

White Paper Report

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Yemeni Manuscript Digitization Initiative

NEH/DFG Grant Project (HG5001910)

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Background

The private manuscript libraries of Yemen comprise one of the world's largest and most important collections of Arabic manuscripts. Collectively, these 6,000 private libraries possess some 50,000 codices, many of which are unique. These sources record a rich cultural legacy of Arabic and Islamic literature from the eighth century to the present. Because Yemen is relatively remote from the central lands of Islam, it has preserved many extremely rare sources, including some of the earliest extant Qur'an fragments and theological tracts, and works of great importance for the study of classical Islam, Arabic literature, science, and history. Ready access to these largely neglected sources would generate a tremendous amount of new knowledge and provide new perspectives on the political, intellectual, and literary history of Islamic civilization. But this irreplaceable trove of manuscripts is threatened. In recent years, Yemen's private libraries have suffered great losses, in part due to Salafi extremists who are ideologically opposed to the Zaydi Shiite school of Islam and have targeted Zaydi manuscripts for destruction. In the past ten years, over 10,000 manuscripts, including several entire libraries, have been destroyed. Since 1999, the Imam Zaid bin 'Ali Cultural Foundation (IZBACF), a nonprofit, nongovernmental organization, has begun to address this critical situation by devoting itself to the digital reproduction and preservation of these private collections. However, IZBACF's technical tools and infrastructure for long-term preservation and dissemination were limited. The Yemen Manuscript Digitization Initiative (YMDI) is a collaborative project between Princeton University Library and the Freie Universität, Berlin. Led by Director Dr. David Hollenberg (University of Oregon) and Principal Investigators Dr. Sabine Schmidtke (Freie Universität, Berlin), and Dr. David Magier, (Associate University Librarian for Collection Development at Princeton University), YMDI's mission is the preservation and dissemination of the Arabic manuscripts in the private libraries of Yemen. The last of the work components have been completed, all project deliverables have been attained or exceeded, and the YMDI has accomplished all three of its main objectives:

1. Digital preservation of several private libraries in the capital city of Sana'a, containing a total of 236 manuscripts.
2. Digitization of twelve additional manuscripts in the rare book collections of the Staatsbibliothek and Princeton University Library.
3. Consolidation of the digitized manuscripts into a single platform, as part of the larger Islamic Manuscripts Online digital-library infrastructure developed at Princeton, to create a freely accessible and broadly discoverable repository of Islamic manuscripts whose scope is unparalleled in the world.

Work and Accomplishments of the Project

Carrying out the work associated with this project was extremely complicated. These complications arose from several sources:

- International communications between Princeton, Berlin, Oregon and Sana'a, Yemen were difficult to coordinate due to time zone differences, lack of good telecommunications or internet infrastructure (in Yemen), and other transient infrastructure problems in Yemen (extensive power outages, civil unrest and security problems); and institutional and policy obstacles (for example, the telephone company that handles all of Princeton's international phone traffic had an embargo on connections to Yemen, requiring us to use outside firms, cellphones, Skype or other Voice-over-IP connections, etc.)
- Grant requirements, procedures and administrative styles differed between the NEH side of the project (at Princeton) and the DFG side (at Berlin), requiring much more discussion, negotiation, formal clearances, etc. than would have been required in a unilateral project
- The work itself has been extremely complex, requiring improvisation of logistical maneuvers and workarounds, major revision of the original workplan, recruiting additional participants for various kinds of assistance, and so on.

Despite all these and many more hurdles, we are happy to report completion of all the deliverables under the grant, well within the timeline of the no-cost one-year extension granted to us by NEH.

Specifically, this grant allowed us to accomplish the following:

a) Training

Our partner in Yemen, the Imam Zaid bin 'Ali Cultural Foundation (IZBACF) has for many years cultivated direct contacts with the owners of private and family archives containing the target manuscripts, whose families have protected them for generations and handed them down to the current owners, in endangered circumstances as described above. But in order to preserve these manuscripts, IZBACF had to acquire the proper high-end digital cameras, light stands and book cradles, computers and other equipment to carry out the digitization. Even more, they had to be trained both in how to use the equipment, AND in the required international standards for creating the digital images of each page and the minimum standards for the initial metadata without which the images themselves would be unusable. Our workplan entailed securing all the needed equipment (under the DFG grant), and conducting intensive training workshops for the librarians and staff of the IZBACF.

