

How should we edit a Papyrus collection in the 21st century?

The University Library in Basel possesses a collection of 60 papyri, mostly in Greek, 9 in Coptic, 2 in Hieratic and 1 in Latin. Less than half of this collection was published by Ernst Rabel in 1917 in *Papyrusurkunden der Öffentlichen Bibliothek der Universität zu Basel* (known as *P.Bas.*). Thanks to a two-year grant from the Swiss National Foundation (SNF), the Basel Papyrus Project, led by Pr. Sabine Huebner, began on September 1st 2015 and aims to make this collection available to both the scholarly audience and the general public. It offers a good opportunity to question the practice of a papyrus editor, to take into account the major technological improvements impacting the field of Papyrology and measure how much the methodology has already changed (or ought to) from the pioneer works of e.g. Wilcken or Grenfell and Hunt. Since the project has just started, this poster does not claim at all to erect new standards or guide lines to future publications but rather to gather some ideas and maybe serve as a starting point for a general discussion among Papyrologists on the most efficient ways to proceed in the Digital century.



1. Imaging the papyri

digital humanities^{lab}

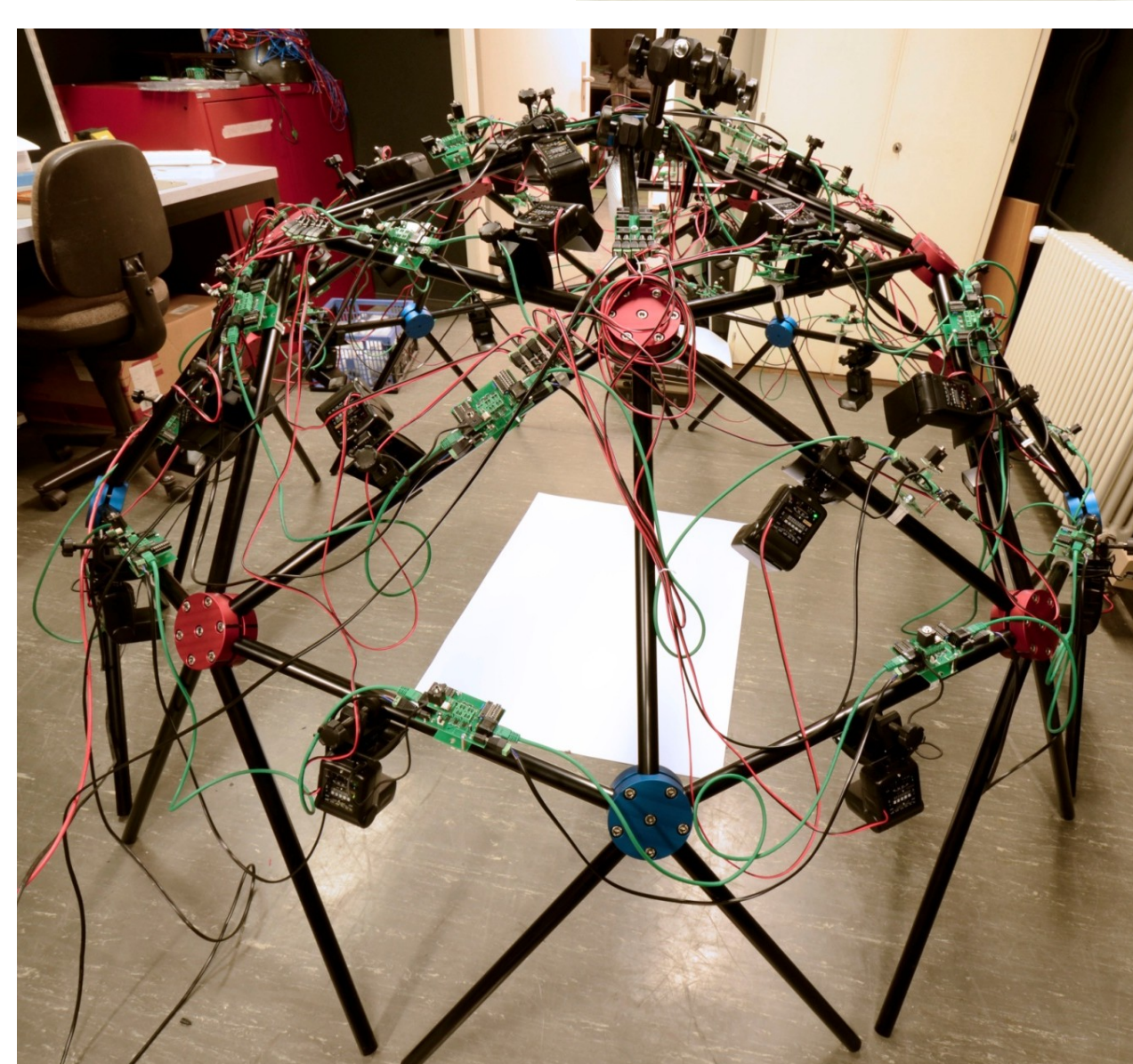


The first step to publish or re-publish papyri is of course to have access to them. For the Basel collection, all the papyri are easily accessible in the University Library, very close to the Altertumswissenschaften building where the team members have their office. Then, good images are needed. On this point we have the chance to work with the Digital Humanities Lab, a research institute of the faculty of Humanities of the University of Basel. But in a time when imaging technologies evolve so quickly, providing impressive results but often being time consuming and costly, a main question is « What should we be asking ? », what kind of images are relevant to papyrus editors?

