Fine Art Black and White Infrared Photography with Better Light Super 6K

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FLAAR

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- Archaeological sites administrators for providing permits to photograph.

Outline

- Introduction to FLAAR
- Equipment
- Weather and Light Conditions
- Location selection and Image Composition
- Workflow
- Examples
- Final Results
- Conclusions

Introduction

FLAAR

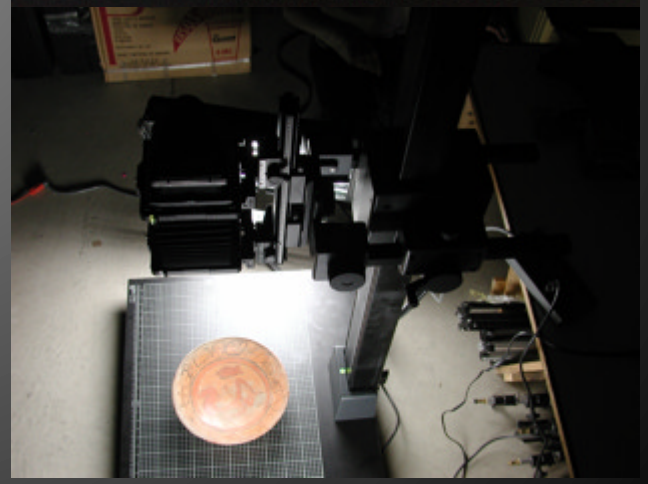
- Foundation for Latin American Anthropological Research

