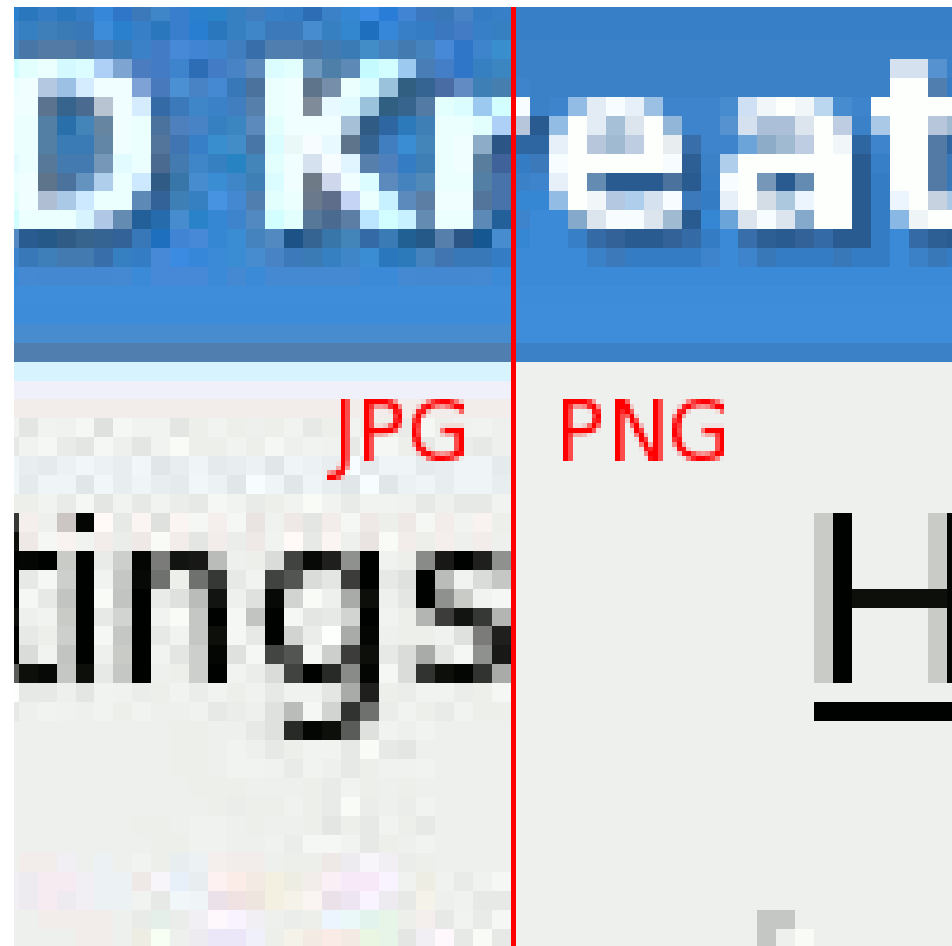
Digital images

- raster
 - lossy, lossless
 - JPEG, TIFF, PNG, GIF, ...
- vector
 - SVG, ...

File formats

- compression type
- bit-depth
- colour profile support
- maximum image size
- tool support

Image compression



JPEG

- lossy (DCT) (typically)
- 3-channel, 8-bit (typically)
- ICC colour profiles
- max size 64k x 64k
- very good tool support

TIFF

- non-lossy (typically)
- n-channel, 8/16-bit
- ICC colour profiles
- max size 4(2)GB
- good tool support, lots of variants, tiling, multi-res

PNG

- non-lossy
- 1 to 4-channel, 8/16-bit
- ICC colour profiles
- max size 4GB(?)
- good tool support

JPEG2000

- lossy or non-lossy (wavelets)
- 1 to 4096-channel, >16-bit
- ICC colour profiles
- max size 2G x 2G
- bad tool support

