



ARTstor : a Case Study

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What is ARTstor? (www.artstor.org)

ARTstor is a digital library of art, architecture, and cultural objects founded by the Andrew W. Mellon Foundation.

Subscription service available to educational institutions since July 2004

Over 540,000 images (and growing)

Approximately 750 subscribers (and growing)

Ultimate digitizing purpose: To provide high-quality digital images with capability to zoom in on details

ARTstor does not own physical collections

Content is acquired through:

- (1) Managed digital production with our contributors
- (2) Already-digitized content offered by contributors
- (3) Sponsored photography campaigns

Over 55 production projects in 2007 (over 22,000 images produced/checked per month)

Production

- Production is geographically dispersed (processing, scanning, cataloging)
- Frequently do physical processing for contributors (inventory, inspection, re-housing; ex.: Gernsheim, Andrews, Qualls)

Production

- We review **every image** received from vendors and contributors
- Often do “post” work in-house: digital clean-up and color/tonal corrections (ex. Qualls)
- Work with vendors to be sure we have same QC environments (CRT monitors, same monitor and lightbox calibrations, lighting environment)

Infrastructure

- Over 6 million digital files on the SAN, and many more elsewhere
- SAN: 71 TB:
 - 35 TB disk (Sun SAMFS), 36 TB LTO2 nearline (StorageTek L180)
- SNAP servers: 13 (ranging from 1.2 TB – 6 TB)
- Over 300 external HDDs for file delivery (200 GB and 300 GB)
- Two kinds of backup:
 - (1) SAN constant backup (duplicate the tapes with HP StorageWorks)
 - (2) collection-level back-up (LTO2 Quantum PX502 with Veritas netbackup; 32 tapes at uncompressed 200 GB per tape = 6 TB maximum collection)

Digital Asset Management

- Internal technical metadata (over 200 fields) to track asset creation: original source information, quality control, technical, legal, digital preservation
- Currently implementing Artesia as digital asset management and QC workflow system solution (ready July 2007)

Digitizing Specs

Depends on variables:

- * digital source format and medium
- * content: is it a detailed image (stained glass), or have broad color fields (graphics)? Does the project document the restoration of an object?
- * quality of source
- * archival considerations (condition of original source)
- * contributor requirements (also determine what file “states” are saved)

File “states”

- (1) “raw” : file from scanner (uncorrected, uncropped)
- (2) “post” : file corrected and cropped
- (3) 8-bit sRGB : for creating the proprietary FPX files (zooming in)
- (4) JPEG thumbnails

Sometimes also an intermediary “cleaned” file between raw and post.

Contributors receive a set of digital files with filenames changed to their specs (e.g., stripping out collection prefix that we add)

Still Imaging Specs

Black and white: 16-bit grayscale

Color: 16-bit (48-bit) RGB

35mm slides (original photography)

4000 – 6000 pixels long side

avg filesize: 40 – 60 MB

4 x 5 transparencies

6000 pixels long side

avg filesize: 60 – 100 MB

5 x 7 transparencies/prints

3072 - 6000 pixels long side

avg filesize: 30 – 200 MB

8 x 10 negatives or prints

9000 pixels long side

avg filesize: 100 - 350 MB

Sample projects

Ghiberti Gates of Paradise (documenting museum objects)

Wayne Andrews architectural photography (digital restoration)

Ghiberti: Gates of Paradise

- Bronze panels on doors to Baptistery in Florence (1425-1452), plus two competition panels (1401-1402)
- 25- year cleaning and restoration project undertaken by Museo dell'Opera del Duomo
- Limited opportunity to photograph panels before encapsulation
- Detailed photography and digital images would be used in seminars and exhibitions (3 panels traveling to the US before final encapsulation)

