CAA 2009 Williamsburg

37th Annual International Conference on

Computer Applications and Quantitative Methods in Archeology (CAA)

"Making History Interactive"

Williamsburg, Virginia, USA
March 22 – 26, 2009

The 37th annual CAA conference will be held from March 22 to 26, 2009 in Williamsburg, Virginia, bringing together students and scholars to explore current theory and applications of quantitative methods and information technologies in the field of archaeology. The CAA conference has established a strong tradition of international, open communication and exchange that crosses boundaries between archaeologists and colleagues working in quantitative fields such as mathematics and computer science. CAA members come from a diverse range of disciplines, including archaeology, anthropology, art and architectural history, computer science, geography, geomatics, historic preservation, museum studies, and urban history. The theme of the conference is "Making History Interactive," which will be reflected in both the conference activities and the unique venue. Participants are especially encouraged to submit papers and posters relating to the conference theme of how computer applications can be used to engage diverse audiences in the study of the past. The conference will also offer optional short, introductory courses in the use of equipment (such as 3D scanners), hardware, and software typically used by digital archaeologists today.

CAA 2009 is being organized by the Colonial Williamsburg Foundation and the University of Virginia. For further information on the conference and how to register, please visit:

www.caa2009.org

CAA 2009 Scientific Committee

Prof. Bernard Frischer (chair), University of Virginia; Prof. Peter Bol, Harvard University; Dr. Wolfgang Börner, City of Vienna; Lisa Fischer, The Colonial Williamsburg Foundation; Prof. Arne Flaten, Coastal Carolina University; Prof. Maurizio Forte, University of California, Merced; Prof. Bernard Frischer, University of Virginia; Prof. Alyson Gill, Arkansas State University; Prof. Luc van Gool, Federal Technical Institute, Zurich; Prof. Gabriele Guidi, Politecnico di Milano; Prof. Elisabeth Jerem, Archaeological Institute of the Hungarian Academy of Sciences; Prof. Ian Johnson, University of Sydney; Han Kamermans, University of Leiden; Prof. Kevin Kee, Brock University; Prof. Guus Lange, National Service for Archaeological Heritage, Netherlands; Gary Lock, Oxford University; Prof. Scott Madry, University of North Carolina, Chapel Hill; Mark Mudge, Cultural Heritage Imaging; Prof. Fraser D. Neiman, Monticello Organization; Dr. Daniël Pletinckx, Visual Dimension; Dr. Axel Posluschny, German Archaeological Institute; Julian Richards, University of York; Prof. Nicholas Ryan, University of Kent; Stephen Stead, Paveprime; John Tolva, IBM

Archaeological Prospection Using High-Resolution Digital Satellite Imagery: Recent Advances and Future Prospects

Session ID: 120

Session Type: Papers

Chair: Karsten Lambers, University of Konstanz, Germany and Véronique de Laet, KU Leuven, Belgium

Date: Monday March 23, 2009, 8:30 am – 3:00 pm   Room: Tidewater C

Session Abstract:

This session will focus on the analysis of high-resolution digital satellite imagery for archaeological prospecting. Since a few years, a new generation of satellite sensors such as the well known Ikonos 2 and QuickBird 2, the new WorldView 1 and GeoEye 1, and a variety of others provide an unprecedented variety of remotely sensed imagery with a spatial resolution of 1 m and better, and the launch of several similar sensors with a resolution of up to 25 cm has been announced for the near future. The resulting space-borne imagery allows for the first time even small archaeological sites and features to be detected. Although this type of space-borne imagery is still quite expensive and does not yet achieve the very high spatial resolution of aerial imagery, it offers a variety of advantages over aerial imagery: it is available nearly worldwide without major legal or practical limitations, it is rather easy to georeference and to use in GIS, and some sensors feature a near-infrared channel in addition to the usual RGB and panchromatic channels, which potentially allows crop marks to be identified more easily. Furthermore, stereo coverage enables a photogrammetric analysis of the images.

Archaeologists have been quick in realizing the high potential of this new data source for the detection and documentation of archaeological sites and features, and a growing number of case studies with interesting results have evolved from ongoing archaeological field projects in recent years. While some of these projects have been limited to a visual inspection of the imagery to aid fieldwork, others now go beyond this level by applying advanced methods of digital image analysis in order to extract archaeological information. These methods include, among others, image classification, multispectral analysis, pattern recognition, photogrammetry, and related approaches. However, a systematic evaluation of the potential of these methods, which were usually developed for different kinds of applications, and the potential of the new data source itself remains a desideratum.