High resolution color images: The DH Lab provided us with high resolution color images of both sides of all the papyri, taken by a camera in 300 dpi, in both tif and jpeg formats. It has been sufficient for the first overall study of the collection but one may suggest 600 dpi would have been better. Some collections also use scanners instead of cameras, which give more homogeneity to the images and less distortion at the edges (which has been corrected in our case by the DH lab).

The DH Lab has also started to take infra red pictures with regular infrared luminescence technique but it is looking now for a better setting, experimenting green light and IR fluorescence photography.

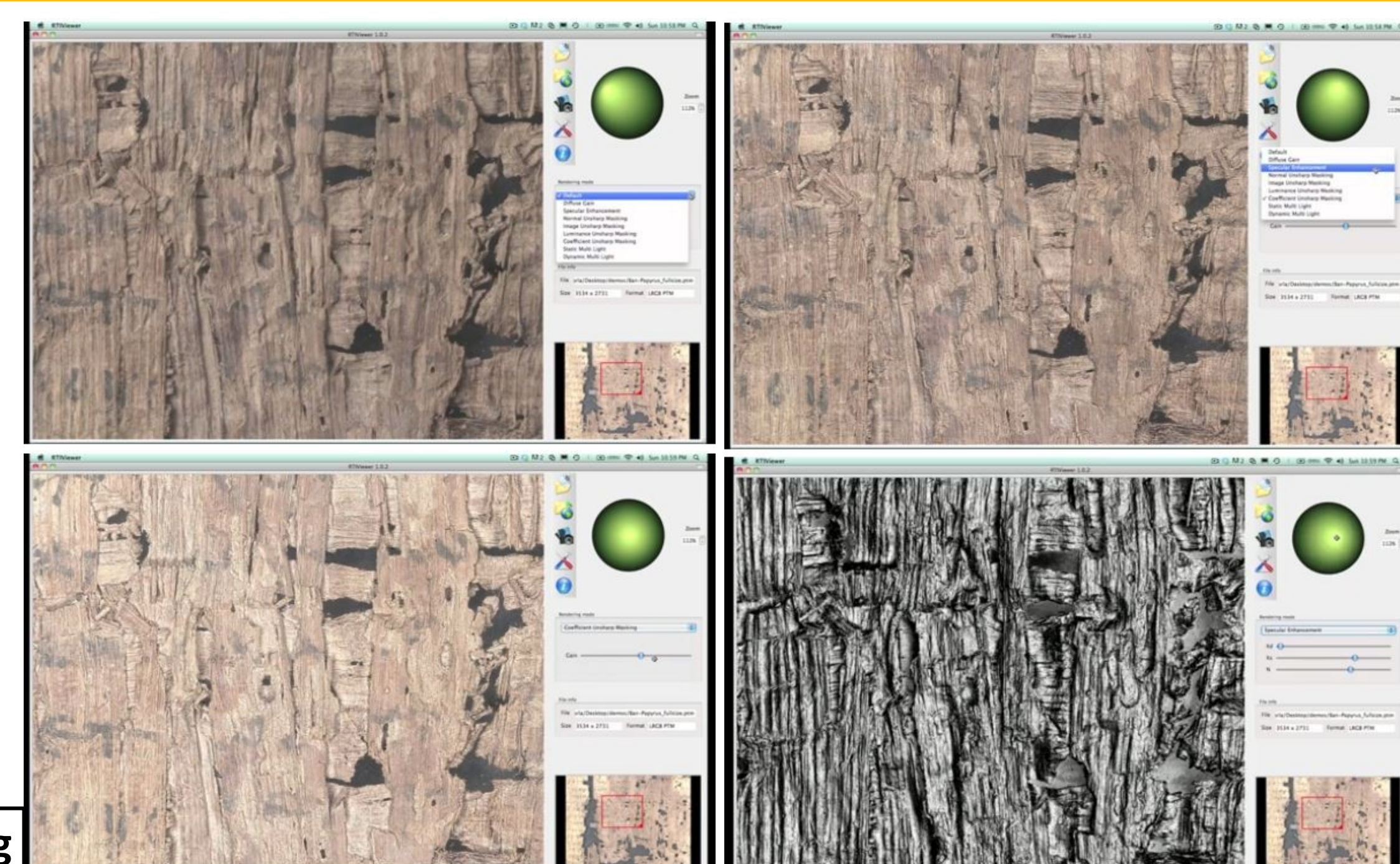
Infra-red and color image of P.Bas. Inv. 43



RTI: The DH Lab has the equipment for RTI (**Reflectance Transformation Imaging**), a computational photographic method that captures a subject's surface shape and color and enables the interactive re-lighting of the subject from any direction. They have built a specific lighting dome that allow them to be fast and efficient on objets as big as A2 seize. If this technology has already shown results when applied on carbonized papyri (Deverni, Herculaneum), the gain for general papyrus edition has not yet been proven. We are planning to give it a try on specific examples where the readings need to be improved.

