The Basel Papyrus Project:

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 *Papyrusschriften 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 Dr. 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 publication 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

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).

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2. Ink dating

We have the chance to collaborate with Sarah Golter 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 exhibit systematic changes as a function of manuscript date. This observation is unexpected given the dates of these papyri cover a 1,200-year 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 authentic ancient manuscripts. Sarah Golter 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

Each papyrus can be accessed in Digital Humanities lab (www.dhlab.unibas.ch) and Cultural Heritage Imaging (http://culturalheritageimaging.org/Technologies/RTI/) and in Digital Cultural Heritage Imaging Lab (http://www.culturalheritageimaging.org/Technologies/RTI/) of the University of Basel. 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 fast and efficient on objects as big as A2 size. If this technology has already shown results when applied on carbonized papyri (Devernay, Herculanum), 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.

4. Reaching a wider audience

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