In this session, papers will be presented that explore the chances and limitations of high-resolution digital satellite imagery, and of current methods of digital image analysis with regard to the requirements of archaeological prospection. Papers with a methodological focus, addressing specific problems of identifying uncooperative archaeological features through digital image analysis and showing recent advances and promising research strategies are especially welcome. Overview papers and new case studies will complement this session that is hoped to bring together specialists from the fields of archaeology, remote sensing, geomatics, photogrammetry, digital image analysis, pattern recognition, and related disciplines.

Topics: photogrammetry and imaging, prospection and remote sensing
Keywords: satellite imagery, high resolution, digital image analysis, remote sensing, archaeological prospection

Papers:

8:30 – 9:00   Extracting Archaeological Features from High Resolution Satellite Imagery: A Review of Current Projects, Problems, and Promising Approaches
Karsten Lambers, University of Konstanz, Germany and Véronique De Laet, KU Leuven, Belgium
Paper ID: 243

9:00 – 9:20   Characterizing Angkorean landscapes: RS based feature detection in tropical areas
Arianna Traviglia, University of Sydney, Australia
Paper ID: 170

9:20 – 9:40   Very high resolution satellite remote sensing as part of an integrated approach for archaeological prospection at Tepe Düzen (southwest Turkey)
Véronique De Laet, KULeuven, Belgium; Branko Music, University of Ljubljana; Sabri Aydal, Antalya Museum; Kim Vyncke, Hannelore Vanhaverbeke, Etienne Paulissen, Gert Verstraeten and Marc Waelken, KULeuven, Belgium
Paper ID: 226

9:40 – 10:00   Discussion

10:00 – 10:15   Coffee break

10:15 – 10:35   Geo-spatial & Archaeological Investigations for the Interpretation of the growth of the holy city of Varanasi, India
Bharat Lohani, IIT Kanpur, India; Bharath Gandhi, IIT Kanpur, India; Vidula Jayaswl, Banaras Hindu University, India; and Manoj Kumar,Banaras Hindu University, India
Paper ID: 194

10:35 – 11:05   The Fragile Crescent Project: the rise and decline of Bronze Age urban settlements in the ancient Near East
Daniel Donoghue, Department of Geography, Durham University, United Kingdom; Nikolaos Galiatsatos, Department of Geography, Durham University, United Kingdom;Tony Wilkinson, Department of Archaeology, Durham University, United Kingdom; and Graham Philip, Department of Archaeology, Durham University, United Kingdom
Paper ID: 365

11:05 – 11:25   Potential of simple feature signatures for mapping landscapes of mobile pastoralists
David John Tucker, Martin-Luther University Halle-Wittenberg, Germany
Paper ID: 222

11:25 – 11:45   Discussion

11:45 – 1:30   Lunch break

1:30 – 1:50   CORONA Imagery Archaeological Atlas of the Middle East
Jesse Casana, University of Arkansas, United States of America
Paper ID: 165

1:50 – 2:10   Effects of Ground Control Point Accuracy on Triangulation and Ortho-rectification of Large Blocks of CORONA Images

Jackson Cothren, Center for Advanced Spatial Technologies (CAST), University of Arkansas; Department of Geosciences, University of Arkansas; Adam Barnes,[1]Center for Advanced Spatial Technologies (CAST); Jesse Casana, Center for Advanced Spatial Technologies (CAST), University of Arkansas; Department of Anthropology, University of Arkansas; and Tuna Kalayci, Department of Anthropology, University of Arkansas
Paper ID: 250

2:10 – 2:30   Accuracy of DEM Generation from CORONA Stereo Pair Images
Tuna Kalayci, Department of Anthropology, University of Arkansas; Jackson Cothren, Center for Advanced Spatial Technologies, University of Arkansas; Department of Geosciences, University of Arkansas; Jesse Casana, Department of Anthropology, University of Arkansas, Department of Geosciences, University of Arkansas, and Adam Barnes, Center for Advanced Spatial Technologies, University of Arkansas
Paper ID: 293

2:30 – 3:00   Discussion

Archaeological site prospection using Google Earth

Session ID: 108

Session Type: Workshop

Chair: Scott L. Madry, University of North Carolina at Chapel Hill, United States of America

Date: Monday March 23, 2009, 3:15 pm – 5:30 pm   Room: Computer Lab BHS 209
      Tuesday March 24, 2009, 3:15 pm – 5:30 pm

Workshop Abstract:

This workshop will be a hands-on introduction to using Google Earth for archaeological site prospection and recording. The presenter has several years experience in using Google Earth for site prospection in France, the Isle of Man, and Peru. Methods and techniques for systematic site prospection will be covered, along with physical processes leading to site visibility. Techniques of recording, documenting, and sharing located features will also be covered. After this workshop participants should be able to conduct independent site surveys using Google Earth.

