Creativity & Compromise: digitizing oversize maritime collections on undersized budgets

1. planning digitization projects for challenging collections - on a budget!

 - two examples of current projects to discuss
- cover a range of digitization plans that could be adapted to suit other small museums
- represent the spectrum of the maritime world, from plan reproduction to vessel documentation

2. the first project is currently under way at Herreshoff Marine Museum in Bristol, RI
brief collection overview:
- more than 2,000 original photos, more than 300 glass plate negatives, ~700 objects, extensive library & manuscript collection, models, half models, and…

3.
- 75 boats, and 10 engines
- last year HMM received a small grant to put towards digital initiatives
- most was earmarked for digitizing catalog records
- 8K was set aside for studio equipment
- was responsible for figuring out what to spend it on in order to "digitize" our vessel and engine collection

4. boats & engines challenging logistically:
- very large, have limited mobility
- virtually all of our boats are on display, not as accessible to public as they could be
- most of the viewing is from below
-     - digitizing would:
      - increase public access to the boats, if we could host the resulting images online
      - serve to document our collection for collections management/conservation purposes
      - assist with research requests from builders interested in the material as a study collection

- 5. the equipment had to work for boats and engines, and also occasionally be used for more traditional artifact photography

- For less than 10k, we were able to acquire a camera, 2x lenses (one suitable for reproduction photography, the other a 24-70mm zoom lens to capture boat interiors), tripod, studio paper, basic lighting kit, a dedicated server, and a refurbished computer and software for editing

6. more challenging than figuring out equipment was defining what it meant to "digitize the boats."
- As of project start last summer, there was no protocol, policy or definition
- started at the base level: while there is a wealth of historic documentation (original half models!, plans, photos etc.,) HMM did not have photographs of the accessioned vessels as they currently exist.
- have been working with MB and leaning heavily on "Boats - A Manual for their Documentation" as well as HABS/HAER guidelines, and my own experience working with art conservators to try to capture a balance between:

- what visitors would want to see when not able to board…

7. what boatbuilders or students would want for reference from our study collection

8. what an art conservator or collections manager would want to know about the condition of their objects.

9. we have done our best to strike a balance between these three perspectives when capturing a suite of photos for each vessel
- number of photos for thorough documentation is variable depending on condition, complexity and size of boats
- generally, have found that for small boats (dinghies, under 16') a complete study ranges from 30 to 50 shots, mid-size (16-25) ~ 50 to 75 shots, and the largest/most complex boats (eg. Thania or the catamaran) usually consist of 100 to 125 shots or more.
- ultimately this is overkill, but we would be grateful for every single one if there were an unforeseen disaster/loss

10. through put rates for boats:

- Depending accessibility & cleanliness, can shoot 2-3 small boats in 1 day. 1-2 days to clean and shoot mid sized vessels, 2-3 days to clean and shoot one of the larger boats
- Processing the images: 1 hour for a single dinghy to a half day for a larger vessel.
- - we are currently almost halfway through the "fleet"

11. Second project in Hart Nautical Collection at the MIT Museum in Cambridge, MA
- MIT Museum: Haffenreffer Herreshoff collection consists ~19,500 objects, (… anyone recognize this one?)

12. (here's the cover)

13. incl. business and technical records, some half hulls and rigged models

14. construction drawings and plans for the Herreshoff Manufacturing Company
- There are about 13,500 plans of vessels, steam engines, tools, casting patterns and architectural drawings of the physical plant

- before project start, Hart Nautical digitized only by request
- current project aims to digitize the entire Haffenreffer-Herreshoff collection start to finish.

15. was given a budget of roughly 25k to come up with a system to photograph mostly oversize drawings at high resolution
- of that, about 4k was reserved for re-housing materials: boxes, mylar, folder stock, glassine etc.,
- did not have enough money to buy a large format camera, decided not to buy a scanner. would be happy to discuss these decisions & how we arrived at them at length with the curious!
- ended up choosing in-house photography and a consumer level camera as our preferred method of capture for a number of reasons, from equipment maintenance and budget constraints to overall versatility (2-D and 3-D objects), mobility, and conservation concerns
- spent just over 20k on all studio equipment, 3 computers, backup drives, software & supplies

16.Here is are a few examples of our what we are capturing. The challenges are myriad, including object fragility & inherent vice, poor past treatments…

17. & filth (making the prospect of scanner maintenance daunting)