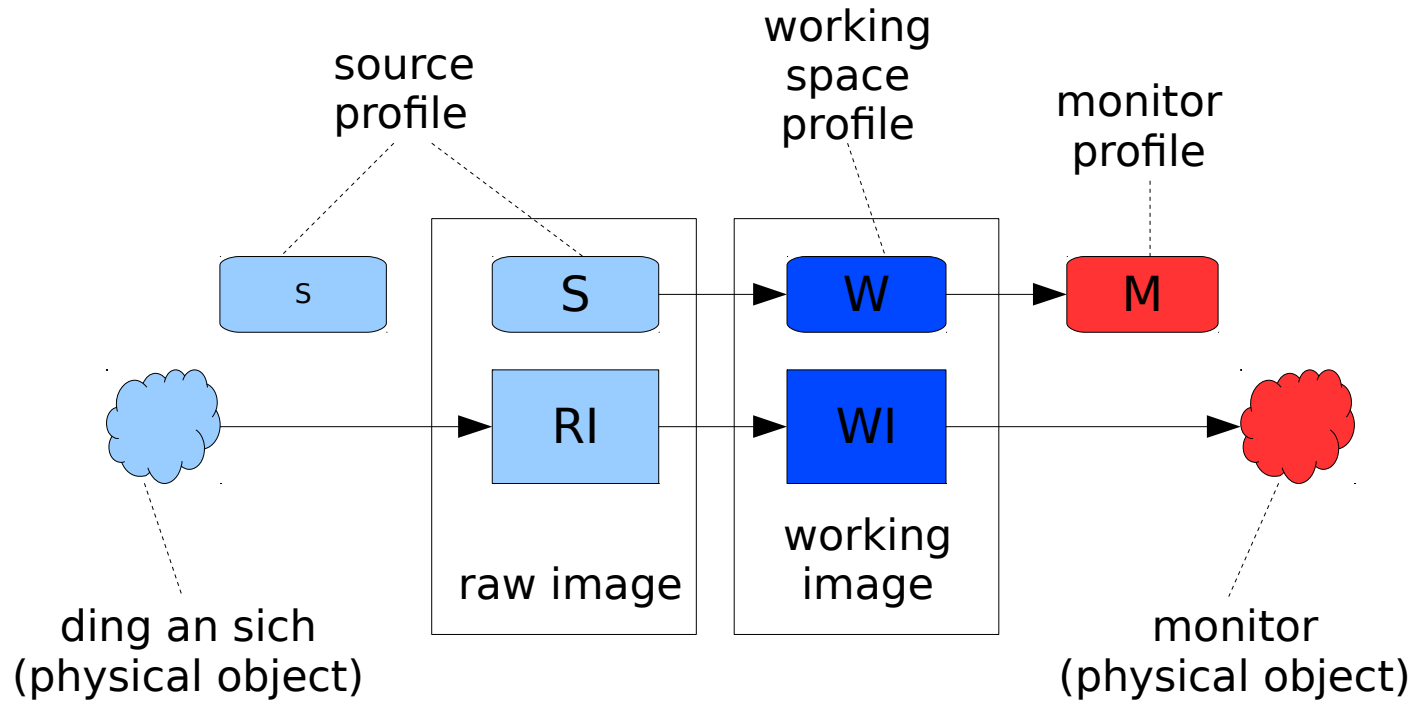
GIF

- non-lossy
- 256 colours (palette)
- no colour profile
- max size 64k x 64k
- do not use!

Colour management

- colour models (coordinate systems)
 - RGB, additive (displays),
 - CMYK, subtractive (print),
 - Lab (perception)
- colour spaces
 - sRGB (small)
 - Adobe RGB (not standardised)
 - ECI RGB

Colour profiles



Dpi?



