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Built Works Registry (BWR)

Interim Narrative Report

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Interim Report Summary

In this first year of IMLS grant funding, the collaborative efforts of the project's teams at the Columbia University Avery Library, ARTstor, and the Getty Research Institute have brought about significant progress in the design and implementation of the technological infrastructure and seed content for the Built Works Registry (BWR). As progress continues into the second year of the grant, the teams, the advisory committee, and the community at large will have a substantive basis to continue to develop the policy issues necessary to building the resource and enabling its wide use. The following progress report summarizes the activity in each of the areas outlined in the project timeline (Addendum A).

Project Administration

Staffing

Following the grant award in the fall of 2010, Project Directors reviewed project teams and committed effort to three Built Works Registry teams as defined in the grant proposal. Some project staff replacements and/or additions occurred in each partner organization, but none of the staff changes has affected budget allocations:

- Avery Library initiated a search to hire the Built Works Registry Project Librarian following Columbia University Libraries hiring procedures. After review of 21 applicants, three candidates were interviewed, and Thomas Freedman was selected for appointment, effective January 2011. Rick Block left Columbia University Libraries for a new position at Seattle University and was replaced by Melanie Wacker (Metadata Coordinator, Columbia University Libraries' Bibliographic Control Division).

- ARTstor: Jeremy Stynes left ARTstor and was replaced by Parastou Marashi (User Experience Designer). Kimberly Henrikson (ARTstor User Services) returned to graduate school and has been replaced by Mary Finer (Project Assistant).
- Getty Research Institute: Patricia Harpring (Managing Editor of the Getty Vocabulary Program) joined the Built Works Registry metadata team; David Farneth (Assistant Director, Getty Research Institute) joined the administrative team.

Communications

A schedule of regular meetings and communication pathways was established to facilitate project development.

- Team meetings: Six Built Works Registry all-team meetings have been held. Staff from all three partner organizations participate in these monthly meetings, which alternate between ARTstor and Avery Library in New York, with Getty members taking part via conference call or webinar. Additionally, each BWR project team (administration, metadata, technology) convene regular meetings and engage in ongoing email/phone communications to ensure progress of work. The Built Works Registry metadata team also meets with the ARTstor Shared Shelf and Getty Vocabularies teams to ensure that data development will be interoperable across all systems.
- Advisory Board meeting: an introductory webinar was held for all members on November 23, 2010; informational packets were distributed prior to the online meeting. An onsite Advisory Board meeting was held at ARTstor on January 23-24, 2011.

Dissemination

Information about the Built Works Registry project is regularly communicated to relevant constituencies in a variety of presentations, print and electronic media.

- Press releases announcing the IMLS award and the Built Works Registry project were distributed widely through the Columbia University Libraries and ARTstor's communication offices: http://library.columbia.edu/news/libraries/2010/20101001_imls.html
- The Built Works Registry blog http://builtworksregistry.wordpress.com/ was designed as the outward facing communication portal. It was launched in February 2011 with regular updates posted throughout the year. An RSS feed is enabled so that interested public can monitor project developments and supply comments to the project team. The Registry blog is also linked from the ARTstor website (http://www.artstor.org/news/n-html/current-projects.shtml) and the Avery Library blog (https://blogs.cul.columbia.edu/avery/) and website (http://library.columbia.edu/indiv/avery/bwr.html).

- ARLIS and VRA listservs are used to announce project-related news.
- Avery Library and ARTstor staff presented updates on the BWR project at the following professional conferences: Association of Architecture School Librarians (Montreal, March 4, 2011) and ARLIS/NA and Visual Resources Association Joint Conference (Minneapolis, March 24, 2011).
- Finally, two articles were published about the project: *Imagining the Built Work Registry* by Aaron Stroup Cope and Christine Kuan, http://www.artstor.org/news/n-pdf/ariticle-Built_Works_Registry.pdf, and *Words will not stay in place: cataloging and sharing image collections* by James Shulman. Art Libraries Journal vol. 36 February (2011): 25-32, http://www.artstor.org/news/n-pdf/alj-shulman-2011.pdf.

Advisory Board

An international Advisory Board was composed to ensure that the Built Works Registry project develops as a meaningful and useful resource to a broad array of international constituencies who can both utilize and help to build the resource. The role of the Advisory Board is to provide input and review policies, technologies, and choices concerning the data structures that comprise the BWR. Members represent academic libraries, research institutes, museums, and cultural heritage organizations. Current members are listed on the BWR blog, http://builtworksregistry.wordpress.com/advisory-board-members/.