Dr. Nicholas Hellmuth

Rollouts Pre-Columbian Mayan Vases

Research Digital Imaging technologies for cultural heritage documentation

- Pre-Columbian Mayan civilizations

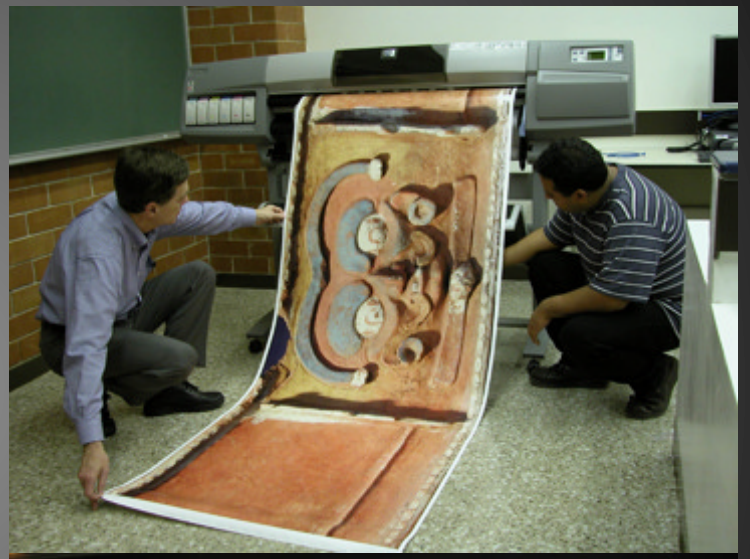


Test Photographic Equipment

- Large and medium format cameras
- 35 mm DSLR
- Accessories

Large Format Printers

- Applications for museum display

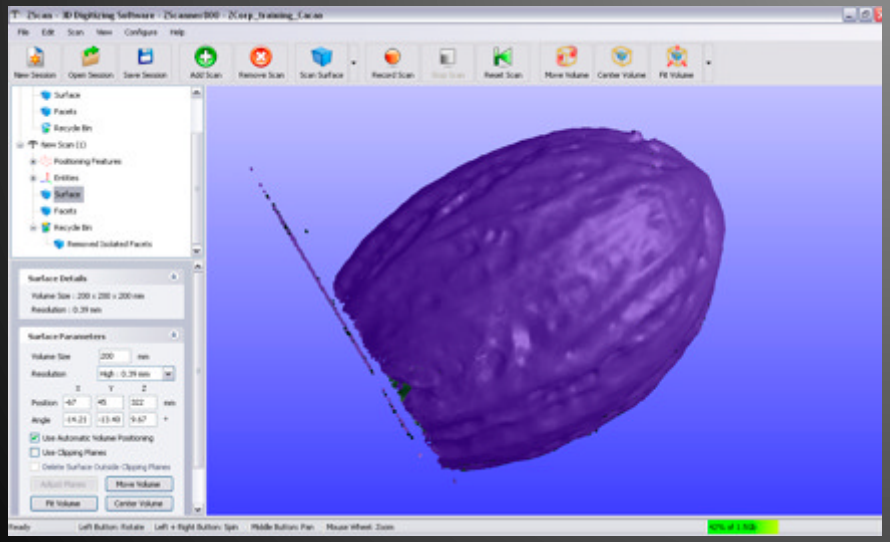


Software

- Color Management Tools
- Editing Software

3-Dimensional Technology

- 3D-Scanners
- 3D-Printers
- Software



3-Dimensional Technology

Equipment Used for Infrared Panoramic Photography with Better Light Super 6K

1. Heavy Duty Tripods
2. Bubble Levels
3. Geared Head


4. Better Light Super 6K – USB
5. Rotating Stage
6. Cambo Large Format Camera

7. Five-Hour Battery
8. Schneider Kreuznach Super Angulon XL 58mm f-5.6
9. Polarizing Filter and Lens Shade
10. Wide Angle Bellows
11. Ladder
12. Calumet LF Case


13. Wheelie

14. Panasonic Toughbook and extra battery

15. Laptop Tray

16. Laptop Screen Shade

17. Focusing Loupe
18. Mac G5 8GB Ram
    with 23¨Apple Cinema Display

Getting Ready to Photograph

Weather and Light conditions

- Cloudy days provide even lighting

Weather and Light conditions

- You can shoot in locations with low light conditions (caves or indoors)

Some Examples of Better Light CCD IR Sensitivity

Line Time 1/10 s, ISO 1400, 5.6 F-stop

Line Time 1/15 s, ISO 800, 5.6 F-stop

Line Time 1/15 s, ISO 1000, 5.6 F-stop

Line Time 1/15 s, ISO 200, 5.6 F-stop

Line Time 1/10 s, ISO 2000, 5.6 F-stop

Line Time 1/20 s, ISO 400, 5.6 F-stop

Weather and Light Conditions

- IR light allows **faster line time settings** at **smaller F-Stops** and **smaller ISO settings**
- In bright daylight a polarizing filter is **necessary**.

Location Selection and Image Composition

Location selection

- (Pre-visualization)
- Consideration for image composition
  - Lens distortion and image elements
  - Panoramas

Location Selection

- Trial and Error

First trial

Location Selection

- Trial and Error

Second

Location Selection

- Trial and Error

Third and final

Location Selection

Experimentation

Location Selection

Experimentation

Workflow

Workflow

- Set Up
  - Tripod with Bubble Levels
  - Rotating Stage and arm
  - LF Camera Nodal point
  - No IR Filter
  - Focus using my eyes
  - Insert Scan Back
    and make a Pre-scan