The session will run 135 minutes and has no required prerequisites other than minimal computer ability or minimal experience using Google Earth. The maximum number of participants will be the number of computers available. One computer per participant, loaded with Google Earth and with internet access is required, along with a projection system for the instructor's computer.

This session will be similar to the one presented at the Berlin CAA.

Size Limit: Each session of this workshop will be limited to 16 participants (2 per computer). An additional 2-4 participants, who wish to use their own wireless-enabled laptop with Google Earth installed may also join

Topics: GIS, Google Earth and archaeology
Keywords: Google Earth, site prospection, aerial image analysis

ArchCamp 7

Session ID: 137

Session Type: Workshop

Chair: Gareth C. Beale and Leif Isaksen, University of Southampton, United Kingdom

Date: Tuesday March 24, 2009, 3:15 pm – 5:30 pm   Room: Tidewater D

Workshop Abstract:

ArchCamp is a regular meeting of minds and idea swapping session held by the Antiquist Cultural Heritage and IT online community. ArchCamp is intended as an open forum within which to demonstrate and to discuss ongoing, interesting and innovative projects and ideas. The session will take a round table format with all attendees welcome to comment and interact on an equal footing.

In order to keep things interesting we ask that participants bring a topic or topics with them that they would be interested in presenting. These will be listed during a round of introductions after which we will agree upon a loose thematic agenda according to the interests of those present.

Generally speaking, presentations will last 5-10 minutes followed by a further 10-20 minutes of interactive demonstration of the relevant tools and technologies. Time will be set aside at the end to pass on and discuss any web discoveries or matters of common interest that participants may have stumbled upon prior to our session.

ArchCamp has been successfully held in conjunction with four previous CAA conferences (Southampton and Berlin 2007, York and Budapest 2008) and will also be held at CAA UK 2009 in Liverpool. The session lasts generally lasts for around 3 hours and is traditionally followed by drinks, food and sparkling conversation at a local watering hole.

For details of past ArchCamps, see:

http://www.antiquist.org/wiki/index.php?title=Archcamp

Topics: Other
Keywords: Open Discussion

Capturing and publishing information with the Heurist e-Research framework

Session ID: 138

Session Type: Workshop

Chairs: Ian Johnson and Cathy Campbell, University of Sydney, Australia

Date: Monday March 23, 2009, 3:15 pm – 5:30 pm   Room: Tidewater B

Workshop Abstract:

In this 2 hour workshop we will move from the creation of a database and related bibliographic information in a flexible Web 2.0 environment to its interactive publication on the web using interactive maps, timelines and linked records of related information (presented as pop-ups on the map or as formatted lists coordinated with the map).

We will illustrate this process with a small sample of heritage site locations and the publications and web sites related to them, but you are welcome to bring some additional site and bibliographic data for inclusion (or indeed other types of archaeological or historic information which you would like to be able to record, relate, share and publish).

The software used – Heurist (HeuristScholar.org) – is freely available and was developed as generic eResearch infrastructure for use in archaeology, history and related fields where geography, time and rich descriptive and classificatory information are common. Heurist is designed to be a single, integrated solution to most of the data management, bibliographic and web publication needs of an individual or workgroup (whether co-located or virtual).

Heurist has a very wide range of functions – of which we will barely scratch the surface – from simple day-to-day activities such as Internet book-marking, social discovery and sharing of information within workgroups (including bibliographic data, rich textual description, notes and annotations with embedded multimedia) through web publication of research databases (such as project inventories, people, events, date determinations or samples), to a programming API which can be used to develop advanced applications (including complex networks of related records, granular annotation within documents and synchronization with repositories).

