Creating Replicable Digitization Practices for Small Objects

or… "What the Seals Taught Us"

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Yale Babylonian Collection

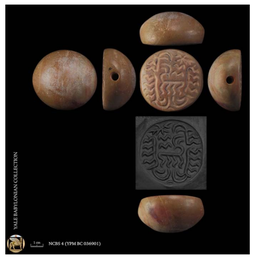
TAKE-AWAYS FROM A TWO-YEAR PROJECT DIGITIZING 4,000 SEALS IN THE YALE BABYLONIAN COLLECTION

1. Know Your Collection and Digitization Goals

- How many ways can a single object be documented / represented?
- What are the artistic and functional qualities of the objects you seek to document?
- Who is your audience and what are their most basic and most advanced needs?
- Do objects need conservation treatment or other forms of documentation?
- What are your limitations in resources and your areas of expertise?

The Yale Babylonian Collection (YBC) Seal Digitization Project took a cultural heritage approach to documentation—aiming for the standardization of photographs rather than an artistic approach in which the qualities of each object is brought out by individually-specified lighting and processing protocols. Our goal was to create a corpus of comparable imagery for specialists and non-specialists.

Right: Stamp seals in the YBC were photographed from 6 sides using standardized camera settings for HDR photography and a color chart. An impression of each seal was made and photographed as well. Assembled into a single plate, the 7 images provide a sense of the object, its function(s), and engraved imagery



2. Organize Objects by Visual Types in Advance

- Consider material and size/shape
- Various materials present contradictory lighting, photography, and processing challenges
- Miniature objects can be difficult to balance or may require different photographic approaches depending on their size and shape
- Try documenting several different objects to determine steps in documentation

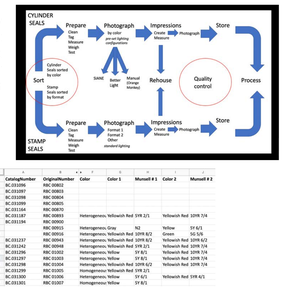
Above: Cylinder seals sorted by color and opacity to facilitate photography
Left: Stamp seals of a similar shape set out for photography

3. Decide How to Track the Progress of the Project

- What are the individual stages of the project? Who will be responsible for each stage?
- Will you remove all objects from collection storage at once or in phases?
- What information do you need to process images?
- When will you perform a quality check and how?

The YBC used Excel documents to track the progress of a multi-component seal digitization project, identifying which activities needed to be performed by the postdoctoral associate and which could be achieved by university students working at the collection. Images were checked at multiple stages, and all photographs (and impressions) were measured, with measurements entered into Excel documents.

Right: Sample workflow chart
Below: Munsell Color Book and tracking document for color of seals



	A	B	C	D	E	F	G
1	CatalogNumber	OriginalNumber	Color	Color 1	Munsell # 1	Color 2	Munsell # 2
2	BC.031096	RBC.00002					
3	BC.031097	RBC.00003					
4	BC.031098	RBC.00004					
5	BC.031099	RBC.00005					
6	BC.031100	RBC.00006					
7	BC.031187	RBC.00053	Heterogeneous, Yellowish Red	5YR 2/1		Yellowish Red	10YR 7/4
8	BC.031194	RBC.00900					
9		RBC.00915	Heterogeneous, Gray	N2		Yellow	5Y 6/1
10	BC.031237	RBC.00916	Heterogeneous, Yellowish Red	10YR 8/2		Green	5G 5/6
11	BC.031238	RBC.00943	Heterogeneous, Yellowish Red	10YR 8/2		Yellowish Red	10YR 6/2
12	BC.031242	RBC.00948	Heterogeneous, Yellowish Red	5YR 2/1		Yellowish Red	10YR 7/4
13	BC.031243	RBC.00949	Heterogeneous, Yellowish Red	5YR 2/1		Yellowish Red	10YR 7/4
14	BC.031297	RBC.01003	Heterogeneous, Yellow	5Y 8/1		Yellowish Red	10YR 7/4
15	BC.031298	RBC.01004	Heterogeneous, Yellowish Red	10YR 6/2		Yellowish Red	10YR 7/4
16	BC.031299	RBC.01005	Homogeneous Red	5YR 2/1			
17	BC.031300	RBC.01006	Heterogeneous, Yellow	5Y 6/1		Yellowish Red	5YR 4/1
18	BC.031301	RBC.01007	Homogeneous Yellow	5Y 8/1			

4. Hire the Right People at the Right Times

- What level of expertise is required to interpret the objects for photography?
- What are the contributions that a specialist in the material vs. a specialist in digitization will offer the project?
- What resources are already available to you?

At the YBC, a grant-funded Postdoctoral Associate led the digitization project with the help of over 15 undergraduate and graduate students over a two-year period. The collection had the most success working with students during the summer, when it was possible to offer positions for 20–40 hours per week. Summer student workers were given a 4-day introduction to the material and then assigned specific tasks that were part of the larger digitization project. Photographers and digital humanities specialists on campus helped advise in the project and the setup of photography stations. The Postdoctoral Associate was responsible for sorting objects, photographing stamp seals, training students, and performing quality checks.