The first annual Advisory Board meeting was held at ARTstor, January 23-24, 2011. The following basic principles describing the intent of the project and defining the parameters for the system design were established:

- Registry function: *required to uniquely register a work.*
- Cataloging function: *minimally describe a work to disambiguate it from other works; more basic records are better than fewer deep records; data must support multi-linguality.*
- Authority function: *data should be trusted; data can be enhanced over time; BWR will be a source of basic data to other efforts to construct authority files (such as the nascent Getty Research Institute's Cultural Object Name Authority).*
- Research function: *out of scope: BWR is not conceived as a source of research information, but rather a core set of descriptive data to uniquely identify a work.*

The Advisory Board engaged in five substantive discussion areas to help the BWR project team in its initial designs for the overall BWR system:

1. What is a built work?

   A built work was defined as both architecture and sites, but not cities. A built work is a human-scaled public or private space, large enough to be seen from the air, has been built rather than planned to be built, and includes cultural landscapes, significant works by known creators, and vernacular works. A built work is often comprised of multiple parts; therefore, Built Work Registry records will need to accommodate part/whole relationships such as a complex (parent) and its individual parts/buildings (child)—for example, a university campus and its individual buildings.

2. What constitutes a minimum record?

   The Board expressed a wide and diverse set of perspectives regarding the appropriate requirements for the level of description and the level of authority for contributed records. Some members felt that brief records provided enough information uniquely to identify the work and strongly preferred this approach for its potential to gather scale quickly over more laborious, complex descriptive requirements. This group also suggested providing reference links to deeper resources, as available. Another group of members, favoring professional cataloging community needs, suggested highly vetted authoritative description. Consensus was reached provisionally on minimum requirements: system-supplied unique identifier, name, location (address, nearby location), and geographic coordinates. These four data elements informed further schema development by the BWR project team over the course of the year. The full schema and data definitions will be presented to the BWR Advisory Board for review and comment at the meeting in January 2012.

3. The Built Works Registry and multi-linguality

   Multi-linguality was considered an essential component of the project. Specifically, records should accommodate vernacular, transliterated, translated, variant and preferred forms of terms. Non-Roman character sets would be consistently supported in Unicode 8.

4. Geo-coding built works

   Each built work record will carry a geo-code that plots its location. Various types of locating parameters were discussed, including: bounding box, centroid, latitude/longitude, and shape of the built work. The technology team was charged with identifying relevant web projects,

strategies and utilities provided by external resources that can be leveraged for adding geo-code data into BWR records.

5. Who can do what?

   The advisory group had an initial discussion that explored options concerning how individuals and institutions might ideally contribute records or data enhancements to BWR records. A set of contributor roles (add, edit, and/or use a record) will be controlled via contributor toolkits. Bulk contributions will be supported for the five seed collections during the grant period, with the hope that tools will be created that will facilitate future institutional bulk contributions. Three possible data contribution routes were explored:

   - A data model, involving a high-degree of human intervention to add reliable data and to certify and authorize terms;
   - A community or crowd-sourced model, which would provide opportunities for broad engagement with the resource and the ability to quickly add scale;
   - A hybrid model, allowing ingestion of institutional data sets for a limited number of core fields, and also allowing the community to enhance those core records.

BWR technology and policy teams will explore each of these strategies further and develop documents and systems to control and support individual and institutional contributions.

Policies

Policies have been drafted regarding the administration and governance of the Built Works Registry project, and regarding the nature of the relationship between Avery, ARTstor and the Getty Research Institute (GRI). These policies are set forth in the form of agreements being negotiated by counsel for these parties; once these policies are vetted and agreed to by all organizations they will be made available to the IMLS administrators. Summaries of the proposed draft agreements may be found below: a master "Founders'" agreement between Avery/Columbia University Libraries, ARTstor and the Getty; an agreement with the institutional contributors of built work records to the BWR; and an agreement with individuals who contribute built work records to the BWR.

<u>Founders' Agreement</u>

The Founders' agreement sets forth the nature of the relationship between Avery, ARTstor and the Getty as well as the administrative mechanisms of the Built Works Registry. Although the agreement is still in the process of being reviewed by counsel and therefore subject to change, the draft currently contemplates

the possibility of joint ownership of the BWR records—as a collective work—among the parties, with intellectual property developed independently (whether it be content or software) remaining with the party that developed such property. The draft of the agreement proposes a founders' standing committee, which would meet periodically to review policies about the administration and governance of the Registry. The draft also proposes that changes to the Registry's administration or governance would be made by joint vote, with all founders having equal weight, except that no change could impose additional monetary or other burdens on an individual founder without the advance consent of that member.