We will start by book-marking some relevant web sites (including importing some browser bookmarks), import some bibliographic data from Zotero and EndNote, some photographs from disk and some geographic data from Google KML files, and also enter a few records by hand. Then we will build relationships between records, linking sites to photographs and the bibliographic references which describe them, and tag and save subsets of these sites (by period, by tagging) for eventual publication. Finally we will publish an interactive map and timeline of sites and a formatted list of sites, embedded in a web page.

You will not learn everything there is to know about Heurist in this short introduction, but we will introduce you to many of the essential elements and give you a taste of the ways it is being used in a wide variety of applications. You will leave with the skills to start book-marking web sites and using Heurist day-to-day as well as creating databases, bibliographies and data feeds into web pages (including web sites in an institutional CMS).

The workshop is suitable across a wide range of skill levels – beginners will gain confidence in being able to collect data, including geographic data, and publish live data to the web; advanced users will

grasp the potential for an integrated approach to web-based data management, sharing and repurposing.

Maximum audience: 40

Topics: databases, data management systems and other field applications, Other
Keywords: social applications, online databases, web mapping, eResearch infrastructure, web publishing

Cell-based analysis and landscape archaeology: new approaches and new applications

Session ID: 129

Session Type: Papers

Chairs: Gary Lock and John Pouncett, Oxford University, United Kingdom

Date: Wednesday March 25, 2009, 8:30 am – 3:00 pm   Room: Tidewater C

Session Abstract:

Since the early adoption of GIS in archaeology in the late 1980s the place of cell-based, or raster, analysis has been of central interest. It has become almost routine to apply techniques such as line-of-sight, viewshed, least-cost path and cost surface analysis in attempts to understand human interaction with past landscapes. Indeed, it could be argued that these techniques are so commonplace and easy to perform that their methodological and theoretical underpinnings are often ignored or, at best, mentioned in passing. Derivatives of elevation such as slope and aspect, the essential building blocks of many analytical techniques and models, are scale dependent. Yet, despite widespread recognition of the significance of scale within landscape archaeology, analysis based on these derivatives is uncritical and typically fails to take this scale dependency into account.

This session is intended to explore beyond the push-button application of cell-based analysis through focusing on new approaches and new applications. We welcome papers that address issues of methodology, new approaches to visibility and movement, topographic modeling and visualization. While visibility and movement will probably remain popular, other areas such as erosion modeling, landscape change and time series analysis would be very welcome. Contributions relating to remote sensing techniques which employ raster data structures and allied image processing techniques are also welcome. It is hoped that this session will provide a platform from which to promote the development of new theoretical and methodological approaches to cell-based analysis within landscape archaeology.

Topics: GIS
Keywords: cell-based analysis, GIS

Papers:

8:30 – 9:00   Modeling Subsurface Content through Multidimensional Remote Sensing, Multivariate Analysis, and Raster GIS
Kenneth L. Kvamme, University of Arkansas, United States of America
Paper ID: 216

9:00 – 9:30   Using Geographically Weighted Regression to predict site representativity
Daniel Lowenborg, Uppsala University, Sweden
Paper ID: 197

9:30 – 10:00   Walking the Ridgeway Revisited: The Methodological and Theoretical Implications of Scale Dependency for the Derivation of Slope and the Calculation of Least Cost Pathways
Gary Lock and John Pouncett, Institute of Archaeology, Oxford University, United Kingdom
Paper ID: 276

10:00 – 10:15   Coffee break

10:15 – 10:35   Digital Terrain Model Analysis and the use of Fuzzy functions for the identification of possible areas with rural post – Roman archaeological sites in the S-W Dacia
Marcel Torok-Oance and Dorel Micle,West University of Timisoara, Romania
Paper ID: 310

10:35 – 10:55   An application of rule based eco-cultural niche modeling to archaeological modeling: emerging complexities in predictive site location modeling for Holocene land and resource use around Lake Turkana
Loretta Jane Dibble, Rutgers University, United States of America
Paper ID: 381

10:55 – 11:15   FIELDWALK@KISOJI: Second Preliminary Report of the GPS/GIS-aided Walking Experiments for Re-modeling Pre-modern Travels in Nakasendo-Kisoji (Central Highland Japan)
Yasuhisa Kondo, Department of Archaeology, University of Tokyo, Japan; and Yoichi Seino, Department of Cultural Coexistence, Kyoto University, Japan
Paper ID: 202

