Built Works Registry

Global IDs for Architecture and the Built Environment

builtworksregistry.org

Margaret Smithglass
Registrar | Digital Content Librarian
Avery Architectural & Fine Arts Library, Columbia University
BWR: the problem

Building name
- Falling Water or *Fallingwater*
- *Kaufmann* or Kauffman House
- Edgar J. Kaufmann Sr. Residence or Kaufmann Desert House

Location
- *Mill Run* or Bear Run

Creator
- *Frank Lloyd Wright* (or what about Richard Neutra!)
<table>
<thead>
<tr>
<th>Title/Name of Building</th>
<th>Artstor</th>
<th>Avery</th>
<th>Cornell</th>
<th>AVIADOR</th>
<th>Harvard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fallingwater, Edgar J. Kaufmann House, Kaufmann House</td>
<td>Fallingwater (Kaufmann house).</td>
<td>Falling Water, Edgar J. Kaufmann Residence</td>
<td>Fallingwater, Kaufmann House</td>
<td>Fallingwater, Edgar J. Kaufmann House, Kaufmann House</td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>Mill Run, Pennsylvania, United States</td>
<td>Bear Run (Pennsylvania), United States</td>
<td>Bear Run, PA, United States, North and Central America</td>
<td>Bear Run, (Pa.)</td>
<td>Bear Run, Pennsylvania, United States</td>
</tr>
<tr>
<td>Creator</td>
<td>Wright, Frank Lloyd</td>
<td>Wright, Frank Lloyd</td>
<td>Wright, Frank Lloyd</td>
<td>Wright, Frank Lloyd One record with Ferriss, Hugh</td>
<td>Wright, Frank Lloyd</td>
</tr>
</tbody>
</table>

**BWR**

Built Works Registry
Global IDs for Architecture and the Built Environment
The solution: a registry

Minimum requirements for BWR records:
• Normalized built work name
• Location (lat/long) for disambiguation
• Unique ID number: BWRxxxxxxx

Strategy:
• Use existing data from trusted sources to seed the project
• Establish BWR schema
• Enhance existing metadata to support future LOD applications
Seed collections

- Ingest collections (40+)
  - De-dupe
  - Parse
- Establish aggregated list of fields across collections
- Map to BWR fields
- Merge all collections
  - De-dupe
  - Enhance (GIS+)