The Founders' agreement draft sets forth ARTstor's standing as the administrator and distributor of the BWR and that, if ARTstor someday ceased to operate or were merged with another entity in a way that changed the terms of the Registry's administration, the founders would seek another distributor. The draft also addresses questions such as copyright liability (which the parties believe would be minimal, and would largely be addressed through take-down measures if needed), and the ability of each founder to terminate its role upon notice (in which case, the other founders would retain the sole rights with respect to the development, ownership, and administration of the BWR).

Content Agreements

As noted above, content contribution agreements for institutional and individual contributors have also been drafted. The drafts contain express licenses, allowing ARTstor (as distributor) or any successor entity to ARTstor to make available individual BWR records for noncommercial as well as commercial purposes (although distribution is intended to be limited in most instances to educational, noncommercial uses). The draft agreements also contain provisions addressing potential copyright infringements (again, thought to be a minimal risk, especially if distribution is limited to data records and not thumbnail images), and the ability of the content provider to terminate the license (in the event of a material breach). The draft licenses provide for worldwide, non-exclusive, royalty-free use of contributed records.

In the draft of the content agreements, consent is given to provide acknowledgments of each institution's contributions to the Built Works Registry through a credits page within the BWR interface.

Metadata

The Built Works Registry Metadata Team met nine times in 2011 to discuss initial project goals, workflow processes, and strategies on how best to work, across all three organizations, on three primary tasks:

1. Creation, development and refinement of a Built Works Registry schema.

2. Evaluation of the Registry's five identified source systems for seed content.
3. Creation and development of a BWR Data Dictionary.

BWR Schema

The draft BWR schema for the Registry was guided by Advisory Board comments and is principally derived from the Getty Vocabulary Program's Cultural Objects Name Authority (CONA) schema along with supplemental elements from Harvard's VIA (Visual Information Access) schema. The BWR schema accommodates a core and an extended data model for BWR work records. Core-record required fields include BWR ID, BWR Name, and Location, and the extended data record can also accommodate migrated data from all of the initial BWR content contributors (Avery, ARTstor, Harvard, and Cornell). BWR schema core fields will be:

- ID NUMBER: a unique identifying number assigned by BWR editors;
- NAME: the "preferred" name, which in most cases will be that name by which a built work is most commonly known;
- LOCATION: to be controlled by Getty's Thesaurus of Geographic Names (TGN); and
- GEOGRAPHIC CODE: based on locational information.

The Registry's full schema comprises 72 fields for descriptive data including start and end work dates, work type, and associative relationships. It is understood that, while this information will not be required for a built work to be included in the Built Works Registry, it will be included in individual records when available. The decision to include numerous fields for descriptive data is especially important in light of the Registry's expected role as a major contributor to Getty's authoritative resource, CONA. Furthermore, it was agreed that this expanded schema would further promote the Registry's profile as a core constituent of the vocabulary for original cataloging. The BWR schema has been approved by the Administrative Team and will be presented to the Advisory Board at the January 2012 meeting (Addendum B).

Data Dictionary

To aid both future institutional and individual contributions, a draft data dictionary has been prepared for review by the BWR Administrative Team and the Advisory Board. The BWR Data Dictionary will provide the necessary descriptions, guidelines and relevant examples to constituencies who would like to make contributions to the Registry. This document will be useful to a wide array of contributors and will facilitate the ingestion of contributed content. Once finalized, the data dictionary will reside on the Built Works Registry's website (Addendum C).

Linked Open Data Strategy

Since the submission of the Built Works Registry proposal to IMLS, the linked open data community has grown, and so has the interest in its potential for data sharing on the part of the participating organizations' constituencies. The BWR teams feel it is important to develop a strategy to enable the Registry better to attain the goal of making data about built works accessible to records management systems and to the public. Therefore, a linked data strategy is necessary, or at least advisable. Just as linked data enables the extension of the Web from a hyperlinked document space into a machine-readable global data space based on open standards, formulating a strategy for linked open data will provide the Built Works Registry with a framework for sharing semantically-rich content.

The Linked Open Data cloud is comprised of 206 data sets. In order to join this community, an ontology will need to be authored for the Registry, and the BWR database schema mapped to the BWR ontology. Then, a web-services layer will expose the registry's RDF data, and the ontologies that BWR data links to will have to be identified. Viable established ontology candidates include Dbpedia, OpenStreetMap, Geonames, and Freebase, among others. Upon identification, Registry links to other data sources will be made either manually or through batch processes (by custom programs and by identifying properties in other ontologies) which will auto-generate the links. Linked ontology owners will then be provided with Built Work Registry resources (RDF records).