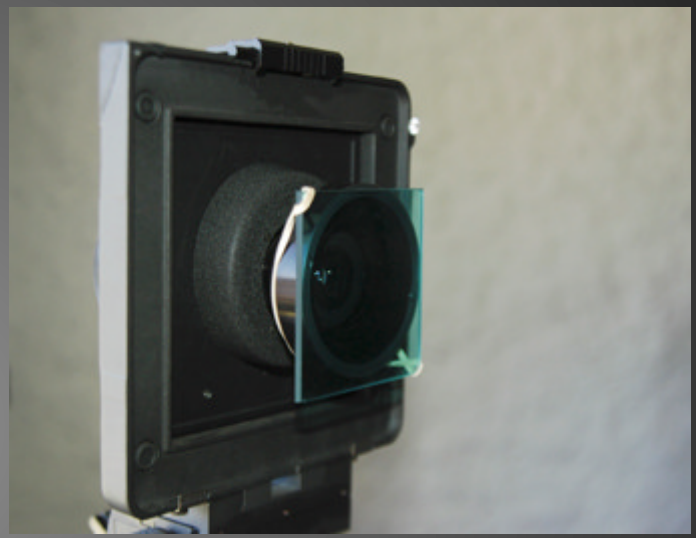


Image Acquisition

- Image data in red color.
- No need for color balance if you only reproduce the image in B&W.

Color Balanced with Gray Card

Image Acquisition

Color Balanced with Gray Card

Image Acquisition

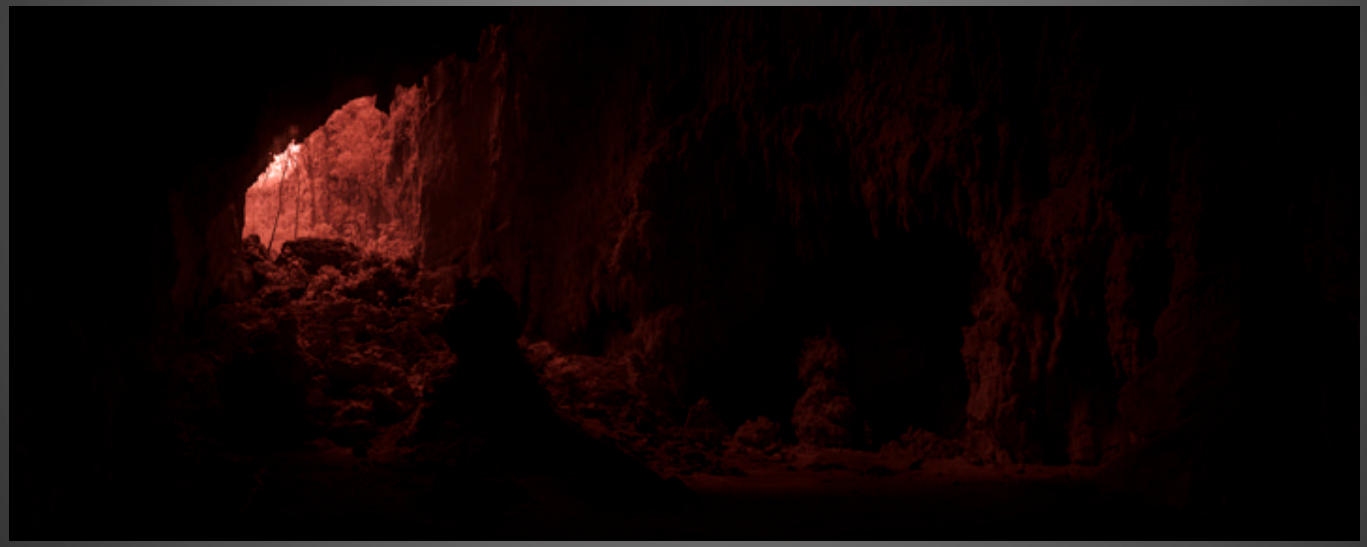
Color balanced with Curves in Adobe Photoshop

Image Acquisition

- Ten stop S-Curve
- Pre-Scan for image composition and histogram evaluation
- Highlights and shadows with Histogram
- Low resolution scan to check focus