(2.5dply)

Image workflow

- scan to publication
- archival aspects
- usage targets
- tools for image manipulations

Image workflow

1. scan or photo
2. collect metadata
3. archive raw images
4. create working images
5. archive working images
6. create presentation images

Scan or photo

- resolution - the highest *really* achievable
- bit-depth - the highest
- raw file format (standards?)
- colour profile

Scanning a book

- camera and stand, flat-bed
- colour chart, scale
- cover, binding, endpaper
- plates, fold-outs
- conservation vs readability
 - paper colour, water marks
 - margins
 - fold

Cover pages



Archival

- archive raw data
- documented file formats
- metadata
 - with the data
 - document image processing

Metadata

- record as much as necessary
- be imaginative about other uses
- think about copyright information

Internal or external

- internal
 - Exif (mostly camera information)
 - IPTC (press-related, in Exif)
 - XMP (XML based IPTC)
 - limited metadata sets
 - don't lose it!
- external
 - file, e.g. index.meta (page002.tif.meta)
 - database (archival?)

Some tools for images at the MPIWG

- Library's digigroup
- digilib image server
 - files and archiving on foxridge file server
 - zoom, rotate, contrast and color manipulation
 - citable images
 - image annotations

Some tools for images at the MPIWG

- FileMaker for metadata
 - for images on desktop or server
 - reads image filenames and thumbnails
 - add any data fields later
 - export for web presentation
- ...

Questions?

Colour

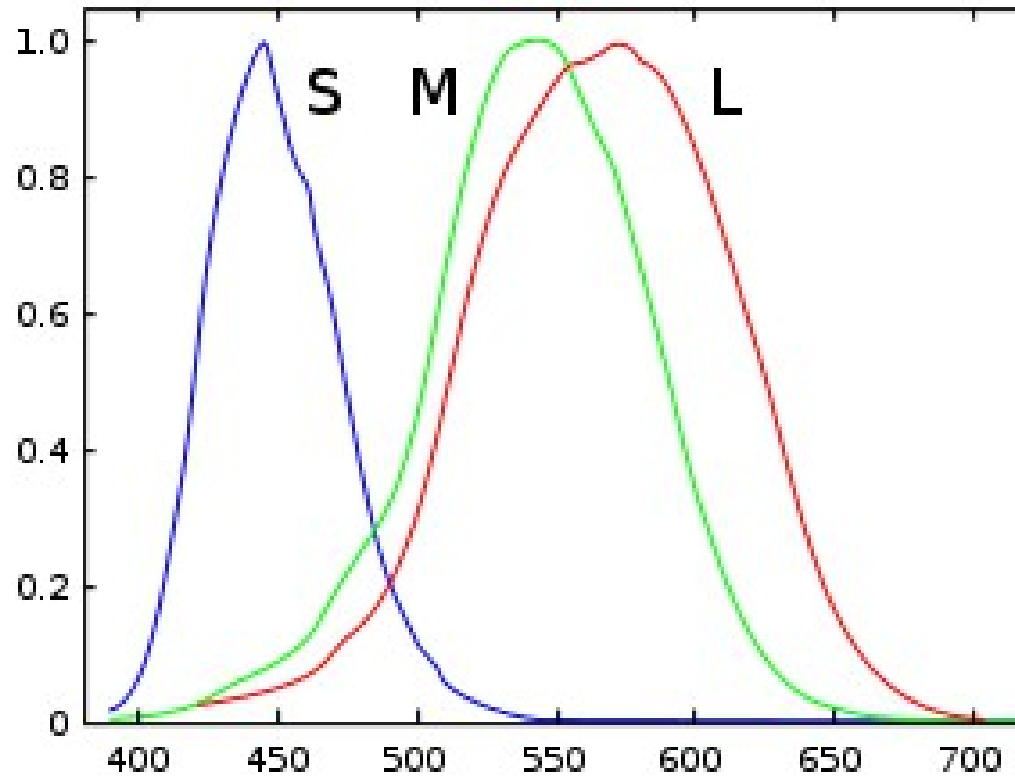
Three numbers not a colour make!