11:15 – 11:45   Discussion

11:45 – 1: 30   Lunch break

1:30 – 2:00   Beyond the Marsh: Settlement Choice, Perception, and Spatial Decision-Making on the Georgia Coastal Plain
Thomas G. Whitley, Inna Burns Moore and Gitisha Goel, Brockington and Associates, Inc., United States of America
Paper ID: 162

2:00 – 2:30   An Improved Method for Extraction of Historical Cartographic Features into GIS: A French Case Study
Scott L. Madry and Elizabeth Jones, University of North Carolina at Chapel Hill, United States of America
Paper ID: 186

2:30 – 3:00   Discussion

CIDOC Archaeological Sites Working Group meeting

Session ID: 130

Session Type: Workshop

Chair: Stephen Stead, Paveprime LTD, United Kingdom

Date: Wednesday March 25, 2009, 3:15 pm – 5:30 pm   Room: Tidewater D

Workshop Abstract:

The CIDOC Archaeological Sites Working Group has a number of exciting projects on the go. In this meeting we will report on progress and discuss issues that have been raised since the last meeting in Athens during September 2008. It is hoped that substantial progress can be made on a number of editing and compilation tasks during this session . Details of the agenda and all working documents are hosted on the CIDOC Forum at http://meta.se/cidocforum/ . All interested parties are invited to join the forum and review the projects, documents and discussion and make their own contributions. Registration is free, easy to complete and allows access to the Working Groups own sub-forum.

The current projects are:-

Thesaurus of Period Names

The proposal is to develop a data model for storing the data necessary to provide inter-operability between regional and/or institutional cultural period thesauri. This would include the acquisition of sufficient test data to verify the data model is adequate and consider delivery mechanisms and data acquisition tools for the expansion and propagation of the resulting data set.

Standards in Use

This is intended to gather a list of different standards in use in archaeology.

This will aid with digital preservation and help the targetting of scarce resources on the appropriate development areas.

Mutliple levels of standards have been identified

1] Technical standards (ISO 3166-1 alpha-2 country codes, ISO 3166-1 alpha-3)

2] File Formats (pdf, doc, docx)

3] Content Standards (CIDOC Core Data Standard)

4] Meta data and high level standards (Dublin Core, CIDOC Conceptual Reference Model)

Standard for the deposition of Archaeological archives

The purpose of this is to produce an international standard that individual countries and regions can use as a touchstone when defining their own deposition standards. This is particularly to support countries when issuing excavation licences which need to enforce the deposition of excavated materials and excavation records.

Revision of Core Data Standard

Editing of the revision to the 1995 draft to produce the INTERNATIONAL CORE DATA STANDARD FOR ARCHAEOLOGICAL AND ARCHITECTURAL HERITAGE

Multilingual Thesauri of Archaeological site types

Development of this thesaurus using an online collaborative KOS system.

Meta-list of lists of thesauri

This is intended to provide a single point of discovery for terminology control. There is no intension to maintain a list of terminology control resources but provide pointers to lists that are maintained by other organizations

Archaeological Implementations of the CIDOC CRM

Compile a list of archaeological CRM exemplars

So come and take part in the development of these resources. All help is welcome as are new projects that you think should be taken under the CIDOC wing.

Topics: CIDOC and other digital standards, databases, Other
Keywords: CIDOC, CIDOC CRM, Thesauri, Archive, Digital Preservation

The CIDOC Conceptual Reference Model - New Standard for Knowledge Sharing

Session ID: 123

Session Type: Workshop

Chair: Stephen Stead, Paveprime LTD, United Kingdom

Date: Tuesday March 24, 2009, 1:30 pm – 5:30 pm   Room: Constitution

Workshop Abstract:

This tutorial will introduce the audience to the CIDOC Conceptual Reference Model, a core ontology and ISO standard (ISO 21127) for the semantic integration of cultural information with library, archive and other information. The CIDOC CRM concentrates on the definition of relationships, rather than classes, in order to capture the underlying semantics of multiple data and metadata structures. This leads to a compact model of 82 classes and 132 relationships, that is easy to comprehend and suitable to serve as a basis for mediation of cultural and other information and thereby provide the semantic 'glue' needed to transform today's disparate, localized information sources into a coherent and valuable global resource. It comprises the concepts characteristic of most museum, archive and library documentation.