18. to wrinkling, folding etc. makes handling and capture challenging

19. biggest challenge is the level of detail in the oversize drawings.
- ex. of the quality of microfilm first captured in the early 90s, digitized in the mid 90's
- a monumental amount of work at the time, and we still use the digitized microfilm daily
- but, quality leaves something to be desired

Roughly 80% of the 13,500 plans measure just under 32x48". A small percentage of the collection is even larger than that, some plans measuring up to 96"
- majority of the plans in the collection require 6-9 individual photographs to capture at 400ppi with our camera, which has a 50 mpg sensor
- After capture, the individual pieces are knit together by an automated stitching program, corrected for lens distortion, and checked for accuracy against a scaled rule in the shot.

20. Is it worth the effort?
- same plan, digitized at 400ppi on the new studio set

21. …
- detail captured as a result
- Not only is color lost in the microfilm, but all of this pencil detail is invisible
- of extraordinary significance considering the number of builders and model makers that actively use this collection

22. are able to achieve this with our "pro-sumer" grade DSLR, $100 worth of stitching software and a little elbow grease
- Examining these images becomes an archaeological experience
- can see color, erased marks, and multiple layers of corrections
- The thought and design process a little more visible

- Have worked on larger budget digitization projects in the past; acknowledge this approach will mean a larger long term investment in labor than if we had a 40K

Hasselblad or a Phase One or wide bed scanner and could capture our plans in a single shot or pass

- however! overall, less initial investment in equipment = start-up less of a hurdle
- once the equipment has been acquired, museums can take on digitization projects in smaller pieces as money and staff time becomes available
- project can hibernate when necessary
- can shoot three dimensional objects as well as archival materials
- when studio work needs to be put on hold, packs down to a few folding tables
- most valuable components - camera and lenses - can be stored in a camera bag the size of a backpack
- Lenses retain much of their resale value over time
- camera repair shops are easier to find than large format scanning repair technicians

23. through put rates for oversize plans aren't too bad, actually:
    - est. there will be 35,000 discrete media records (including books etc.) in total for HAFH collection
    - current method involves working with batches of roughly 50 - 75 plans at a time
    - capture includes studio time & stitching
    - processing includes creation of smaller derivative files for web publication, upload to the museum database (rendering them web-accessible) as well as digital archiving of "master" files on a dedicated server

-   total number of studio minutes: 1-2 minutes per plan to photograph, ~3 to stitch (2.5 minutes of that is passive, time for computer to render, files to load etc.)
-   total number of processing minutes per plan: 4.3 minutes to process, 2.3 of which is passive
    - TOTAL (current) TIME per oversize plan, 7-9 minutes, from moment of capture to Mimsy and Mobius accessible
- we have recently hired a full time processor, and anticipate that this average will improve slightly with time

24. huge challenge to narrow scope of these kinds of projects enough to make them practical, set priorities, but also respond with flexibility according to the institutional needs.
-   - To that end, a few long term goals:
-

At HMM: new website to create digital catalog (following MSM Watercraft Collection book model, but hosted on our website) photogrammetry? 3-D models?

MIT: refining checks & balances on precision in reproduction, continuing to stay vigilant about our methods/practices, hiring another photographer so we can do more

Both museums: eventually hosting the digitized material in a shared common repository, so no one else will ever have to do the commute I'm doing right now

I am certain that the technology will continue to improve, making this process less labor intensive, more accurate, and even more accessible as time goes on, and I am hopeful and excited for more and more of these collections - particularly those that are currently less well known or accessible - to start becoming available online

25.   Both museums would like to make the documentation of our process available to those who are interested, to encourage other small museums - and restoration shops who have particularly museum-minded clients - to take on projects like this
- would like to see the community at large increase accessibility to resources that could make the process less daunting, and would love to hear about other folks' processes in exchange

- very interested in seeing "Boats - a Manual," hosted on CAMM site, plus some additional material from relevant folks in this community
- has been discussed by this group in the past - but, I would love to start the conversation again

27. final note: never underestimate how long it takes to clean
- Amaryllis II after a decade hanging from the ceiling undisturbed.
- probably spend 50% "photography" time vacuuming, 30% moving lights, and 20% hitting the shutter
- but - really helpful to have to go over every inch of the boat before you start to understand what is most significant and worth capturing so we won't be hiring a cleaner any time soon