Of course, we faced immediate problems in this very first stage of work: Our partners in Yemen could not secure US visas to come to Princeton to receive this training in our digital studios. On the other hand, because of US Department of State travel advisories for Yemen (due to the deteriorating security situation there), our Princeton digital library and metadata staff could not be permitted to travel to Yemen to carry out the training in situ.

The equipment, which was purchased in Berlin, could not initially be shipped to Yemen due to restrictions on shipping.

How could we get all the people (the Princeton trainers and the Yemeni partners) into the same place, *with* the equipment, in order to give them proper hands-on training? Our solution was to hold the training workshops in Berlin itself. With the cooperation of the staff of the German Embassy in Sana'a, our Yemeni partners were able to secure visas for Germany and could fly there (with travel costs supported by the DFG), while the Princeton delegation -- accompanied by YMDI Director Professor David Hollenberg -- could fly to Berlin (travel costs supported by the NEH grant) to meet them there and conduct the training.

After a tremendous amount of discussion, negotiation and delay, we secured the cooperation of the Staatsbibliothek zu Berlin (which has its own impressive collection of Yemeni manuscripts and a well-equipped digitization studio), who allowed us to conduct the two training workshops on their premises: one on digitization and how to use the cameras, hardware and software; and another one on required standards and methodologies for metadata, cataloging, and manuscript description).

In our initial planning, and in the travel components of the grant budget, we intended each of these two workshops to be two weeks in length. But after consulting with our Sana'a partners and determining more closely their skill levels, we felt that we could proceed more cost effectively with two intensive workshops (digitization, and metadata/cataloging) of only one week each, with the possibility of bringing the group together again in the future if refresher training seemed to be need. So we compressed the syllabus and training plans for the two workshops into a single two-week intensive training visit to Berlin, and utilized the actual cameras, computers and equipment that would eventually be sent with the trainees back to Yemen for the production work with the manuscripts there. The Princeton training team consisted of Clifford Wulfman (Library Digital Initiatives Coordinator), Roel Muñoz (Library Digital Imaging Manager, Digital Studio), and Joyce Bell (Director of Cataloging and Metadata Services). The IZBACF delegation consisted of Ahmed Eshaq (Director of the IZBACF), and his imaging technicians and catalogers Abdul-rahman Al-Noamy and Abdullah Abdulsalam al-Wajih. Most of the training was conducted in Arabic (by Joyce Bell), or translated into Arabic for the trainees by her, by Ahmed Eshaq, or by YMDI Project Director David Hollenberg.

Here is Joyce Bell's overview report on the cataloging and metadata portion of the workshop. (A detailed account of the hands-on digitization portion of the sessions, written up by Roel Muñoz, is attached below as an Appendix):

The workshops for the Yemen Manuscript Digital Initiative finally came to pass in Berlin December, 2010. Presentations on general cataloging and hands-on cataloging methods were mostly confined to the mornings, with additional scanning time, a tour of the preservation department, and packing of equipment taking place in the afternoons. The workshop began with lecture-style presentations in Arabic on cataloging principles and standards. Topics covered included general cataloging principles and FRBR user tasks, and how both of those elements relate to description and access as provided in AACR2. Also outlined were various cataloging standards used for this project: AACR2, RDA, AMREMM, the NAF, MARC, MODS, METS and the ALA/LC Romanization table for Arabic. The basics of authority control were also covered. The group reviewed and discussed a pre-prepared bilingual list of terminology to ensure mutual understanding of technical cataloging and manuscript terms.

The week continued with manuscript-specific and project-specific cataloging and featured communal discussions and hands-on cataloging work. In lively discussions, the group reviewed the format and content of the data which IZBACF currently gathers for their own material and noted where changes and additions were necessary to gather the appropriate data for this project. As a group, we cataloged three of the Berlin manuscripts following the guidelines for the project. Adjustments to the data collection tool were made along the way. Partial data for logical structure maps for the three manuscripts were also gathered -- completing the data requires viewing the image files which weren't initially accessible at that time.