The tutorial aims at rendering the necessary knowledge to understand the potential of applying the CRM - where it can be useful and what the major technical issues of its application are. It will present information integration by employing a core ontology of relationships, in contrast to the prescription of a common data format, as an approach applicable to other domains. Participants with some background in information modeling should be able to use the CIDOC CRM in their applications after this course and some further reading.

Topics: CIDOC and other digital standards
Keywords: CIDOC CRM, ISO21127, Data standards, Ontology

Close-Range 3D Laser Scanning: Recent Developments and Applications

Session ID: 109

Session Type: Papers

Chair: Christopher Goodmaster, Geo-Marine Inc., Plano TX, and the Center for Advanced Spatial Technologies, University of Arkansas

Date: Tuesday March 24, 2009, 8:30 am – 3:00 pm   Room: Tidewater B

Session Abstract:

Recent advances in three-dimensional (3D) laser scanning hardware coupled with the development of improved scanning methodologies on the part of a growing community of practitioners, advances in micro-computing capabilities allowing the ability to process and manage large data files, and the capability of integrating these data across a variety of platforms have made this technology an effective and practical option for the documentation, analysis, archiving, curation, and dissemination of archaeological information. For these reasons, 3D laser scanning has become an accepted and widespread practice in the European archaeological community with increasing popularity in North America as well.

This session specifically explores close-range 3D laser scanning, i.e., techniques that rely on an active near-infrared sensor to generate sub-millimeter three-dimensional surface data for artifacts, features, monuments, architectural elements, etc. Session participants should highlight:

- improved methods for data collection and processing,

- new and innovative applications of the technique and resultant data,

- issues in digital archiving, data curation, and data dissemination,

- metadata standards, and

- the implications of this technology with regard to archaeological practices.

Participants are encouraged to draw upon a wide variety of case studies to underscore the utility and potentials of close-range 3D laser scanning, as well as share their tribulations and successes. This session is also intended to foster a sense of community among the practitioners of this technique and serve as the potential basis of an international working group dedicated to the application of this technology to archaeology.

Topics: 3D data capture and modeling, North American archaeology and digital technology
Keywords: close-range 3D laser scanning, field methods, 3D data processing, data curation, metadata

Papers:

8:30 – 8:50   Beyond Cabinets of Curiosity? Analysis Potential in 3D Laser Scanning and Virtual Museums
Katie Marie Simon, Angelia Michelle Payne, Keenan Cole, Christopher Scott Smallwood, Christopher Goodmaster and Fredrick Limp, Center for Advanced Spatial Technologies, University of Arkansas, United States of America
Paper ID: 368

8:50 – 9:10   Lighting Systems in Three Dimensional Non-Contact Digitizing
C. Scott Smallwood, University of Arkansas, United States of America, CAST, University of Arkansas; Angelia Payne, University of Arkansas, United States of America, CAST, University of Arkansas; Katie Simon, University of Arkansas, United States of America; CAST, University of Arkansas; Christopher Goodmaster, GeoMarine; Frederick Limp, University of Arkansas, United States of America, CAST, University of Arkansas; and Jackson Cothren, University of Arkansas, United States of America, CAST, University of Arkansas;
Paper ID: 292

9:10 – 9:30   Cutting Edge Research: An old solution in search of a new methodology, Rob Sands, UCD School of Archaeology, Ireland (Republic of)
Rob Sands, UCD School of Archaeology, Ireland (Republic of)
Paper ID: 148

9:30 – 9:50   Automatic Point-Cloud Surveys in Prehistoric Sites Documentation and Modelling
Mercedes Farjas, Universidad Politécnica de Madrid, Spain; Francisco J. García-Lázaro, Universidad Politécnica de Madrid, Spain; Julio Zancajo, Universidad de Salamanca, Spain; and Teresa Mostaza, Universidad de Salamanca, Spain
Paper ID: 163

10:00 – 10:15   Coffee break

10:15 – 10:45   The Transition from Direct to Digital, Molding Reliefs at the Pyramid of Amenemhat to 3-Dimensional Imaging at The Metropolitan Museum Of Art
Ronald Street, The Metropolitan Museum of Art, United States of America
Paper ID: 183

10:45 – 11:15   Mesoamerican Sculpture: From 3D Documentation to Dissemination
Travis F. Doering and Lori D. Collins, University of South Florida, United States of America
Paper ID: 181

11:15 – 11:35   Development of a 3D model for archiving and dissemination of the first hindu temple at Bhitar village, Kanpur, India using laser scanning and digital photography
Bharat Lohani, N. Balaji, Satyaki Roy and Onkar Dikshit, IIT Kanpur, India
Paper ID: 195