In turn, URIs will have to be established for BWR records. Multiple aggregations and views of the same data will thus be possible. For the human audience, the document view of data will be accessible via the URIs; whereas for the machine audience, the concept (namely the resource or RDF) will be dereferenced from the document, hence becoming accessible via a redirection. Once a part of the Linked Open Data community, the Built Works Registry will be linked to by other datasets which will in turn provide it with their own links, thereby increasing the registry's discoverability.

Content

As noted in the Built Works Registry's Project Design and Evaluation Plan, five source data files will initially seed the Registry. Two of these data sources—the *Avery Index to Architectural Periodicals* and the *Avery Videodisc Index of Architectural Drawing on RLIN (AVIADOR)*—were utilized first, since they were readily accessible and Avery staff members were very familiar with both their content and their data structure. Records in both of these data sources are structured utilizing the MARC 21 format. Sample sets of AVIADOR and Avery records, each, were selected for analysis and evaluation. Four fields from AVIADOR and the Avery Index were extracted based on the BWR schema data requirements: title/name,

location, creator and work type. Moreover, information found in the "notes" section of AVIADOR and Avery Index records was imported to the BWR schema. The Columbia University Libraries' technology group identified, extracted, and normalized AVIADOR records and posted them to an FTP site, where they were made available to the BWR Technology Team. On analysis, AVIADOR records were found to be fairly uniform—data fields were consistent and there was little variation in the records. Avery Index records, on the other hand, were found to be less consistent and the field location of relevant information varied. The team concluded that the variation in Avery Index records appeared to be the result of changes made to indexing practices instituted sometime between 1978 and 1979. To remedy this situation, Avery Index records were divided into two large groups: records created in 1978 or earlier and records created in 1979 or later and respectively identified as Avery1 and Avery2. Relevant fields in each of these groups were identified and, as with the AVIADOR records, the Columbia University Libraries' technology group was asked also to make them available to the Built Works Registry's Technology Team via FTP.

The next step for the Metadata Team was to design three unique data maps for what at the moment were three separate sets of data—AVIADOR, Avery1 and Avery2. Data was then extracted from the FTP site and transferred to the BWR schema. Currently, there are 4,878 AVIADOR records and 433,131 Avery records (Avery1 and Avery2 combined) residing in the Vocabulary Warehouse. Metadata Team members are currently engaged in a review of Avery1, Avery2, and AVIADOR content and will soon begin the process of editing, de-duplicating and enhancing existing records.

Over the past six months, the team has also analyzed, mapped, and test-loaded datasets from Cornell and Harvard University. These two collections have been built over the last decade in response to their teaching faculty's needs. Each dataset (catalogued with different rules and built on different data structures) presented its own challenges, but the following sets have been successfully parsed and mapped to the data model. Namely, from Cornell, 13,847 records, including 1611 different works/sites, have been mapped. From Harvard's OLIVIA database, 392,917 work records will be parsed to identify 55,621 sites. Even though "creator" will not be a required field in the BWR model, the seed collections are earmarked for mapping into the more expansive data model, when feasible, so as to create the strongest possible set of initial collections. For this reason, "creator" data from Cornell (17,064) and Harvard (85,790) have been loaded also. Even though only a subset of these creator names will be associated with built works, in the process of loading these sets the team has learned some of the issues that the Built Works Registry will face when including other large datasets (for example, distinguishing built work records from moveable work records).

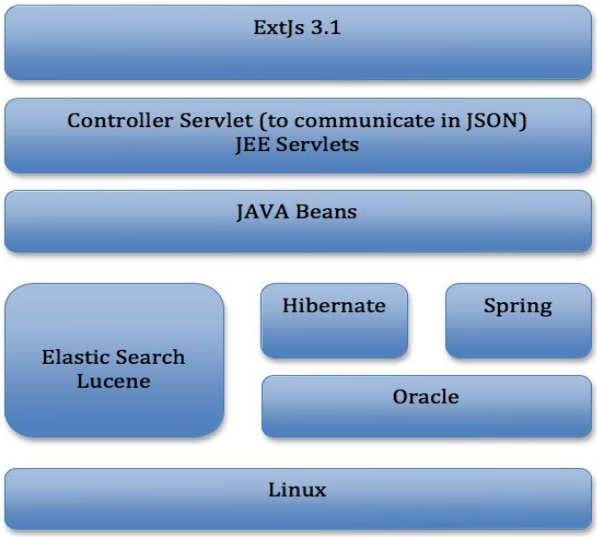
ARTstor Digital library has been assembling and sharing image collections in the arts, architecture, humanities, and sciences since 2004. Today, it is one of the largest not-for-profit centralized educational databases of images and associated image records in the world. In the past seven years, one of the core areas of focus for collection development has been the built environment from all time periods and geographic regions. For the Built Works Registry project, the ARTstor collection development team has selected 15 important and unique collections of architectural and built environment image records (approximately 70,000) to be reviewed, edited, and converted into unique work records for inclusion in the Registry. These collections span the following subject areas: historical architecture, modern and contemporary architecture, landscape design, gardens, world monuments, archaeological sites, and vernacular architecture. They are expected to complement the data records coming from other participants in the project and will therefore expand the range of built works records made available in the Built Works Registry. Because of the diversity of the source collections and datasets to be included from ARTstor, mapping and loading of these collections is still underway. The following table lists ARTstor contributed collections and their image counts, which are being used to seed Registry content:

Brian Davis: Architecture in Britain	1656
Carnegie Survey of Architecture of the South (Library of Congress)	6884
Christopher Long: Central European Architecture (University of Texas at Austin)	215
Contemporary Architecture, Urban Design and Public Art (ART on FILE Collection)	13033
Ezra Stoller Archive (Esto)	14548
Historic Campus Architecture Collection (Council of Independent Colleges)	4045
Le Corbusier (Dalhousie University)	252
Plans of Ancient and Medieval Buildings and Archaeological Sites (Bryn Mawr College)	7989
Ralph Lieberman: Architectural Photography	4658
Renzo Piano Building Workshop	299
Robert Winter: Architecture of California (Occidental College)	2051
SAHARA	8991
Wayne Andrews: Architecture (Esto)	4210
Wilfried Wang: Modern Architecture (University of Texas at Austin)	458
World Monuments Fund	992
Total	70281

In addition to the above-mentioned five source data files, future contributions are anticipated from other educational institutions, museums, and historical and cultural organizations, depending on how and when the BWR teams are able to make this possible. Furthermore, the Built Work Registry will eventually provide a public user interface which will permit registered individual users to contribute additional works to the Registry or to enhance existing records by supplying additional information.

Technology

In the first year of work on the Built Works Registry, the team has made significant progress designing and building the infrastructure that will house registry data. Specifically, the project has advanced considerably in the areas of hardware and networking infrastructure, software for managing the database, routines for mapping source data into the database to test the data model, and viewing screens and reports for analyzing the data from the five source collections.



Technical Design

Designing and implementing the repository, search, and business logic levels of the Registry's database structure already show remarkable advances. The front end uses extjs3.1, which provides an array of widgets and tools for data entry and presentation and interacts with Object-relational mapping (Hibernate + Spring) using servlet. Oracle is used as the Database and Lucene provides elastic searchability, which will be particularly important when end-users look to see if a record for a given work exists before embarking upon creating a new one.

Data Warehouse Development

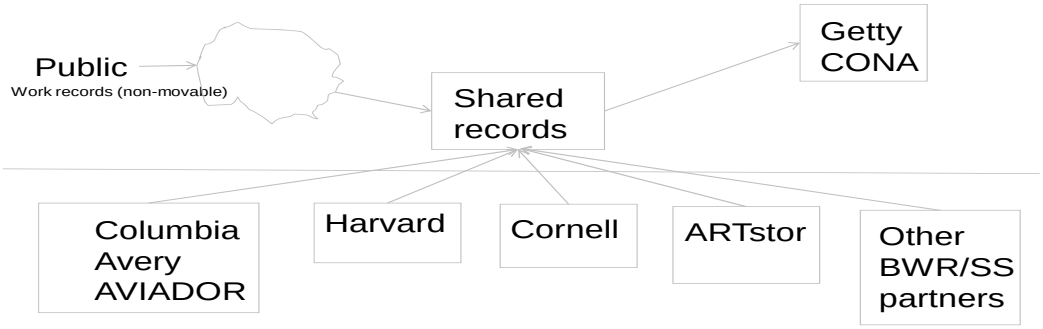
The Built Works Registry will reside in a set of databases that constitute an authority file and controlled vocabulary warehouse. Within the warehouse, there will be a constellation of authority files (including the three major authorities created by the Getty Research Institute (The Union List of Artists' Names, ULAN; The Thesaurus of Geographic Names, TGN; and the Art & Architecture Thesaurus, AAT) as well as community-contributed terms.

Steps toward the creation and deployment of the warehouse that have already been accomplished include:

1. Harvesting and local implementation of the Getty vocabularies;
2. Screen design for adding additional creator names as candidate terms;
3. Web services protocols for utilization of ULAN, TGN, and AAT data in the building of a work record;
4. Implementation of the full BWR data model for testing against initially contributed data sets;
5. Harvesting routines by which the Getty Research Institute can in turn harvest contributed terms to determine whether they can subsequently be taken into the authority files.