Ghiberti: Doors of Paradise

Photographer: Antonio Quattrone

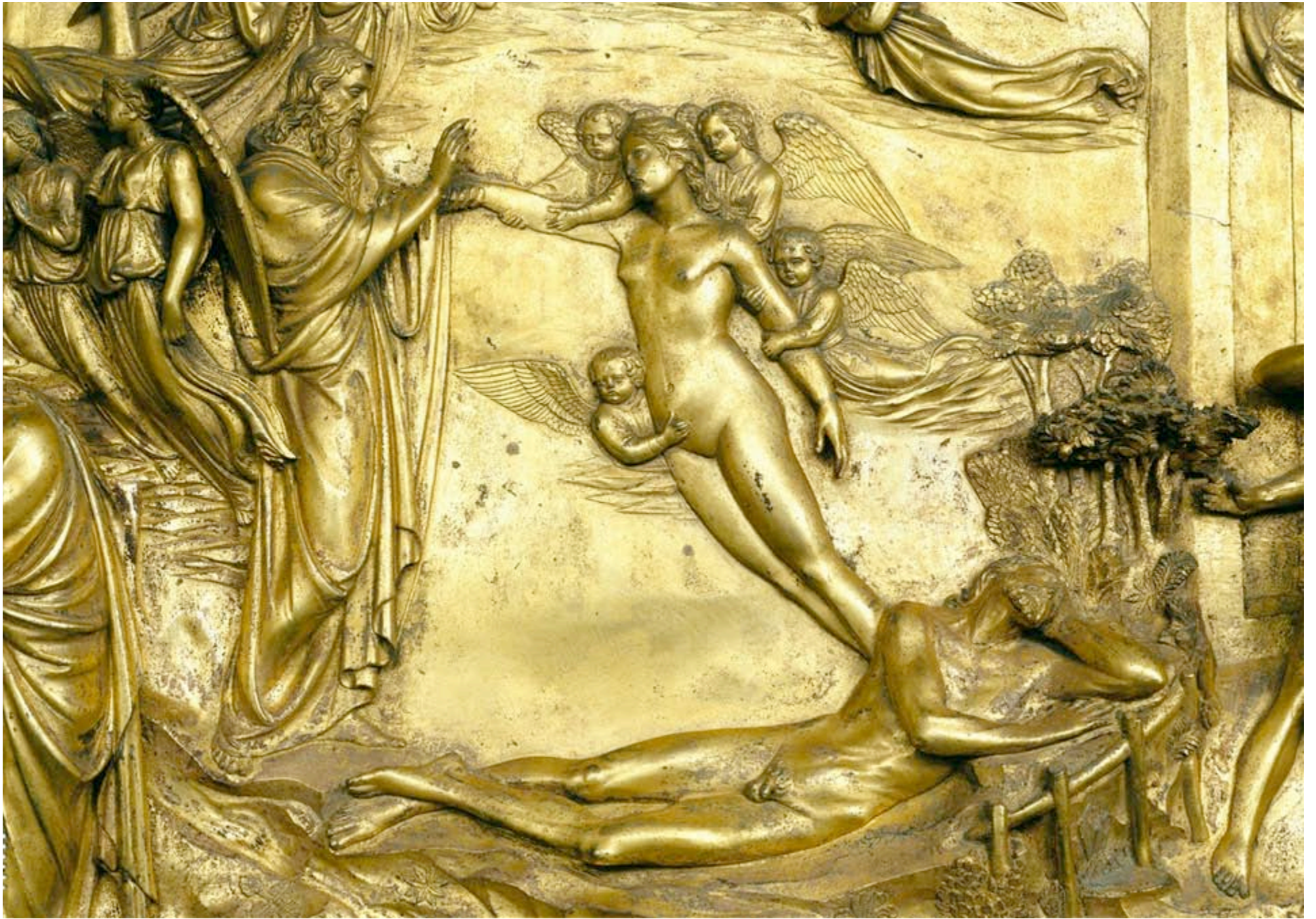
Analog photography: 5 x 7 color positive transparencies (total: 369)
 8 x 10 black and white prints (total: 503)