Image Acquisition

- Two exposures for HDR



Underexposed for Highlights

Image Acquisition

- Two exposures for HDR

Overexposed for Shadows

Image Acquisition

- Two exposures for HDR

Final Result with Layer Masks

Image Acquisition

- Two exposures for HDR

Underexposed for highlights

Image Acquisition

- Two exposures for HDR

Overexposed for shadows

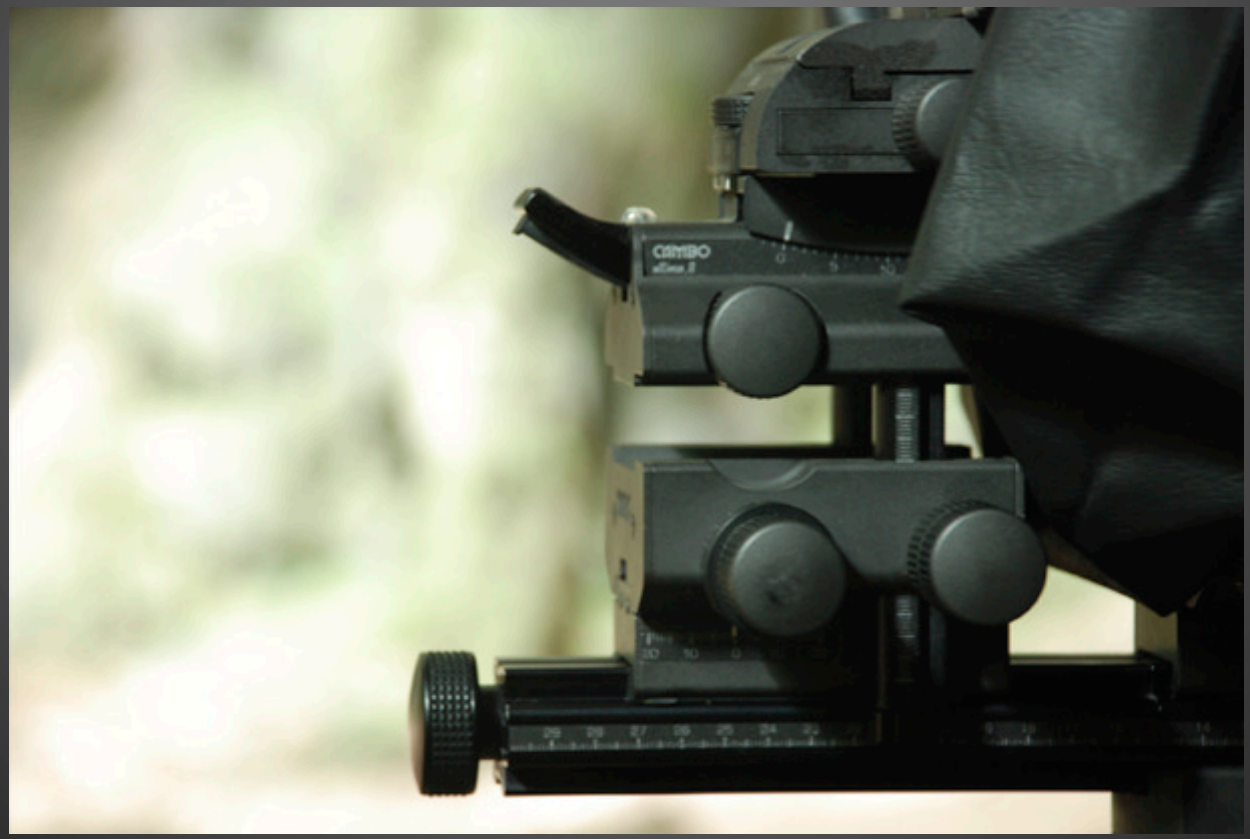
Image Acquisition

- Two exposures for HDR

Final Result with layer masks

Image Acquisition

- Front and rear standards movements

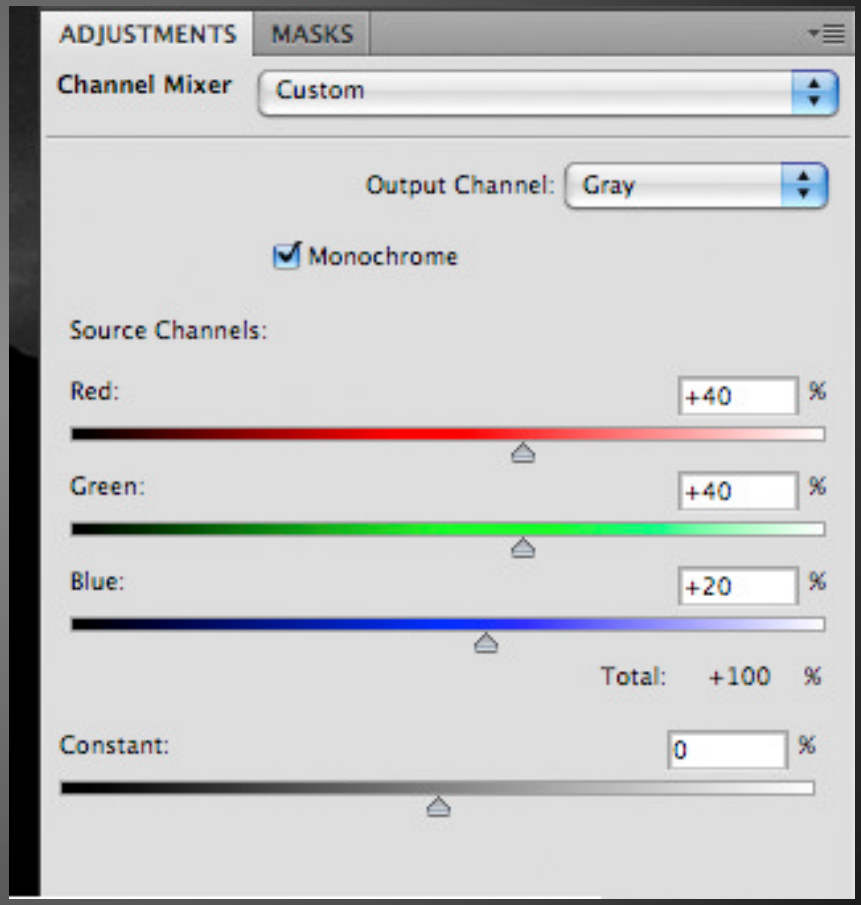


Front and Rear Standards Movements

Final Result

Post-Processing IR Images

- First attempts I tried different processing methods
- Lab channel method
- Splitting individual channels
- Inverting red/blue channels
- **Finally selected the Channel Mixer method. (Just check the monochrome checkbox)**



Post-Processing IR Images

- Last year I learned Mike`s luminance masks method for color panoramas and applied it to BW images to enhance contrast.
- 16 Bit image data
- Channel mixer
- Selections and masks of portions of image
- Levels and curves
- Unsharp mask
  - Amount = 150 %
  - Radius = 0.5- 1.0
  - Threshold = 0

Post-Processing IR Images

Examples of Post-Processing

Final Results

Candelaria Caves, Coban.

Candelaria Caves, Coban.

Quirigua Archaeological Site

Quirigua Archaeological Site

Ermita Santa Cruz, Antigua Guatemala

Ermita Santa Cruz, Antigua Guatemala

Santa Clara Convent, Antigua Guatemala

Santa Clara Convent, Antigua Guatemala

Capuchinas Convent, Antigua Guatemala

Capuchinas Convent, Antigua Guatemala

Capuchinas Convent, Antigua Guatemala

Challenges Still to Overcome


Carrying heavy equipment outdoors


Carrying heavy equipment outdoors

Improving Selections and Transitions

Conclusions

Conclusions

- Better Light Super 6K tri-linear scan back is ideal for fine art IR BW photography
- Sensor allows faster line time, smaller F-Stops and smaller ISO settings.

Thank you !

- I am happy to tell you that 11 of these images will be exhibited at Photokina 2010, in Cologne, Germany.