Data Model Implementation and Registry Seeding Progress

Having designed the data model, all of the initial datasets were mapped to the model to try out its utility and to test how the data values from the heterogeneous sets would be accommodated by the schema, already discussed above. Each data set was loaded as an "institution specific set" within the data model and returned for analysis, as illustrated by the diagram below. The team is currently in the process of examining the mapping exercise and making changes necessary to the extraction, transformation, and loading process before attempting to merge all of the initial contributions into one shared database.



Addendum A: BWR Project Timeline

Trajectory	Activity	Project team effort	2010	2011				2012				2013		
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Project Admin	Hire/appoint/commit staff positions	Administrative team	X											
	Coordination, communications, documentation	Administrative team	X	X	X	X								
	Reporting	Administrative team		X		X								
	Dissemination	Administrative team	X		X									
Policies	Administrative Policies framework (governance, legal)	Administrative team	X	X	X	X								
	Content policies (scope, processes, workflow)	Administrative team			X	X								
	User policies (distributed curation & collaboration model)	Administrative team		X										
	Advisory group onsite meetings	Administrative team		X										
Metadata	Schema development	Metadata team		X	X	X								
	Data dictionary & guidelines	Metadata team			X	X								
	Processes / workflow	Metadata team			X	X								
Content	Identify/define	Metadata team	X	X	X	X								
	Extract & verify	Metadata team			X	X								
	Aggregate	Metadata team				X								
	Analyze	Metadata team			X									
	Normalize	Metadata team												
	Enhance	Metadata team												
	Migration prep to BWR data warehouse	Metadata team			X	X								
Technology														
	Policies design (processes, workflow)	Technology team		X	X	X								
	Technical design	Technology team		X	X	X								
	Backend infrastructure development	Technology team				X								
	Data warehouse development	Technology team				X								
	Export/ingest	Technology team												
	Deduplication	Technology team												
	User Interface development:													
	Data entry environment	Technology team												
	Administrative data management environment	Technology team												
	User management	Technology team												
	Shared infrastructure development:													
	Open interface	Technology team												
	Web services	Technology team												
	Integration	Technology team												
	Deployment	Technology team												
Evaluation		Admin, metadata & tech		X	X	X								

Addendum B: BWR Schema

CORE FIELDS BWR Schema	
Core Fields	Notes
BWR ID	
BWR Name	
Location	Controlled through TGN
Geocode	
SUPPLEMENTARY FIELDS BWR Schema	
Supplementary Names/Titles	
Display Name	
Authority Source	List of sources, where did information come from
Title Type	
Language	
Variant Names	List of all names by which building is known

Location Information	
Display Location	
Location Type	Used when a building has been moved from its orig. location
Repository	Controlled through ANA
Ref ID	Controlled through ANA, TGN
Vocab	ANA, TGN
Repository Number	
Address	
City	Controlled through TGN
County	Controlled through TGN
State/Province	Controlled through TGN
Country	Controlled through TGN
Zip Code	
Latitude	Controlled through TGN
Longitude	Controlled through TGN
Bounding box	
Elevation	Controlled through TGN
Authority Source	
Related People/Corporate Bodies	
Display Creator	
Name Id	Controlled through ANA
Name	Controlled through ANA
Extent	tower, interior, addition....
Role	architect, engineer, designer etc
Attribution	attributed to…
Dates	
Display Date	
Date Type	creation, alteration, destruction etc, refer to VRA core 4 restricted values schema
Start Date	
End Date	
Source	
Landmark Status	Is built work designated, and if so, by what organization
Date Status Conferred	
Work Types	
Display Work Type	
Work Type	Controlled by AAT, TGN, etc.
From	
To	
Display Date	
Material & Techniques	
Display Material/Techniques	Information will not be available in all cases
Type	material, technique
Material & Techniques	stone, brick, marble etc
Vocab	AAT etc
Vocab Ref Id	e.g. AAT ID, etc.

Measurements	
Display Measurements	Information will not be available in all cases
Type	length, height, dimension
Unit	m, ft, inch, cm
Extent	
Value	stone, brick, marble etc
Style	
Display Style	
Style	Controlled through AAT etc
Vocab	AAT etc
Vocab Ref Id	e.g. AAT ID, etc.
Culture	
Display Culture	
Culture	Controlled through ANA
Vocab	
Vocab Ref Id	e.g. ana.nationality_code, ana.unknown creator
Notes	
Note Type	
Note	Descriptive narrative and additional information would be put here
Page	
Bibliography	
Source Type	Source
Page	
Work Hierarchy and Work Relations (Associative Relationship)	
Ref Id	
Relationship Type	Hierarchical relationship e.g. parent/child relationship and also associative relationships
Display Date	
Start Date	
End Date	
Legacy Information	
Legacy Id	
Source	
Note	
Problem	

Addendum C: DRAFT BWR Data Dictionary

BWR ID NUMBER *(to be assigned by BWR editors)*
Description:
Unique numeric or alphanumeric identification for the BWR record. This identification number will be assigned by the BWR editors.