### Collection Status Raw records Reduced to %

<table>
<thead>
<tr>
<th>Collection</th>
<th>Status</th>
<th>Raw records</th>
<th>Reduced to</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTstor: American Institute of Indian Studies (AIIS)</td>
<td>Ready for BWR Merge</td>
<td>73561</td>
<td>4571</td>
</tr>
<tr>
<td>ARTstor: Art History Survey Collection</td>
<td>Permit pending</td>
<td>4837</td>
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<tr>
<td>ARTstor: ARTstor on Abu Dhabi - Dubai</td>
<td>Ready for BWR Merge</td>
<td>1159</td>
<td>95</td>
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<tr>
<td>ARTstor: ARTstor on Amsterdam</td>
<td>Ready for BWR Merge</td>
<td>879</td>
<td>96</td>
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<tr>
<td>ARTstor: ARTstor on Berlin 1</td>
<td>Ready for BWR Merge</td>
<td>633</td>
<td>64</td>
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<tr>
<td>ARTstor: ARTstor on Berlin 2</td>
<td>Ready for BWR Merge</td>
<td>327</td>
<td>13</td>
</tr>
<tr>
<td>ARTstor: ARTstor on Berlin 3</td>
<td>Ready for BWR Merge</td>
<td>658</td>
<td>744</td>
</tr>
<tr>
<td>ARTstor: ARTstor on Buenos Aires</td>
<td>Ready for BWR Merge</td>
<td>1440</td>
<td>93</td>
</tr>
<tr>
<td>ARTstor: ARTstor on Istanbul</td>
<td>Ready for BWR Merge</td>
<td>1548</td>
<td>70</td>
</tr>
<tr>
<td>ARTstor: ARTstor on Italy</td>
<td>Ready for BWR Merge</td>
<td>1772</td>
<td>114</td>
</tr>
<tr>
<td>ARTstor: ARTstor on Paris</td>
<td>Ready for BWR Merge</td>
<td>1533</td>
<td>74</td>
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<td>ARTstor: ARTstor on Shanghai</td>
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<td>79</td>
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<td>ARTstor: ARTstor on Spain</td>
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<td>43</td>
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<tr>
<td>ARTstor: Blair/Bloom - L1</td>
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<td>ARTstor: Blair/Bloom - L2</td>
<td>Ready for BWR Merge</td>
<td>850</td>
<td>849</td>
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<td>ARTstor: Blair/Bloom - L4</td>
<td>Ready for BWR Merge</td>
<td>2752</td>
<td>471</td>
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<tr>
<td>ARTstor: Blair/Bloom - L5, part 3</td>
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<td>38</td>
<td>10</td>
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<tr>
<td>ARTstor: Bron Mayer - Lantern slides</td>
<td>Ready for BWR Merge</td>
<td>518</td>
<td>114</td>
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<tr>
<td>ARTstor: Bron Mayer - Mellink</td>
<td>Ready for BWR Merge</td>
<td>4114</td>
<td>127</td>
</tr>
<tr>
<td>ARTstor: Bron Mayer - Plans LS (Ancient/Medieval)</td>
<td>Ready for BWR Merge</td>
<td>2785</td>
<td>780</td>
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<td>ARTstor: Bron Mayer - Plans LS</td>
<td>Ready for BWR Merge</td>
<td>1567</td>
<td>490</td>
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<tr>
<td>ARTstor: Bron Mayer - Plans LD (Ancient/Medieval)</td>
<td>Ready for BWR Merge</td>
<td>2665</td>
<td>114</td>
</tr>
<tr>
<td>ARTstor: Denny - Batch 3</td>
<td>Ready for BWR Merge</td>
<td>1640</td>
<td>151</td>
</tr>
<tr>
<td>ARTstor: Denny - Batch 4</td>
<td>Ready for BWR Merge</td>
<td>1065</td>
<td>153</td>
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<tr>
<td>ARTstor: Denny - Batch 5/6</td>
<td>Ready for BWR Merge</td>
<td>2314</td>
<td>171</td>
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<tr>
<td>ARTstor: Denny - Batch 7/8</td>
<td>Ready for BWR Merge</td>
<td>728</td>
<td>92</td>
</tr>
<tr>
<td>ARTstor: Giff Photo Archive, Julius Shumman</td>
<td>Ready for BWR Merge</td>
<td>6188</td>
<td>549</td>
</tr>
<tr>
<td>ARTstor: NASA-HARP</td>
<td>Can be transferred to BWR</td>
<td>1000000</td>
<td></td>
</tr>
<tr>
<td>ARTstor: National Geospatial Intelligence Agency</td>
<td>Indexing pending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARTstor: Historic Campus Architecture Collection/NEAP</td>
<td>Ready for BWR Merge</td>
<td>4079</td>
<td>1753</td>
</tr>
<tr>
<td>ARTstor: LoC: Carnegie Architecture of the South</td>
<td>Ready for BWR Merge</td>
<td>6884</td>
<td>1868</td>
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<tr>
<td>ARTstor: Princeton</td>
<td>Ready for BWR Merge</td>
<td>7731</td>
<td>6214</td>
</tr>
<tr>
<td>ARTstor: Ralph Lieberman</td>
<td>James investigating</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>ARTstor: QVR project works (in progress, more)</td>
<td>No permission (removal?)</td>
<td>1200</td>
<td></td>
</tr>
<tr>
<td>ARTstor: SAAHLA</td>
<td>Ready for BWR</td>
<td>14582</td>
<td>2648</td>
</tr>
<tr>
<td>ARTstor: UC Santa Cruz</td>
<td>Status unknown</td>
<td></td>
<td></td>
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<tr>
<td>ARTstor: UCLA</td>
<td>Status unknown</td>
<td>5392</td>
<td></td>
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<tr>
<td>ARTstor: LASS Architecture</td>
<td>Ready for BWR Merge</td>
<td>34540</td>
<td>5264</td>
</tr>
<tr>
<td>ARTstor: UT: Box/Reingan, Mexican Architecture</td>
<td>Ready for BWR Merge</td>
<td>5713</td>
<td>451</td>
</tr>
<tr>
<td>ARTstor: UT: Christopher Long, Central European Architecture</td>
<td>Ready for BWR Merge</td>
<td>216</td>
<td>118</td>
</tr>
<tr>
<td>ARTstor: UT: Yorick M.D. / Modern Architecture</td>
<td>Status unknown</td>
<td>418</td>
<td></td>
</tr>
<tr>
<td>ARTstor: World Monuments Fund</td>
<td>Ready for BWR Merge</td>
<td>1946</td>
<td>242</td>
</tr>
<tr>
<td>Avery Index: 1 Avery datasets (through 1978, no 1950s)</td>
<td>Completed datasets ready for BWR Merge; processing continues</td>
<td>206836</td>
<td>10604</td>
</tr>
<tr>
<td>Avery Index: 2 Avery datasets (1979 forward, with</td>
<td>Mergeset &amp; data processing</td>
<td>356555</td>
<td></td>
</tr>
<tr>
<td>Avery: AVIADOR: previous works to be redone</td>
<td>Mergeset processing</td>
<td>4852</td>
<td></td>
</tr>
<tr>
<td>Avery Drawings &amp; Archives: Mollitor, Neumann</td>
<td>Ready for BWR Merge</td>
<td>3235</td>
<td>280</td>
</tr>
<tr>
<td>Avery Drawings &amp; Archives: Neumann</td>
<td>Ready for BWR Merge</td>
<td>1442</td>
<td>1248</td>
</tr>
<tr>
<td>Columbia: NYC Landmarks Preservation Commission</td>
<td>Ready for BWR Merge</td>
<td>2811</td>
<td>2801</td>
</tr>
<tr>
<td>Harvard - Oliva E. Lees, Fine Arts 1 &amp; 2, Design School</td>
<td>Ready for BWR Merge</td>
<td>28299</td>
<td>21676</td>
</tr>
<tr>
<td>Key Monuments: MLL, created by ARTstor metadata team</td>
<td>Not yet</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>MBL: Gordon, France <a href="http://melangofrone.org">http://melangofrone.org</a></td>
<td>Permission pending</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>SAAH Archivists (small subset of total)</td>
<td>James considering whether to use</td>
<td>10695</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>724228</td>
<td>85240</td>
</tr>
</tbody>
</table>
Seed collections