- physical colour
- human perception of colour
- colour model, colour space
- colour profile, digital image

Pixel and dpi

- digital image has pixels
- dpi of digital image is metadata
 - dpi of a scan
 - dpi of a photo?
- physical representation has dpi
 - dpi of a screen/print

Colour perception



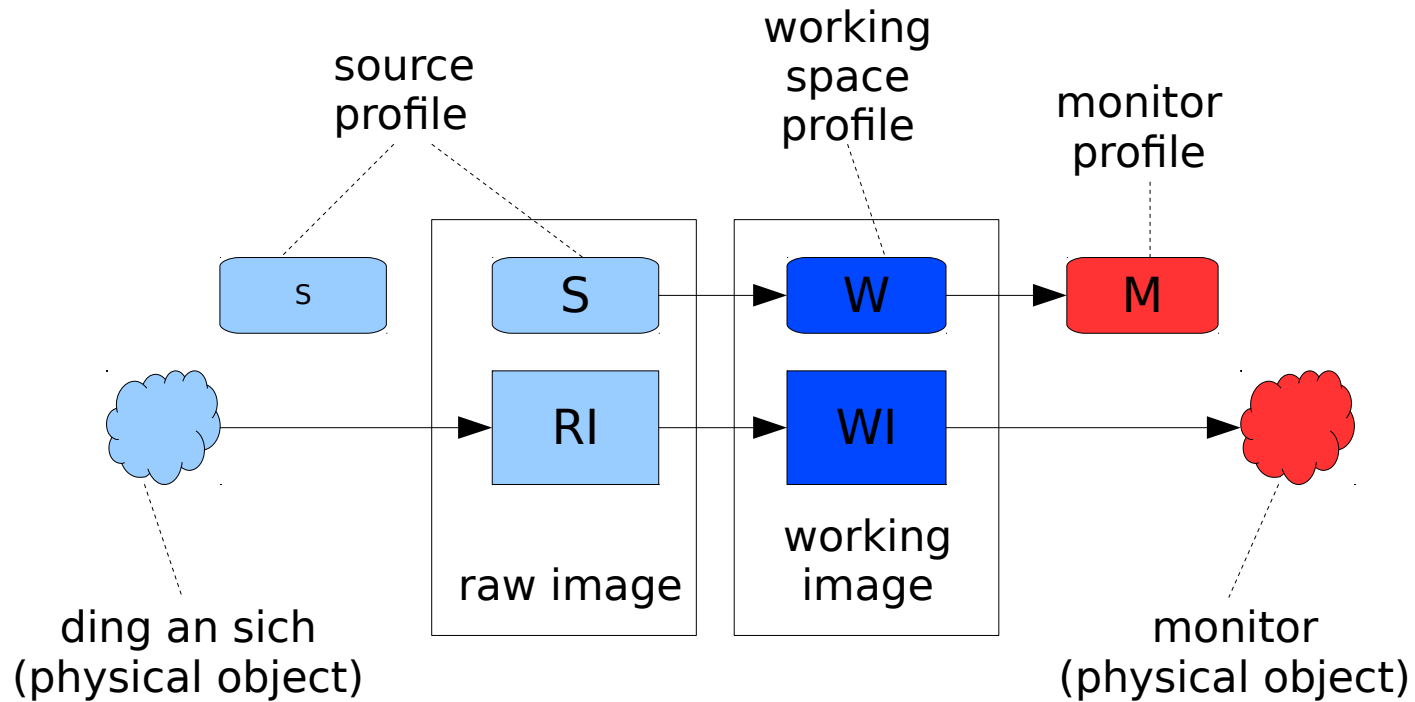
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Colour profiles