NAME *(both Preferred/BWR and Variant/alternate names)*
Preferred/BWR Name
Description:
Each built work will have one and only one default preferred name which will be identified with the *preferred* flag.

Guideline:
In most instances, the preferred name will be the most commonly used English-language name. The preferred name will also serve as the BWR name in the record.
All other names including variant and vernacular names will be included in the BWR record. (See below for further guidance).

Variant/Alternate Names
Description:
In addition to the preferred name, a built work may have any number of supplementary or alternate names. These include variant spellings, vernacular names, variations in different languages, nicknames, pseudonyms, as well as any and all variations of these names.
Guideline:
All listed names in a record are considered to be equivalents or synonyms and all will linked by the BWR ID Number as described above.
Various flags will be used to identify variant/alternate names. As noted above the preferred/BWR name will be identified with the *preferred* flag. Vernacular names will be flagged with a *V*. The vernacular language for this name if known should also be indicated with the appropriate language code. (See Appendix X). There may be numerous vernacular names.

Examples of other name flags which may be used include the following.

O = Official name
P = Pseudonym
LC = Library of Congress authoritative name form
C = Current
H = Historical
B = Both current and historical
U = Unknown

LOCATION *(controlled through TGN)*
Description:
The geographic location of a built work.
Guideline:
The location of the built work can be expressed in any number of different forms including geopolitical entities (e.g. Italy), addresses, map coordinates, bounding box and/or elevation. All known information regarding geographic location should be provided. (See below for a more detailed discussion of location attributes found in BWR records).
The majority of built works can be placed and/or located within a "city" and "country, state/province or other subdivision," and "nation." The broader contexts should be emphasized by placing them in parentheses—or in some other accepted manner.

Examples:
[Medina Azahara palace] example from CCO
Current Location display: Cordoba (Andalusia, Spain)

The Getty Thesaurus of Geographic Names (TGN) should be consulted for guidance on the geographic location of a built work. TGN can prove extremely useful in providing the proper identification of elements such as nation, state, city/province, etc. http://getty.edu/research/tools/vocabularies/tgn/index.html
All proper names, including the names of villages, towns, cities, provinces, states, nations, etc. should be capitalized. When a name includes a preposition or an article, such as *des, de, la, or l'*, use the lowercase unless it is the first word in the name.

Address:
Street addresses should be included when available.
An address can be used to locate a built work within a given geopolitical entity and can be composed of any number of elements or individual pieces of information, including city, state/province, country and zip code. Abbreviations and initials should be avoided. This includes U.S. Postal Code abbreviations for state names in the United States.

These elements combine to create an address form levels in a hierarchy, ranging from country down to name and number.

Examples:
[house in a neighborhood]
Lower East Side (New York, New York, United States).
[street address for a church] example from CCO
17, Rue St.-Antoine (Le Marais, Paris, France)

Spatial Coordinates-Latitude and Longitude:
Spatial coordinates are sets of numbers sometimes with associated letters that locate points on the earth's surface. Most systems use coordinates made up of two numbers, these corresponding to an x and a y axis (although some use three).

Example:
[Detroit, Michigan]
Coordinates:

Lat: 42 19 00 N *degrees minutes* Lat: 42.3167 *decimal degrees*
Long: 083 02 00 W *degrees minutes* Long: -83.0333 *decimal degrees*

Coordinates are particularly useful when a built work must be located with accuracy but the address elements are not sufficient, as with a lighthouse. Another advantage of map coordinates is that while addresses change, coordinates do not. The importance of spatial coordinates has grown with the development of computer-based Geographic Information Systems (GIS). Using GIS can make it relatively simple to retrieve all records that have the coordinates of any location on a map. The recording of coordinates is of most importance to regional and national bodies engaged in documenting archaeological sites and historic buildings. However, it would be impractical for the majority of cataloguing institutions to record this information. For this reason map coordinates are not regarded as core, but are recommended for use by institutions that are in a position to record them with relative ease.

Bounding Box:

Elevation:
Also referred to as geometric height, this measurement is used when referring to points on the Earth's surface. This element describes the height of a built work above a fixed reference point--the level of the sea.

RELATED PEOPLE/CORPORATE BODIES (CREATOR)
Description:
This field should contain the name of the person/s and/or corporate body responsible for the creation of a built work or component part of a built work. A built work may have multiple creators who may have played a role in the creation of a built work or was responsible for a certain element or part of a built work. This should be detailed in either the *Attribution* or *Extent* subfields which are discussed below. If a specific role can be ascribed to an individual, i.e. architect, engineer, this should be recorded in the *Role* subfield which is explained below.