11:45 – 1:30   Lunch break

1:30 – 1:50   LIDAR Scanning of Elmina (Ghana) (a slave fort)
Patricia Seed, University of California Irvine, United States of America
Paper ID: 308

1:50 – 2:10   Virtual Reconstruction of a Ceramic Vessel: A Case Study from The Pas, Manitoba
Morgan John Tamplin, Trent University, Canada; Kevin Brownlee, Manitoba Museum, Canada; Leigh Syms, Manitoba Museum, Canada; Andrew Fallak, Manitoba Museum, Canada; and Myra Sitchon, University of Manitoba
Paper ID: 292

2:10 – 2:30   *A Future for the Past:* Use of digital technology in preserving a 20th century legend
Shamim Javed, Robert P Schubert and Ki-Hong Ku, Virginia Tech, United States of America
Paper ID: 372

2:30 – 3:00   Discussion

Computational Intelligence in Archaeology

Session ID: 114

Session Type: Papers

Chair: Juan Antonio Barcelo, Universitat Autonoma de Barcelona, Spain

Date: Tuesday March 24, 2009, 8:30 am – 11:45 am   Room: Patriot

Session Abstract:

Computational (or "Artificial") intelligence is not just about robots. It is about understanding the nature of intelligent thought and action using computers as experimental devices. The purpose of this session is to present investigations about the nature of inferential mechanisms for archaeological explanation, and how computer programs allow us to discover how we produce inferences.

The discussion should be between what is considered an artificial way of reasoning (computer programs) and our supposed natural way of reasoning (verbal narrative). Critics of the Constructive and Formalized view of archaeological discipline are ignorant of the true renaissance of the cybernetic paradigm experienced in the late 1980s, and its integration with new paradigms of cognitive science, philosophy and the "New" artificial intelligent paradigm. One reason for its resurgence is the discovery of more powerful machine learning algorithms: new generation adaptive algorithms (neural networks, support vector machines, genetic algorithms, Bayesian models) appear to be formally true universal mechanism devices.

If we want to reproduce human intelligence in a machine, we should make emphasis on three central aspects: development, interaction, and integration. Development forms the framework by which machines should imitate the way humans successfully acquire increasingly more complex skills and competencies. Interaction should allow an "automated archaeologist" to use the world itself as a tool for organizing and manipulating knowledge, it allows them to exploit humans for assistance, teaching, and knowledge. Integration should permit the automated archaeologist to maximize the efficacy and accuracy of complementary mechanisms for perceiving and acting. These subjects are inspiring a new generation of cyberneticists in the fields of situated robotics or "New Artificial Intelligence", and they offer an interesting domain for debating what it means to "produce" knowledge.

To imitate a human scholar, an "automated" archaeologist should not be fully programmed since the beginning, but developmentally. The gradual acquisition of interpretive skills and the consequent gradual expansion of the automated archaeologist capacities to explain archaeological observables (creating more and more self-training data as it does so) will define then the cognitive behavior of an "intelligent" machine. This strategy facilitates learning both by providing a structured decomposition of skills and by gradually increasing the complexity of the task to match the competency of the system. Behaviors and learned skills that have already been mastered prepare and enable the acquisition of more advanced explanations by providing sub-skills and knowledge that can be re-used, by placing simplifying constraints on the acquisition, and by minimizing new information that must be acquired.

This special session pretends to explore the implications in archaeology, both theoretically and methodologically of Machine learning. Suggested contributions can be about the application of standard "Artificial Intelligence" tools and methods (Neural networks, Agent-based simulations, Genetic Algorithms, Expert Systems, Bayesian networks, Automated Induction, Rule generation, etc.) but specifically on any contribution at the interface between theory and method, that is to say, investigations using computers to discover the way we think.