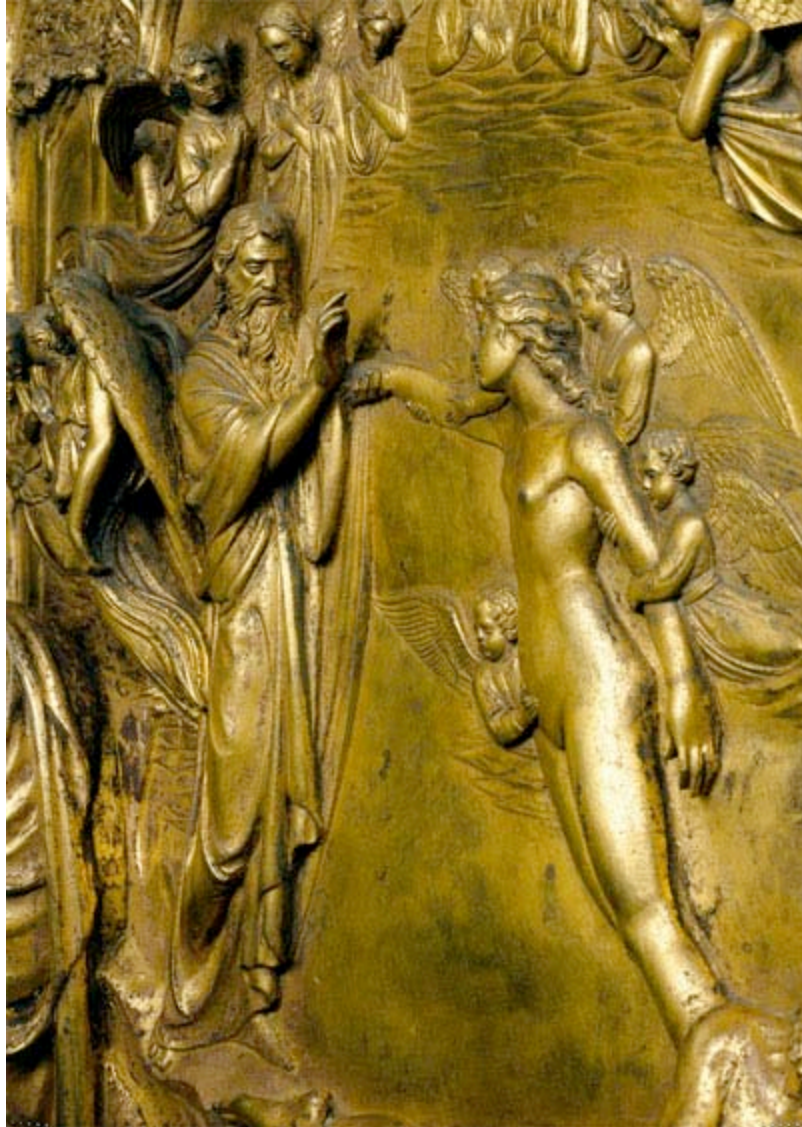
Scanned: Ektas: 48-bit RGB
 6000 pixels long side

 Prints: 16-bit grayscale
 9000 pixels long side

Saved “raw” TIFFs (not corrected) and “post” TIFFs







Side view



Back view



Wayne Andrews: American Architecture

- 4,200 original 4x5 black and white negatives of American architecture shot 1940s-1970s by Wayne Andrews
- Source material in poor condition (scratches, abrasions, glue residue)
- Required digital restoration
- Photographer's cropping instructions available for some images

Wayne Andrews: American Architecture

Scanned: 16-bit grayscale
6000 pixels long side

Vendor used liquid mount in scanning to eliminate major imperfections

Saved 3 to 4 digital file “states:”

1. “raw” TIFFs (not corrected)
2. spot-cleaned TIFF (scratches, abrasions, marks removed)
3. “post” TIFFs (tonal corrections and cropping)
4. “photographer’s cropped” TIFF: where instructions were available

“raw”

“post”



“photographer’s
crop”