The workshop was rounded off with descriptions and screenshots illustrating how the data provided by IZF will be used to create the catalog records and data files required for the project. File naming conventions, folder structure, and transmission methods were discussed.

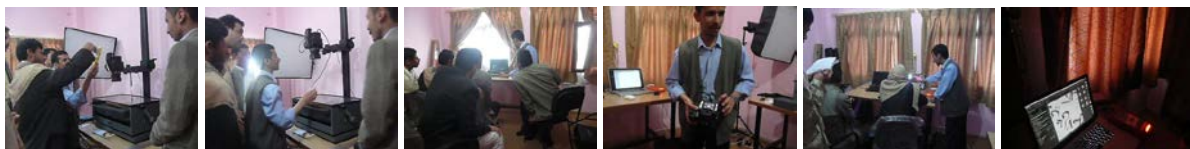
In their evaluations of the digitization and metadata work carried out by the trainees at the conclusion of the training, our team of trainers determined that the Yemeni staff had truly mastered all the concepts and techniques, and were fully ready, after their two-week training experience, to go back to Yemen and move into production mode for this project. As it turned out, this evaluation was accurate: the IZBACF staff got to work as soon as the equipment reached them, producing professional-quality digital images and preliminary metadata according to our specifications. Refresher training was not needed and the project proceeded apace, limited only by other circumstances described below. Thus, by holding two weeks instead of four weeks of training, we were able to save about 50% of the budgeted international travel expenses in the NEH budget earmarked for the training sessions, without sacrificing any quality in the output.

b) Production: digitization and metadata creation in Yemen

Once our partners were fully trained and received their workshop completion certificates, they went back to Yemen, carrying most of the equipment with them. However, they could not immediately get to work: another unanticipated problem held up the work for 2 more months: the Yemeni government impounded the imported equipment at the airport and held it pending more documentation – which ultimately took 2 months. The IZBACF trainees used this time to conduct *theoretical* training of additional staff without the use of the equipment.

Once the equipment was finally released in February 2011, the IZBACF could finally get to work in earnest with the manuscripts. From early reports received by email from Sana'a, they successfully assembled all the camera, light-bed, cradle and computer components, tested everything, and conducted more hands-on training of the additional staff who could not come to Berlin.

Here are some photos from the local digitization and cataloging workshops conducted at the IZBACF in Sana'a by the Berlin-trained staff for their colleagues:





It was very encouraging to receive these reports from our colleagues, and to see the staff fully engaged in this project. However, once again, delays set in almost immediately: in early 2011 Sana'a experienced widespread, long-lasting power outages, and the work ground to a halt. We responded by purchasing (through the good offices of the German embassy) a powerful Honda 20i generator for the IZBACF.

Finally the work was underway, and we received reports from Ahmed Eshaq that his staff were literally working day and night to create the page images and compile the associated metadata on the computers. The urgency came from trying to make up for lost time, fear about further confiscations or destruction of the endangered manuscripts, the necessary furtiveness of the manuscript owners entrusting their prized family heirlooms to the IZBACF staff in the dead of night, and the rapidly deteriorating situation on the street in Yemen. A New York Times article (<http://www.nytimes.com/2011/01/28/world/middleeast/28yemen.html>) gave a vivid picture of the accelerating protests against the Yemeni regime.



Meanwhile, back at Princeton, while waiting for the first fruits of the work going on in Yemen, Joyce Bell and our digital library staff were busy doing the post-processing work on the images and the metadata that had been captured on the equipment used for the training exercises in the Berlin workshop itself (i.e. the Yemeni manuscripts from the Staatsbibliothek that were ultimately to be consolidated with those from Princeton and Yemen and presented online together in the YMDI on Princeton's server). Princeton staff also worked on in-house digitization of Princeton's own small collection of 14 Zaydi Yemeni manuscripts.

In Sana'a, things continued to get worse. We wanted our colleagues to send us their first batch of images and metadata, so that we could conduct quality control and make sure everything was being done correctly. Unfortunately, the whole question of getting the data

from Yemen to Princeton turned out to be one of the major stumbling blocks of the entire project.