The lighting dome in DH Lab, Basel.

Examples of RTI from Cultural Heritage Imaging



2. Ink dating

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ANCIENT INK LABORATORY COLUMBIA NANO INITIATIVE
COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

We have the chance to collaborate with Sarah Goler of the Columbia Nano Initiative and Ancient Ink Laboratory at Columbia University (USA), whose research aims to determine the age of ancient Egyptian manuscripts through **micro-Raman Spectroscopy**. Micro-Raman spectroscopy is a non-destructive light scattering technique that can be used to distinguish physical and chemical properties of materials. The project members have discovered that, for a study of well-dated ancient Egyptian papyri covering the date range from 300 BCE to 900 CE, the Raman spectra of black ink all show the characteristic spectrum of carbon black materials. They also observed the carbon black spectra exhibit systematic change as a function of manuscript date. This observation is unexpected given the dates of these papyri cover a 1,200-year time span and the fact that each manuscript has a unique provenance, archeological, and storage history. They conclude that, over this time-period, black ink pigments in Egypt were manufactured using similar processes. The systematic change observed in the Raman spectrum is likely to come from two concurrent oxidation processes: slow oxidation of the crystalline carbon and faster oxidation of the amorphous carbon. The changes observed are well characterized by models for carbon black Raman spectra. Oxidative degradation must proceed relatively uniformly over time to alter the Raman response of the material, providing a direct experimental indicator for the age of the manuscript. This research thus establishes the basis for a simple, rapid, non-destructive method for dating ancient manuscripts from Egypt, as well as differentiating between modern forgeries and authentically ancient manuscripts. Sarah Goler will come to Basel on December 11th for a workshop on ancient ink dating and will take measurements on the Basel Papyri who are, in most of the cases, dated only according to paleography. This age characterization should be of great help for the editing and commenting work.

3. Visibility online

Papyri.info

 PAPYRUS
PORTAL

Berlin | Bonn | Bremen | Erlangen | Giessen | Halle | Heidelberg | Jena | Köln | Leipzig | Marburg | Trier | Würzburg

Creation : A web site is being created, presenting the project and the history of the collection. It will contain the picture and the edited text of each papyrus together with its commentary. We are considering the possibility to link each word to its location on the image, so that when an internet user would click on a word, the image window will show where this word is on the papyrus. It will be a pedagogic tool for students and non-specialist audience but also would save some time for papyrologist colleagues. We also have in mind that, thanks to Digital Palaeography projects like e.g. Anagnōsis and AncientLives, it could soon be possible to compare the shape of the letters in order to characterize the same handwritings on fragments from different collections and to find matches to digitally reconstruct the codices. The first step would concern the Literary texts, 5 for now in Greek and 4 in Coptic in the Basel collection, for which the tagging of the picture would not only be for each word but for each letter. The addition of a research engine, which would conveniently come in lieu of the indices, would complete this E-edition.

Incorporation to existent projects: It seemed obvious from the beginning that part of our work was to include the collection in the **main online data-bases**, like the Papyrusportal and HGV for the meta-data, but also papyri.info (where both the Coptic and Greek documentary texts will be encoded). If possible, the Literary Greek texts would join the specific work in progress data-base.

4. Reaching a wider audience

The Basel Papyrus Project gives the opportunity to train students and non-specialist scholars to Papyrology thanks to **conferences** and **workshops** in Basel University.



The **Exhibition in the University Library** in 2017 will coincide with the 100th anniversary of the first volume of P.Bas. and will be the major public event of our program. A special focus will be made on the history of the collection, whose oldest acquisition can be related to the Humanism movement in the 16th c. Efforts to make all the documents understandable to the general audience are being made by looking for the best way to display the papyri but also the needed contextual information to underline their own specific interest. Students in Ancient History will take part of this event, for example through research assignments.



The team

Prof. Sabine Huebner
Dr. W. Graham Claytor
Dr. Isabelle Marthot-Santaniello
Dr. Matthias Müller

For further information

Presentation of the project: altgeschichte.unibas.ch/forschung/projekte/basel-papyrus-collection/
DH Lab: <http://www.dhlab.unibas.ch/>
Cultural Heritage Imaging: <http://culturalheritageimaging.org/Technologies/RTI/>
Ancient Ink Laboratory: <http://nano.columbia.edu/ancient-ink-laboratory-2>

Poster made for the workshop
*Altertumswissenschaften in a Digital Age:
Egyptology, Papyrology and Beyond,*
Leipzig, November 4-6, 2015