THE ROLE OF CULTURE IN EARLY EXPANSIONS OF HUMANS

Human Origins—Digital Future (HODiF)

ROCEEH ONLINE CONFERENCE 2020

— 3rd circular —

July 27–31, 2020

Conveners: Volker Hochschild, Nicholas J. Conard, Miriam N. Haidle, Andrew W. Kandel, Christine Hertler, Christian Sommer, Ericson Hölzchen, Zara Kanaeva and the ROCEEH Team

Contact: conference2020@roceeh.net

Website: http://www.roceeh.net

Scientific scope

The ROCEEH and Senckenberg Conference "Human Origins—Digital Future" will present and discuss integrative aspects and approaches to the development, use, and future securing of large scientific databases, especially within the context of anthropological research. The primary research question asks: How can we use databases with their innovative information technology to gain new knowledge by retrieving and extracting archaeological, paleoanthropological, paleobiological, and paleogeographic information?

With this online conference, we will address core issues of digitalization, including possibilities and problems of large, interdisciplinary databases. Although digital tools are widely applied in scientific projects, questions of linkage, targeted expansion, evaluation, and sustainable safeguarding of databases remain unresolved. We will also address new approaches including innovative methods of data mining and machine learning as well as deep learning and artificial intelligence.

Monday, July 27, 14:00-16:00 Central European Summer Time

Session 1: Databases

The first session addresses scientific databases focused on the humanities and intends to:

- Connect the advantages of <u>shared standards</u> with the intrinsic, problem-oriented requirements of databases in the humanities
- Balance <u>open access</u>, <u>quality control</u> and the advantages of an <u>expert-curated dataset</u>
- Highlight the importance of <u>long-term preservation</u> and the <u>reproducibility</u> of scientific analyses.

Introduction (15 min. organization and overview)

5 Contributions @ 15 min. including a few questions after each talk:

Eric Grimm, University of Minnesota, Department of Earth and Environmental Sciences, Minneapolis, USA – The Neotoma Paleoecology Database: Shared Standards, Community Curation, and Active Reanalysis of Paleo Data

Andrew Kandel, ROCEEH, Heidelberg Academy of Humanities & Sciences, Germany – Managing Large Archaeological Datasets: An Overview of the ROAD Database

Franco Niccolucci, ARIADNE, University of Florence, Italy – A Data-Centric Archaeological Research Methodology: Opportunities and Risks

Christopher Nicholson, tDAR database, Arizona State University, USA – Challenges of Archiving Complex Archaeological Datasets for Reuse: An Example from the American Southwest

Jesús Rodríguez, CENIEH, Burgos, Spain – The Specific Problems of Palaeontological Databases and How NQMDB Deals With Them

30 min. General discussion

Tuesday, July 28, 14:00-16:00 Central European Summer Time

Session 2: Methods

With the expanding amount of data and the linkage thereof, novel approaches to data analysis become applicable—and mandatory! This session highlights new possibilities to:

- <u>Quantify heterogeneous data</u> from the fields of the humanities, where expert-based interpretation of objects plays an important role
- Find relations in interdisciplinary data through <u>data mining</u> and derive new hypotheses or validate existing hypotheses
- "Reconstruct" and reproduce expert knowledge (e.g. the classification of cultural objects) by means of <u>machine learning</u> and <u>deep learning</u>
- Analyze spatial and cultural distributions with <u>agent-based modelling</u> (ABM)

Summary of Day 1 (10 min. Mind-Map)

5 Contributions @ 15 min. including a few questions after each talk:

Juan Antonio Barcelo, Departamento de Prehistoria de la Universidad Autónoma de Barcelona, Spain – Solving Archaeological Inverse Problems: A Reverse Engineering Approach

Christian Sommer, ROCEEH, Heidelberg Academy of Humanities & Sciences, Germany – New perspectives for data exploration in ROAD

Ingo Timm, Business Informatics, Trier University, Germany – Artificial Intelligence and Paleoanthropological Databases

Alice J. Williams, Department of Biological Sciences, University of Exeter, UK – How well does the Circumscription Theory Explain the Formation of Complex Societies? Using Agent-Based Models to Evaluate Archaeological Theories Against Existing Archaeological Data

Christian Willmes, SFB 806, University of Köln, Germany – PaleoMaps: Creating, Collecting and Compiling Geospatial Paleoenvironment Data for Culture Environment-Interaction Modeling Applications

30 min. General discussion

Wednesday, July 29, 14:00-16:00 Central European Summer Time

<u>Session 3: Applications</u>

The poster session highlights a variety of <u>applications</u> and <u>analyses</u> originating from large databases.