First of all, we had made a serious miscalculation about how the data would be shipped. In our proposal and budget we imagined that small batches of the data would be put onto CD disks and mailed to us on a regular basis. But the preservation quality .tiff images of the manuscript pages are very large files, and only a very small number of pages could fit on a disk. With a target of 236 manuscripts, amounting to thousands of page images (and accompanying data files with the metadata), CD disks turned out to be completely inadequate as a regular data-shipment plan.

Since we had pretty good email contact with the IZBACF at that time, we thought, briefly, that there would be a way to ship the data over the Internet via file transfer, uploading to a shared server, etc. But in fact, stable large-bandwidth internet connections simply do not exist in Yemen. We even explored having the data transferred to Princeton via satellite uplinks from the US embassy there. But given the political and security situation, they had other urgent priorities.

We then decided to have the data copied onto terabyte external hard drives, and to have those physically shipped to Princeton. Again, we ran into serious roadblocks. By late February and early March 2011, FedEx, DHL, and all the other international shipping companies had closed their offices in Yemen as the protests and violent confrontations on the streets got worse and worse. Although Ahmed was able to buy a hard drive, he had no way to get it to us! Finally, after long silence and endless delay, we got word that he was going to travel to Saudi Arabia in order to carry the drive with him and ship it to us from there. We also arranged to ship more blank hard drives to him at the place he was staying in Saudi Arabia.

When the first disk arrived in Princeton, we had a major celebration. Upon inspection we found that the staff in Yemen, operating under very perilous and difficult circumstances, had managed to do a superb, professional-quality job of digitizing the first batch of manuscripts! Joyce Bell examined the accompanying preliminary metadata and found that because of their resilience, creativity and personal commitment to the preservation of these precious works from the Zaydi community, the Yemen staff had created excellent records that went beyond the standards she had established in Berlin for the preliminary work. We congratulated them and cheered them on to proceed with the rest of the work.

But in Sana'a again there were demoralizing setbacks. When Ahmed's staff visited one of the private archive owners whose manuscripts were to be digitized, they learned that the entire library had been looted and destroyed. But they did work with another archive and continued on a grueling production schedule with additional materials. Then our email contacts with Yemen went silent. For almost two frustrating and tense months, we heard nothing and could not get anyone by phone or internet. Just when we were ready to give up, we got a brief email explaining what was going on in Yemen. We learned that the IZBACF staff could only come into the office intermittently because of the unrest in the streets. Power was out most of the time (up to 20 hours per day), and they could only rarely use their generator because there were miles-long lines to try to get fuel at the few open gas stations. Ahmed reported that the main group of protesters were camped only 50 meters

from the Center, and there were many days of violent clashes. At one point, a tear gas canister was thrown through his office window and he basically had to put the staff on leave as it was just not safe to be in that neighborhood (let alone trying to have manuscript holders try to sneak their fragile ancient cargo into the building).

In a report from spring 2011, we learned that fuel, water, and food, had been severely rationed in Sana'a, and that acquiring fuel required a full day's wait in line. In the capital, the edge of the tent-city in which anti-government protesters were still camping was only one block from the IZBACF. On days when there was violence between pro- and anti-government forces, it was still not safe for the technicians to go to work.

Eventually, though, things did quiet down a bit. By summer 2011, despite the harrowing conditions and working whenever possible, the technicians had successfully digitized and completed preliminary catalog information for 48 manuscripts (28% of the total 236 manuscripts in the project). But there was still no direct way to get the data to Princeton. Finally, a second batch reached us on a hard drive, by way of a third-party courier who hand-carried it stashed in their carry-on bag on a trip from Sana'a to Washington, and shipped it to Princeton from there.

By August 2011, after post-production processing and metadata work by Princeton staff, the batches of digitized manuscripts and metadata from the IZBACF joined an initial 8 manuscripts from Princeton's own collection, and 4 manuscripts from the Staatsbibliothek, and were all put up on the Princeton server for the YMDI (<http://pudl.princeton.edu/collections/pudl0079>).

