

Natural Sciences and Technology in Manuscript Analysis

Hamburg, 29 February to 2 March 2016

From February 29 to March 2 2016, the Second international conference on *Natural Sciences and Technology in Manuscript Analysis* organized by the Centre for the Study of Manuscript Cultures (CSMC) convened scholars and scientists from the fields of the humanities, informatics, chemistry, physics, and biology. The conference provided a forum for discussing a multi-faceted interdisciplinary approach dedicated to the fast developing research of manuscripts. Forty contributions included in the programme presented new results from the research in areas of material analysis of manuscripts, spectral analysis to recover lost writing, as well as digital methods of image and text analysis. For the first time, the conference allocated time for a Round Table discussion addressing the vital questions of designing and funding interdisciplinary research.

The first session, on February 29, chaired by H. Sigfried Stiehl was dedicated to material analysis of manuscripts. In her key-note lecture on *Hard science and history*, Marina Bicchieri described multi-instrumental comparative approach for the correct characterization of the manuscript under study capable of reconstructing the history of its production and deterioration, and of predicting the expected further changes. Other papers presented non-invasive techniques that can assist the scholars in understanding the composition of writing materials (M.M. Khorandi, M. Gulmini, M. Aceto, A. Agostino, and H. Sayyadshahri; P. Çakar). Manfred Mayer demonstrated a simple method to reveal watermarks in medieval paper manuscripts. Reports of the projects conducted jointly by philologists, codicologists and scientists (M. Geissbühler; M. Delhey; D. Nosnitsin and A. Brita) elucidated the interdisciplinary approach adopted by the CSMC.

The second session, chaired by Ira Rabin in the morning of 1 March, focused on techniques for recovery of lost or damaged writing. Key-note lecture delivered by Vito Mocella presented the strength and limits of the newly developed X-ray phase contrast tomography capable of discerning hidden texts written with carbon inks (V. Mocella, E. Brun, C. Ferrero, and D. Delattre). Papers that followed included conventional X-ray tomography for reading unopened volumes containing inscriptions in metal-based inks (F. Albertin, E. Peccenini, M. Bettuzzi, R. Brancaccio, M. P. Morigi, A. Patera, I. Jerjen, S. Hartmann, and R. Kaufmann), multi- and hyperspectral imaging of the damaged manuscripts and data processing (K. T. Knox; C. T. C. Arsene, P.E. Pormann, W. I. Sellers, and S. Bhayro; V. Lorusso, and B. Pouvkova; T.

Łojewski, and D. Chlebda) and description of a special center for image and material analysis recently established in Vienna (M. Schreiner, H. Miklas, C. Rapp, R. Sablatnig, W. Vetter, B. Fruehmann, and F. Hollaus).

The third, evening session held in the afternoon of 1 March and chaired by Christian Brockmann highlighted the achievements of computational techniques in the image and text analysis. Here, Peter Stokes presented the state of the art in digital palaeography in his key-note lecture. The rest of the session was divided between segmentation-free word spotting (Y. Elfakir, G. Khaisidi, M. Mrabti, M.A. El Yaccoubi, Z. Lakhliai, and D. Chenouni; S. Sudholt, L. Rothacker, G.A. Fink; T. Konidaris, A. L. Kesidis, and B. Gatos), text/image alignment (D. Stutzmann, T. Bluche, Y. Leydier, F. Cloppet, V. Eglin, C. Kermorvant, and N. Vincent; R. Cohen, K. Kedem, and J. El-Sana) and segmentation-based extraction of salient features (E. Arabnejad, H. Ziaei Nafchi, E. Treharne, C. Allen, and M. Cheriet).

The fourth and the last session chaired by Volker Märgner in the morning of 2 March included a key-note lecture by Leif Glaser who reported on the last technical developments of the synchrotron applications in material analysis and imaging techniques. His comparison of the radiation output from conventional and synchrotron sources suggested that the general belief in absolute safety of the radiation use in the studies of the manuscript should be revised. The rest of the papers of this session presented case studies using various computational methods of text analysis (A. Garz, M. Seuret, A. Fischer, and R. Ingold; R. Hedjam, M. Kalacska, S.S. A. Al-ma'adeed, and M. Cheriet; A. Santoro, A. Marcelli, and F. Carillo) or combinations of material and imaging techniques (F. Kergourlay, C. Andraud, A. Michelin, A. Histace, B. Lavédrine, and I. Aristide-Hastir, R. Lheureux).

The session ended with a round table discussion dedicated to facilitation of interdisciplinary research, moderated by Oliver Hahn. Besides various funding strategies, the conference participants suggested to improve the visibility and accessibility of the tools for manuscript analysis that are being constantly developed in the fields of natural sciences and digital humanities by means of summer schools or special courses. The latter topics arose from the great success of the manuSciences '15, the German-French summer school for exhaustive manuscript studies held in September 2015 in Chimsee, Germany. The series of such summer schools is planned for the next years in Germany, France, and the USA.

For the full programme and abstracts of the conference, visit <http://www.manuscript-cultures.uni-hamburg.de/natural_sciences_2016.html>.

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