- source profile
- working colourspace
- image profile
- monitor profile

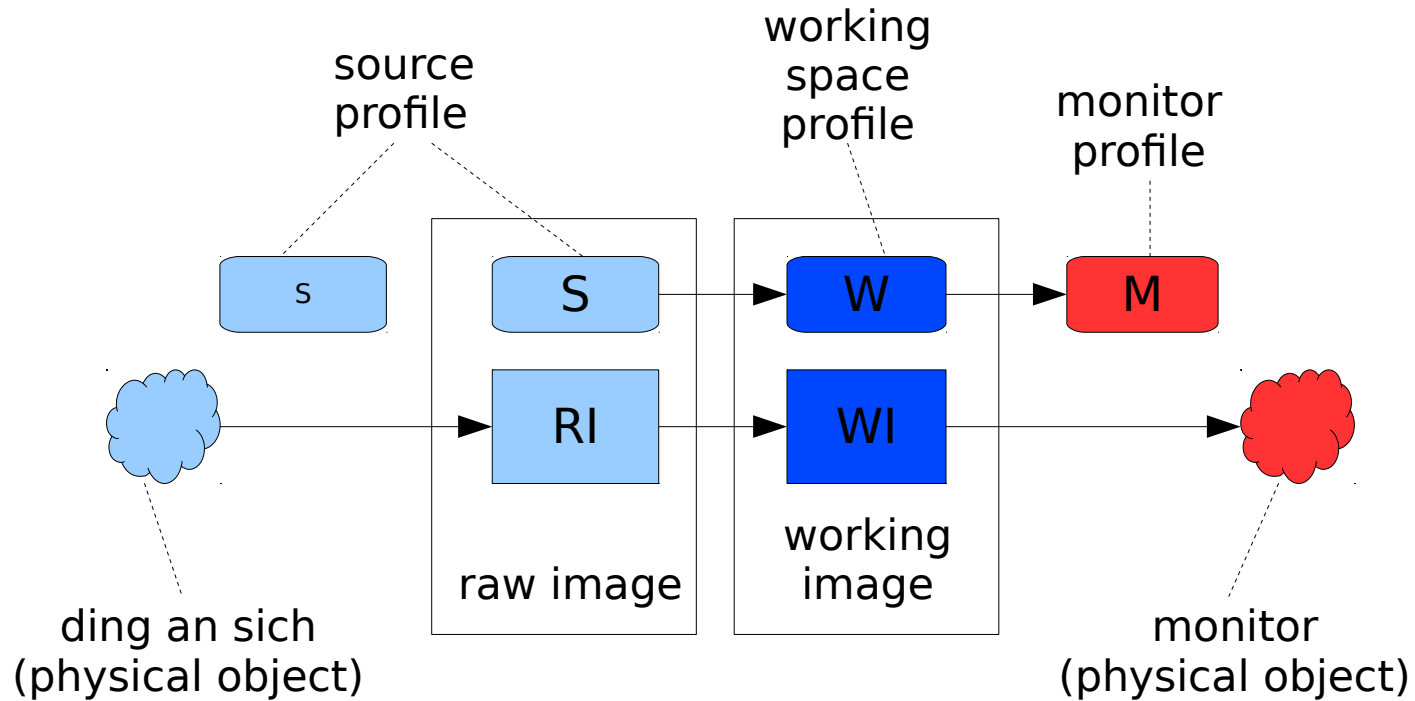
Colour profiles



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Colour profiles



Colour calibration

- colour chart with known properties (IT8)
- create image of chart
- calculate profile for imaging process
- assign profile to raw image

Colour chart



Working colour space

- ECI RGB (<http://www.eci.org/>)
- load image and convert to working space
 - do not assign working space!
 - if necessary assign source profile
- save image with working space profile

Using images

- research
- online presentation
 - digilib
- PDF
- e-publication
- printed publication

Other imaging methods

- multi-spectral
- raking light
- RTI (Reflectance Transformation Imaging)
- almost 3D
- 3D imaging (laser, structured light, ...)

index.meta sample

[...]

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[...]