Things went along smoothly for a while, until the expensive camera in Yemen broke. Apparently, the lens system was affected by the dust and dry environment, and the aperture mechanism got jammed. This created an urgent situation for the project. After a short delay with the digitization staff in Yemen marking time while we explored various options, Princeton decided in the end to supply a different camera (along with new instructions for its use), until we could figure out how to get the broken camera back here for repair. (The vendor, who was also excited by the nature of our project, generously agreed to extend the warranty to cover this repair). After several months, we did eventually manage to get the broken camera back here, rapidly repaired by the vendor, and shipped back to Ahmed. But at the time of the initial breakdown, we had to find a quick way to ship our own stand-in camera to Ahmed -- regardless of cost -- so as not to lose precious production time with the grant clock ticking. International shippers were still not operating in Yemen, so straightforward commercial shipping was simply not an option. Ultimately, we were able to make use of another third-party courier (a family member of one of the associates of the IZBACF), who was travelling to Saudi Arabia from Washington. We shipped the camera (a Princeton-owned Canon EOS 1Ds Mark III that we took out of production here in our labs temporarily so that it could be put to emergency use on the project) to her in Washington, and she hand-carried it to Jiddah. From there by a circuitous and somewhat risky route through other unknown intermediaries, it eventually reached Ahmed in Sana'a.

So by early fall 2011, Ahmed and company were back in full production, cranking out more

excellent page images and metadata, though still having no way to get all that data back to us. A third batch of data did reach us (along with the broken Phase-One camera), arriving on campus after a long journey, courtesy of a 6-months long effort by the US diplomatic community. In the end, it was not until May 2012 that we received the last of the data, on two hard drives that Ahmed himself hand-carried to Berlin, where he handed them to me during the course of the international conference on the YMDI that we conducted as part of this project, at the Staatsbibliothek of Berlin.

b) Post-Production: completing the cataloging/metadata work; mounting the files

Because of all the delays and difficulties partially outlined above, we could not organize the Princeton-based post-production work, as originally envisaged in the proposal, based on a *steady* stream of images and data arriving from Yemen. Eventually, we applied for and received a much-appreciated one-year no-cost extension from the NEH. And we totally revised the Princeton workplan. A professional manuscripts cataloger was needed to finish off the data received in preliminary form from our colleagues in Yemen, but we could not hire someone on staff and then have them waiting around for the images and data to arrive. So instead of hiring a half-time cataloger for two years, we decided to wait until we had all or most of the data in hand, and then hire a full-time cataloger on a temporary term appointment to finish the work.

Once we had the complete dataset from Yemen in hand (May 2012), we conducted a national search, posting the job listing and interviewing candidates over the summer. Eventually, we hired a new Islamic Manuscripts Cataloger (employed by Princeton University Library as a Professional Specialist on a 9-month term appointment). Nathan Spannaus is an Arabic-language manuscript specialist with many years of research, teaching and publication in this field, a Harvard MA in Near Eastern Languages and Civilizations, and a PhD (with a dissertation on Islamic intellectual history) from the Institute of Islamic Studies, McGill University. (After completing his work on this project, Nathan is now teaching in the Department of Religious Studies at University of Tennessee-Knoxville). In the last 9 months of the grant, Nathan conducted quality control on the image and metadata files, compiled the structure maps to bring the data into the Princeton database system for web presentation, and enriched the descriptive metadata on each manuscript based on his knowledge and research and what he could derive from examination of the images of the manuscripts themselves.

Here is the final inventory of files created under this project and now visible, live on the web, on the YMDI server (URL above).

- manuscripts from the Staatsbibliothek zu Berlin: 7 titles / 2,109 images
- manuscripts from Princeton University Library: 14 titles / 3,010 images
- manuscripts from Yemen: 238 titles / 87,628 images
- TOTAL: 259 titles / 93,789 images

In addition to these derivative images (web-scaled JPEG2000 images derived from the original archival .tiff images), we have also stored the archival files on our archival image server (with a redundant second-location backup). Thus, despite all the set-backs and problems that bedeviled this project, in the end we did manage to exceed our target

production of 248 manuscripts, with a final product containing 259 titles and more than 90,000 images, digitally preserved according to international standards, and presented online in an open-access framework with very rich metadata and a robust discovery and viewing environment.