Students and staff of YBC working on digitization of seals

Tips:

- Black velvet purchased at a fabric store is easy to clean with a lint brush and produces a dark (true) black background for object photography
- Sandboxes and museum wax do not work as well as a box with ethafoam sheets and pillows covered in black velvet for balancing objects

Right: Options for balancing seals for photography: sandbox (left), museum wax (right front), box with pillows (right back)

- All photographed objects must be measured and measurements logged in an excel document in order to batch process images into a shared plate
- Batch process works (when photographing on black background) if you first lighten the image and then crop it
- There is no single best solution – each approach / equipment comes with its own limitations

WHAT IS A SEAL?

- A small object made from various materials (natural and man-made) carved into different shapes
- An administrative device that can be stamped or rolled to create an impression
- A wearable object that could have protective properties

Over 4,000 cylinder and stamp seals exist in the Yale Babylonian Collection, dating from ca. 6,000 BCE – 600 CE. Examples of ancient cylinder and stamp seals are known from across West Asia and beyond. It is estimated that some 50,000 cylinders and an unknown (possibly greater) number of stamp seals exist in collections around the world.

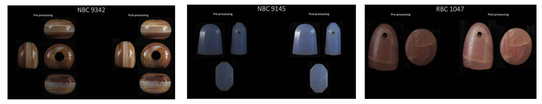
THE DIGITIZATION JOURNEY OF A STAMP SEAL IN THE YALE BABYLONIAN COLLECTION

1 Sort all seals in the collection by shape to create two categories: (1) taller seals with a distinct shape that can only be seen in a profile shot and (2) flatter seals with a shape that is visible from the engraved face of the seal.

2 Clean, measure, weigh, and re-tag all seals following best practices determined by collection conservators and curators.

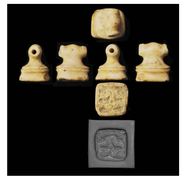
3 Take 6 HDR photographs of each seal (in the same sequence) on a black background with standardized lighting and camera setups.

4 Rename images (raw files and jpgs). Batch process in Adobe Photoshop.

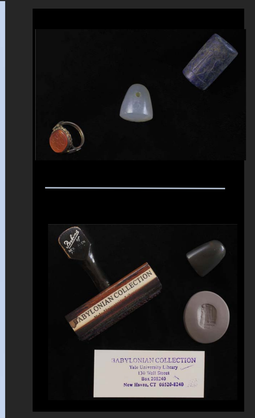


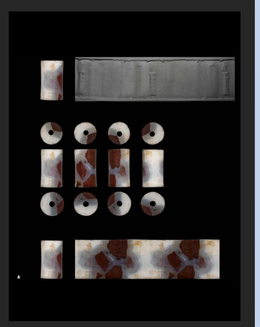
5 Create, measure, and photograph impressions of seals. Process photographs.

6 Use scripts to assemble a final plate for each seal with all 7 images. Edit the final plate in Photoshop, adding object number(s) and scale.



7 Upload single images and final plates to collection database. Share images with partner projects.





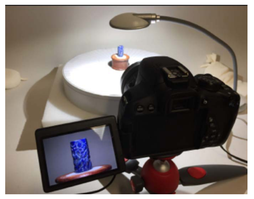
METHODS FOR CAPTURING SMALL CYLINDRICAL OBJECTS

During the course of a two year digitization project, the YBC tested different techniques for the documentation of cylinder seals and the creation of digital unwrappings—scans of the surface of the seals that show engraved imagery and material together in a flattened, rectangular plane. Irregular shapes (convex, concave, and broken cylinders), varying sizes, and a range of material qualities all introduce complications into the creation of these images.

Left: Possible ways to represent a cylinder seal through digitization

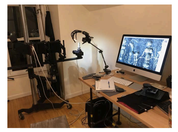
Right: Digital unwrapping of a cylinder seal

Orange Monkey Turntable with DSLR Camera, Light(s), and Software:
Pros: affordable and portable; produced high-quality results
Cons: translucent / transparent objects can be difficult to process; quality dependent on skills of the photographer; lack of standardization

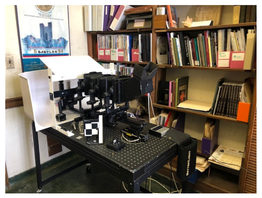


Orange Monkey turntable and camera

4x5 Better Light Scanning Back System with Panoramic Adaptor, Cyclorama, and Software:
Pros: increased standardization and automatization
Cons: cost and size of equipment; initial setup difficult



Version 1 Better Light in studio of photographer Erik Eskind

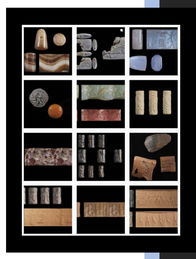


Version 2 Better Light with breadboard and cyclorama

For small collections we recommend a turntable method. Contact the YBC to learn more about ongoing Better Light developments.

LEARN MORE!

- Visit the Yale Babylonian Collection's website (https://babylonian-collection.yale.edu/) or follow us on Instagram (@yalebabyloniancollection) or Facebook (@YaleBabCol)
- E-mail Elizabeth with questions at eak324@nyu.edu
- E-mail babylonian.collection@yale.edu to sign up for notifications regarding a forthcoming open-access best practices publication



CREDITS: *YBC Seal Digitization Project supported by CLIR Digitizing Hidden Collections Grant. Photo Credits: Elizabeth Knott, Klaus Wagensonner, Erik Eskind, Pavla Rosenstein.*