Summary of Day 2 (10 min. Mind-Map)

10 Contributions @ 5 min. each with up to 3 min. discussion

Rimtautas Dapschauskas, University of Heidelberg, Germany – Using a Geo-relational Spatial Information System to Examine Questions about the Large-scale Development of Cultural Behavior in Human Evolution: The Example of Ochre in the African Middle Stone Age

Ewa Dutkiewicz, Museum für Vor- und Frühgeschichte, Berlin, Germany – Structuring the Unstructured: Databases for Paleolithic Art

Christine Hertler, ROCEEH, Heidelberg Academy of Humanities & Sciences, Germany – The ROAD Map Module

Zara Kanaeva, ROCEEH, Heidelberg Academy of Humanities & Sciences, Germany – A Publication and Data Sharing Tool of ROAD

Ana Mateos, CENIEH, Burgos, Spain – Matching datasets and palaeoenvironment to frame Human Palaeoecology in Europe around MIS 11

Shannon P. McPherron, Max Planck Institute for Evolutionary Anthropology, Department of Human Evolution, Leipzig, Germany – Is a decentralized, non-standardized approach to data sharing in archaeology good enough?

Mika Puspaningrum, Bandung Institute of Technology, Bandung, West Java, Indonesia – "Living in Sangiran"

Denné Reed, University of Austin, USA – Paleo Core: A Platform for Data Integration in Paleoanthropology

Manuel Will, University of Tübingen, Germany – Combining Paleoenvironmental and Paleoanthropological Datasets to Understand Human Brain and Body Size Evolution

Andreas Zimmermann, University of Cologne, Germany – Prehistoric Population Dynamics – Extended

15 min. General discussion

Thursday, July 30, 14:00-16:00 Central European Summer Time

<u>Session 4: Products</u>

This session assembles a variety of approaches to visualize and analyze data in online databases. We present links between the scientific approaches and a broader audience, and discuss opportunities, requirements and constraints to public discussion. This session presents approaches to:

- Visualize and analyze data through <u>online analytical tools</u> with user-friendly interfaces
- Encourage scientists to <u>contribute and retrieve data</u> through web portals
- Present <u>results</u> to specialists and the general public

Summary of Day 3 (10 min. Mind-Map)

5 Contributions @ 15 min. including a few questions after each talk:

Wolfgang Börner, Urban Archaeology of Vienna, Austria – Wien Kulturgut: Web Portal for the Contribution of Archaeological Data from the Palaeolithic until Today

Liane Giemsch, METAhub Frankfurt, Germany – METAhub Frankfurt – A Database as Link Between Museum Cultures and Performative Art

Simon Goring, Neotoma, University of Wisconsin, Madison, USA – Connecting Disciplinary Data and Resources: Using the Throughput Database to Speed Up Discovery

Yasuhisa Kondo, Research Institute for Humanity and Nature, Japan – Interdisciplinary challenges of the Cultural History of PaleoAsia project and its database development: Lessons learnt

Matthias Lang, Center for Digital Humanities, University of Bonn, Germany – Spacialist – A Virtual Research Environment for the Spatial Humanities

30 min. General discussion

Friday, July 31, 14-16 CEST

<u>Session 5: Perspectives</u>

In the final session, we peer into the future, discussing ways to secure databases and additional gathered information beyond the scope of project runtimes. We also wish to discuss ways to make today's data ready for future analytical methods. This session offers interviews with invited panel members and concludes with an open discussion.

Summary of Days 1-4 (15 min. Mind-Map)

Pre-recorded interviews with invited speakers about selected topics @ 15 min. including a few questions after each interview:

Sarah Kansa, Open Context, Alexandria Archive Institute, USA – Sustaining Open Data: Perspectives from Open Context

Alexandra Lux, Institut für sozial-ökologische Forschung, Frankfurt, Germany – Databases in Trans- and Interdisciplinary Approaches

Peter McKeague, Survey and Recording, Heritage Directorate, Edinburgh, UK – Mapping Our Heritage: Towards a Sustainable Future for Digital Spatial Information and Technologies in European Archaeological Heritage Management

Julian Richards, Archaeology Data Service, University of York, UK – Implementing the FAIR Principles (Findability, Accessibility, Interoperability, Reuse)

Dieta Svoboda-Baas, Heidelberg Academy of Humanities & Sciences, Germany – Longevity of Data Storage und Use

15 min. General discussion

Summary of the conference and closing remarks

Conference venue – ONLINE!

The conference will take place online using NextCloud and Zoom:

1) NextCloud is a platform installed on a secure server hosted by ROCEEH at out institution in Tübingen onto which you can upload your presentations, view talks and engage with other types of media. Active participants (speakers, presenters, discussants) will receive a link to NextCloud via e-mail with further details about how to use it.

2) We plan to use Zoom as the communication platform for the conference and will send you a link a few days before the conference.

For speakers, presenters and discussants

If you already sent us your title, abstract, or other media, we have registered you, so there is no need to do anything. If your e-mail address changes or you wish to use another address, please contact us at conference2020@roceeh.net.

Registration for other participants and interested colleagues

If you are not giving a talk or poster, you may participate for free via Zoom by returning this form to conference2020@roceeh.net. By filling out this form, you agree to the temporary storage of your personal information, which we will delete after the conference. You will receive the Zoom link a few days before the conference.

Surname: _____   First Name: _____

Email: _____

Affiliation/Institution: _____

We look forward to seeing you online!

The ROCEEH Team