It was Nathan's work that allowed us to add all the additional fields of detailed description of value to researchers and codicologists, and to index more of the data in each record for different kinds of advanced field-based searching.

Meanwhile, we have continued publicizing this research resource to librarians, archivists and scholars all over the world. Cliff Wulfman has made presentations and demonstrations on the project at several digital humanities conferences. David Magier has presented on *The ups and downs, ins and outs, benefits and pitfalls of international library collaboration: case study of Princeton's Yemeni Manuscript Digitization Initiative*, presented at the panel "International Library Partnerships: Logistical and Technical Issues Relating to International Digitization Projects," at the American Library Association's annual meeting in Anaheim, California, June 2012. He also included the work of the YMDI in his presentation in a panel entitled "New horizons in primary source research," at the Center for Research Libraries *Global Resources Forum*, at the CRL Annual Members Council Meeting and Collections Forum, Chicago, in April 2012 (<http://www.crl.edu/events/7447>). Possibilities for future digital humanities work with the manuscripts of the YMDI project were presented by Magier in his presentation on "Recent trends in text-mining and library services: research library perspective," presented at Center for Research Libraries Webinar on *Text-Mining Opportunities and Challenges*, November 2012. (<http://www.crl.edu/events/8391>).

Our German colleagues have likewise been holding conferences and meetings, and publishing articles on the YMDI in research journals. The International Workshop on the Yemeni Manuscript Digitization Initiative, funded by the NEH and DHG parts of this grant, was held for three days in Berlin in May 2012. With presentations from each member of the Princeton library team (David Magier, Cliff Wulfman, Joyce Bell), Princeton and other US faculty members and scholars, our German partners from the Free University and the Staatsbibliothek, and delegates from the IZBACF itself in Yemen, it was attended by dozens of scholars from all over Europe, Middle East and North America. Feedback has been very enthusiastic, and it is clear that everyone would like us to seek ways to extend the work of the YMDI project and to preserve and make accessible even more of the thousands of other endangered Zaidi manuscripts still in hiding in storage sheds, garages, basements and attics in Yemen. We have begun some exploratory conversations along these lines, and have reason to hope that fundable and sustainable follow-on projects may eventually emerge from these efforts.

APPENDIX 1:

Report on Berlin Activities

Dec. 2-10, 2010

Dec. 2:

I departed Newark International airport on the evening of Dec. 1, arriving at Tegel airport in Berlin on the morning of Dec. 2. Cliff and I shared a taxi to our hotel in the Potsdamer Platz section of Berlin. After settling in we walked the approximately 1 km to the Staatsbibliothek to meet Christoph Rauch, curator of manuscripts at the library. We explained our tasks and obtained a key to the room where imaging and catalog training would take place. We were given a brief tour of the library and we were briefed on protocols for entering and exiting the library as temporary employees.



Dec. 3:

Returning to the library Cliff and I collected photographic equipment that had arrived. Items that were available at this time were the Phase One back/body, copy stand, Macintosh laptop (Macbook Pro) and two ruggedized external hard drives, 1 Tb capacity each. All equipment was set up and software installed to ensure functionality. Necessary items still to be delivered for the workshop were the book easel and lighting equipment.

Arrangements were made for staff from the Freie Universitat to meet and accompany the Yemeni contingent to the hotel on Sunday Dec. 5.

Dec. 6:

This was the first day of the workshop. At the library we still did not have lighting equipment or a book easel. I began by showing Yemeni imaging technicians Abdullah and Abd Rahman the functions of the camera and setting the camera up on the copy stand. I then spent time with the technicians going over the Macintosh operating system. Both technicians are moderately proficient with English. Ahmad Abbas Ishaq, general manager of the Imam Zaid bin Ali Cultural Foundation (IZBACF) in Yemen was also in attendance to record proceedings and act as translator for complex imaging explanations. Both technicians have IT backgrounds and while neither had worked with the Macintosh operating system before they quickly understood the essence of the OS and became Mac fans.