Artstor Digital Library
  American Institute of Indian Studies
  ART on FILE Collection
  Islamic Art and Architecture Collection (Sheila Blair, Jonathan Bloom, Walter Denny)
Bryn Mawr College
  Classical Antiquity Lantern Slide Collection
  Mellink Archive
  Plans of Ancient and Medieval Buildings and Archaeological Sites
Getty Research Institute Photo Archive, Julius Shulman archive
Council of Independent Colleges, Historic Campus Architecture Collection
Library of Congress, Carnegie Survey of Architecture of the South
Princeton University, Department of Art and Archeology, Visual Resources Collection
Society of Architectural Historians, SAHARA
University of California San Diego Libraries
University of Texas at Austin, School of Architecture, Visual Resources Collection
  Hal Box and Logan Wagner: Mexican Architecture and Urban Design
  Christopher Long: Central European Architecture
World Monument Fund
Avery Architectural & Fine Arts Library, Columbia University Libraries
  Avery Index to Architectural Periodicals
AVIADOR Project
Department of Drawings & Archives
Cornell University Library, Knight Visual Resources Collection
Harvard Library
Talend Open Studio: mapping collections to aggregated fields
BWR geolocation strategy

Two geo-coding protocols:

- Records with street addresses:
  ArcGIS processing with targeted databases, for built works in US and Canada

- Records with city-country:
  Open Refine Cluster tool used for normalization of city and country names; reconciled normalized names against Freebase databases.

Subsequent mediation by hand using TGN, geonames.org, etc.

Iterative, detail-oriented, time-consuming process

Outcome (builtworksregistry.org) – OpenStreetMap, MapBox
Case Study 1: NYC Landmarks Preservation Commission

- 1248 records
- 1149 street addresses
- ArcGIS /nyc.gov database
- Open Street Map
- no additional mediation
- 80% mapped
Case Study 2: Avery Index to Architectural Periodicals

- 1645 records
- No street addresses
- City – state – country
- Google Earth Pro
- 55-60% mapped
Discovery: named work

1. Lever House
   Bunshaft, Gordon (1909-1990), American, architect | skidmore, owings & Merrill (1954-).
   4th Floor
   390 Park Avenue | Manhattan
   New York, New York, United States
   1959 - 1960
   ID: BWR3777729

2. Unilever House
   Stephenson and Tumar
   Sydney, Australia
   ID: BWR3773012

3. Unilever House
   Lomax-Simpson, James | Burnet, John James
   Blackfriars
   London, England | United Kingdom
   ID: BWR3770953
Discovery: common building name

Built Works Registry
Global Data for Architecture and the Built Environment

1. Church of Notre Dame
   200 West 21th Street | Manhattan
   New York, New York, United States
   ID: DM03970918

2. Rectory of the Church of Notre Dame
   420 West 14th Street | Manhattan
   New York, New York, United States
   ID: DM03970905

3. Westlee Clinical School
   Designers:
   Westlee, Victoria, Australia
   ID: DM03970906

4. Basilique Notre Dame de la Paix
   Yaounde, Cameroon, Cameroun
   1990 - 2000
   ID: DM03970728

5. Notre Dame
   Avignon, France
   ID: DM03970640

6. Notre Dame du Chatel
   Auby, Savoie, France
   ID: DM03970699

7. Notre Dame des Pommiers
   Meudon, France
   ID: DM03970775

8. Abbey Church of Notre Dame
   Bernay, Eure, France
   1000 - 1199
   ID: DM039709374

BWR ID
Abbey Church of Notre Dame
BWR Name
Abbaye de Notre-Dame | Notre-Dame
BWR Variant Name
1000 - 1199
Date
Bernay, Eure, France

Latitudes
49.09

Longitudes
0.6

Abbey Churches
Work Type
Discovery: advanced search
Discovery: part-whole relationship
New contributions
• Launched 2015
• Global: 190 countries
• Disambiguates 70,000 built works from one another using name, location and unique ID

**Project Team**
Project Director: Carole Ann Fabian
(Former Director, Avery Library)
Artstor: James Shulman, William Ying
Getty: Murtha Baca, David Farneth
BWR Project Manager: Margaret Smithglass
Built Works Registry

Margaret Smithglass
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