In some instances, the creator may be unknown in which case the responsibility for a built work should be ascribed to a cultural group (see discussion of *Culture* field outlined below).

Guideline: People
An individual may be known by a number of names, including spelling variations and all other alternate or vernacular names. All names should be recorded along with the appropriate flagging; preferred names should be indicated as such using the standard *preferred*; *V* is used to indicate the vernacular.
To facilitate retrieval names are ordered surname first. For display purposes, a separate category will display the name in natural order. The nationality and dates associated with an individual should be provided if available.

Guideline: Corporate Bodies
Defined in the broadest of terms, a corporate body can be defined as an organization or collective of two or more people who have worked together as an entity. Legal incorporation is not necessary. Appropriate examples of corporate bodies include governments, guilds, schools, religious bodies, foundations, architectural firms, studios,

and offices. As with individuals, corporations may be known by a number of names. This is especially true of architectural firms, where name changes are reflective of changes in the partners involved. In these instances, record the name that was in used when the work was created.

Attribution:
For those built works which were created by a single, known creator a simple straightforward reference is sufficient. When multiple entities were involved in the creation of a built work, it is important to record the most important and/or most prominent. There may also be instances where responsibility for creation is unknown, but scholarly opinion has concluded that a work can be attributed to a known individual or group. This should be included.

Extent:
If an individual was involved in the creation of a particular part or section of a built work such as tower, interior, addition it should be indicated here.

Role:
If the particular role of a creator is known, e.g. architect, engineer, designer, it should be included.

WORK TYPES *(controlled through AAT)*
Description:
The Work Type element identifies the kind of built work which is being described. It is important to use the most appropriate and/or specific term as possible. If a part of the built work being described is important and/or significant enough to have its own record, the record for the part being described should be linked to the record for the whole work. (See Work Hierarchy/Work Relations for more detailed information).

Guideline:
In some instances the function of built work has changed over time. In these instances it will be important to record both the original and subsequent Work Types. Record these Work Types in reverse chronological order—the most recent Work Type first. A note can be added to the record to explain this change in a built work use over time.

Examples:
[For Hagia Sophia, Istanbul]
Work Type: cathedral – mosque - museum

DATE
Description:
The date or range of dates associated with the creation, design, production, construction or alteration of the built work or its component parts.

MATERIALS/TECHNIQUES *(controlled through AAT)*
Description:
Includes any substances or materials used in the creation of the built work, including any manufacturing or production techniques, methods or processes incorporated into its construction. *Materials and Techniques* should be recorded together in the same field. This field will allow for free-text for displaying full phrases, but the terms themselves should be derived from AAT if available.

Type
(To be defined)

MEASUREMENTS
Description:
This field contains information about the size, dimensions, or scale of the built work. It is understood that this information may not be available for all built works and any indications of uncertainty, ambiguity or nuance should be included here.

Type:
Includes the length, height, width, area and other dimensional aspects of the built work.

Unit:
Includes millimeters, centimeters, meters, inches, feet, square feet and cubic centimeters.

Extent:
That part of a built work which is being measured.

Value:

STYLE *(controlled through AAT)*
Description:
This category includes any defined style, historical period, movement, group, or school whose characteristics are evident in the built work. Terms used to describe style may be derived from specific historical periods and thus establish a chronological reference.

Designations of style, period, group, or movement are typically derived from scholarly tradition. Stylistic terminology epitomizes many of a work's most significant or notable characteristics, and should place it in the context of other works created in the same style. This field is particularly useful when the Related People/Corporate Bodies (Creator) is unknown.

The list of possible terms for this category is vast and can include the names of dynasties, ruling families, and the names of specific ruling monarchies. It can also include broad terms such as *Medieval* or *Renaissance* which may also be subdivided into more specific secondary stylistic eras such as *Classical* or *Hellenistic*.

CULTURE *(controlled through AAT/ANA)*
Description:
The name of the people, culture or nationality attributed to a built work. In most instances, the culture that produced a work will almost always be the same as the creator's culture. When the work has a known it is not necessary to enter a value for *Culture*.

NOTES
Any descriptive notes, information or narrative about a built work should be included here.

BIBLIOGRAPHY
This field includes any authoritative sources which were used to construct record for built work. Should include all relevant information including page number.

WORK HIERARCHY/WORK RELATIONS (includes Associative Relationships)
Description:
Hierarchical relationships are typically whole-part relationships, while associative relationships describe related concepts.