In the afternoon we began working with Capture One software, which drives the camera operation. We went step by step setting up imaging sessions in the software, locating capture and output directories created by these sessions. We then went through the tools available in the software to adjust and ensure that images are captured with correct color balance, proper rotation and correct resolution. Each of the technicians took turns setting up imaging sessions, taking sample photographs of books from the library stacks, processing the images and batch processing the images to archival format (TIFF) using Adobe Photoshop, an application both technicians were familiar with. Without a book easel or lights we ended the day at approximately 4:45. The technicians and Ahmad left for evening prayers but at 5 p.m. the book easel arrived. I set it up to make sure it was functional and was surprised to find that it was a Linhof Book easel. This was our original choice, but in the months leading up to the workshop FU staff indicated this book easel could not be purchased and requested a different model. I recommended a new model after researching what would be available in Berlin and even requested Princeton purchase the new model for familiarization leading up to the workshop.

In the evening I went to a photography store (Calumet) to purchase a large roll of background paper to block window light in the library as well as purchase a grayscale for use in light balancing in different lighting conditions.

For the balance of the week we settled into a routine that allowed all of the Yemeni group to break for meals and prayer. Imaging sessions therefore went from 9 a.m. to 1 p.m. and 2:30 to 5:30 p.m. The library mandated that all manuscripts be returned by 5 p.m., allowing time to return the manuscript and set up overnight batch processing.

Dec. 7:

In the morning we received our first manuscript from the library to begin photography. I showed the technicians how to safely set up the manuscript in the book cradle for imaging. The originally specified lighting still had not arrived but the vendor provided a “loaner” mismatched set of strobe lights to use while waiting for delivery. I showed the technicians how to set up the lights using an umbrella system as this set lacked softboxes.



With necessary equipment available “Studio C” became operational. Abd Rahman collected and adjusted images using camera software as Abdullah photographed pages from the manuscript. I oversaw their work as questions about the software and the actual photography were frequent. The technicians were able to photograph a complete manuscript by the time the manuscript was due back in curatorial hands.

Dec. 8:

The technicians switched roles (photography, editing) and as an exercise for when they return with the equipment to Yemen instructed each other on the nuances of the work. Abd Rahman walked Abdullah through setting up a new imaging session with the software and showed him some of the shortcuts to editing he devised. Abdullah walked Abd Rahman through setting up the camera and the lights as well as positioning and readying the next manuscript for imaging on the book easel. I oversaw both of their explanations to each other, interjecting only briefly to clarify points and offer suggestions.

The second manuscript was larger than the first and took longer to photograph. They were not able to complete the entire manuscript by the end of the day, but with the time available were able to set up the previous day's images for batch Photoshop processing overnight.

Dec. 9:

By now the technicians have an excellent grasp of the work and immediately set to work on finishing the second manuscript while I simply observed, noting that their grasp of the tasks of editing and photography were done with complete understanding of the reasons behind seemingly arbitrary tasks. For example, they understood that adjusting crop marks for each individual image was more efficient than adjusting the book on the cradle and reshooting the page. Unknown to the technicians I had adjusted the settings on the camera to yield overexposed images and they were able to make adjustments on their own, with the understanding that the aperture and shutter speed were incorrectly balanced.

At this point I simply answered questions as they arose but both technicians had become capable imaging technicians. By mid-morning they had completed imaging of the second manuscript. They again switched roles and began imaging on the third manuscript.

In the afternoon our entire contingent took the metro to the Friedrichstrasse section of Berlin for a tour of another Staatbibliothek facility where an imaging studio with 10 workstations (mostly Zeutschel but also Treventus and Traveler systems) operate under two shifts. It's an impressive studio in a newly refurbished section of the library.



Apparently every library in the world is undergoing renovation

Dec. 10:

Again the technicians set to work on their own. It should also be noted that late in the afternoon of Dec. 9 we were notified by FU staff that the specified lighting was back ordered until January. While the technicians continued their work Cliff and I set about finding a set of lights for the FU to purchase. We found a set of lights at a nearby photography store (Calumet) and coordinated the purchase of the new lights from Calumet through the FU. The new lights were acquired by mid-day.

After lunch I disassembled the entire imaging workstation and guided the technicians through setting up the entire station; connecting the camera and digital back, assembling the copystand, mounting the camera and setting up the newly purchased lighting system. This was videotaped for use in Yemen. The technicians successfully assembled the entire workstation and finished photographing the last few leaves of the third manuscript.

Notes:

- Abdullah and Abd Rahman proved to be excellent students; both are capable, skilled and very hard working. They were quick to ask questions and by the end had a firm grasp of the workflow involved and an excellent understanding of photography, image editing and processing. All of the Yemeni contingent have my contact information if issues arise.
- Ahmad indicates that they plan to take the camera system into the field. I had spoken with David Hollenberg previously and he said that he preferred they not take the camera into the field and hoped to convince owners of the libraries in Sana'a to bring the images to IZBACF for imaging. At our planning meeting on Sept. 13 I suggested that if technicians go into the field a more mobile camera system be used instead (Nikon D3x). While this camera doesn't have the resolution of the Phase One it is a much more rugged system. This idea was not accepted but my suggestion is that if the Phase One does break down it be replaced with the Nikon system for completion of the project.
- The grant calls for imaging of approximately 236 manuscripts in Sana'a but Ahmad indicates the number is closer to 400.

Appendix 2 – Completed dual-script MARC record

| Books | | Rec stat | n | Entered | 20090921 | Replaced | 20090921 |
|-------|---|--|---|---------|----------|----------|----------|
| Type | t | ELvl | l | Srcce | d | Audn | |
| BLvl | m | Form | | Conf | 0 | Biog | |
| | | Cont | | GPub | | LitF | 0 |
| Desc | a | Ills | | Fest | 0 | DtSt | s |
| | | | | | | Dates | 1341 |
| 040 | | PUL #b eng #c PUL #e amremm | | | | | |
| 066 | | #c (3) | | | | | |
| 043 | | a-ye— | | | | | |
| 090 | | #b | | | | | |
| 049 | | PUL | | | | | |
| 100 | 1 | بيهقي، احمد بن علي. | | | | | |
| 100 | 1 | Bayhaqī, Aḥmad ibn 'Alī, †d 1077 or 8-1149 or 50. | | | | | |
| 245 | 1 | 2 | أحمد بن علي المقرئ الملقب بأبي جعفر بن البادش / #c الإقناع في القراءات السبع | | | | |
| 245 | 1 | 3 | al-Iqnā' fī al-qirā'āt al-sab' / #c Aḥmad ibn 'Alī al-Muqrī al-mulaqqab bi-Abī Ja'far ibn al-Bādhiṣh. | | | | |
| 260 | | #c 1341. | | | | | |
| 300 | | 190 leaves | | | | | |
| 500 | | Incipit: حمد وتناء... قال الأستاذ الأجل أبو جعفر أحمد بن علي المقرئ رضي الله عنه : الحمد لله... الخ | | | | | |
| 500 | | [قال: مع كل ختمة دعوة مستجابة، والحمد لله وحد. تم الكتاب... الخ [لقطة رقم 85 | | | | | |
| 500 | | قصيدة في اللقطة رقم (3)، مطلعها: حفظت لفظاً عظيماً مطهراً ظفراً*** طعت يقطان عن ظلم علي نظراً | | | | | |
| 500 | | فائدة: إجازة أحمد بن محمد العويلى، لمحمد بن مطهر النحوي- لقطة (88-85). 2- فائدة: 1- في التجويد- لقطة (88-89). 3- فائدة: في الهمزة والإمالة ونحوها- لقطة (89-90). 4- فائدة: باب مذهب حمزة في الوقف- لقطة (91-97). | | | | | |
| 500 | | تم نسخ الكتاب من نسخة للمقرئ الإمام أحمد بن محمد بن أحمد بن سعيد بن سلمان العويلى | | | | | |
| 500 | | Ms. codex. | | | | | |
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| 500 | | Copy was completed Thurs. 5 Ramaḍān 741. | | | | | |
| 561 | | Digitized from the collection of [library] | | | | | |
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| 650 | 0 | Manuscripts, Arabic †z Yemen. | | | | | |