Topics: Other
Keywords: Artificial Intelligence, machine learning, Neural networks

Papers:

8:30 – 9:00   Towards Indexing and Data Mining all the Worlds Rock Art
Eamonn Keogh, Sang-Hee Lee, Qiang Zhu, Xiaoyue Wang and Taryn Rampley, University of California - Riverside, United States of America
Paper ID: 192

9:00 – 9:20   Where do you want to go today? Pathfinding, algorithms and agent-based modeling
Martin Hinz, Institut für Ur- und Frühgeschichte, Christian-Albrechts-Universität Kiel, Germany
Paper ID: 299

9:20 – 9:50   Automatic Construction of Typologies for Massive Collections of Projectile Points and other Cultural Artifacts
Eamonn Keogh, Lexiang Ye, Taryn Rampley and Sang-Hee Lee, University of California - Riverside, United States of America
Paper ID: 377

10:00 – 10:15   Coffee break

10:15 – 10:45   A proposal of ceramic typology based on the image comparison of the profile
Ana Luisa Martínez-Carrillo, Arturo Ruiz-Rodriguez, Andalusian Center of Iberian Archaeology, University of Jaén, Spain; Manuel Lucena and Jose Manuel Fuertes, Computer Sciences Department, University of Jaén, Spain
Paper ID: 240

10:45- 11:15   Visualization and Automatic Typology Construction of Ceramics Profiles
Laurens van der Maaten, Tilburg Centre for Creative Computing, University of Tilburg, Netherlands; Guus Lange, National Service for Archaeology, Cultural Landscape, and Built Heritage, Netherlands; and Paul Boon, Tilburg Centre for Creative Computing, University of Tilburg, Netherlands
Paper ID: 280

11:15 – 11:35   3D Pottery Shape Similarity Matching Based on Digital Signatures
Anestis Koutsoudis and Christodoulos Chamzas, Department of Electrical and Computer Engineering, Democritus University of Thrace, Xanthi, Greece
Paper ID: 272

Computational Intelligence in Archaeology: Quantitative Methods and Other Approaches (General Session)

Session ID: GS2

Session Type: Papers

Chair: Juan Barcelo

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Tidewater B

Papers:

8:30 – 9:00   Multitemporal landscape history in Burgundy: An innovative application of genealogy software
Elizabeth Anne Jones, University of North Carolina at Chapel Hill, United States of America
Paper ID: 182

9:00 – 9:20   Continuity and change: a study of the shape of late neolithic and early bronze age vessels from the Netherlands
Vincent Mom, DPP Foundation, The Netherlands, and Erik Drenth, Archeomedia, Capelle aan den IJssel, The Netherlands
Paper ID: 245

9:20 – 9:40   Cogitating Prehistoric Archaeological Landscape with Pattern Recognition
Prakash Sinha, University of Allahabad, Allahabad, India, India
Paper ID: 207

9:40 – 10:00   Dividing time, space and social factors. A multivariate analysis of Early Bronze Age funerals of the Unětice Culture
Martin Hinz, Institut für Ur- und Frühgeschichte, Christian-Albrechts-Universität Kiel, Germany
Paper ID: 300

10:00 – 10:15   Coffee break

10:15 – 10:35   Dendro-similarity
Vincent Mom, DPP Foundation,The Netherlands; Joachim Schultze, Forschungsprojekt Haithabu, Archäologisches Landesmuseum Schloß Gottorf, Schleswig (GE);Sigrid Wrobel, Federal Research Institute for Rural Areas, Forestry and Fisheries, Institute of Wood Technology and Wood Biology, Hamburg (GE); and Dieter Eckstein, University of Hamburg, Dept. of Wood Science, Division Wood Biology, Hamburg (GE)
Paper ID: 246

10:35 – 10:55   The Effects of Electrochemical Reduction on the Subsurface Corrosion of Iron from Terrestrial Settings.
Jason Lain Lunze, Virginia Museum of Natural History, United States of America
Paper ID: 235

10:55 – 11:15   Scientific Puzzle Solving: Current Techniques and Applications
Florian Kleber and Robert Sablatnig, Vienna University of Technology, Austria
Paper ID: 156

11:15 – 11:45   Discussion

Computer Applications in Maritime Sites

Session ID: 132

Session Type: Papers

Chairs: Eric Dennis Ray and Peter Bryson Campbell, Program in Maritime Studies, East Carolina University, United States of America

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Liberty

Session Abstract:

Maritime sites present a unique set of challenges to archaeologists. The sites are sometimes submerged, limiting time and equipment on-site. They are frequently inaccessible to the public, making effective outreach difficult. Added to these issues, ships are incredibly complex structures, consisting of a variety of quickly-decomposing organic materials arranged in non-uniform, complicated ways.

Increasingly, high-tech methods are being used to overcome these challenges. Maritime archaeologists are using new surveying and rapid photogrammetric methods to rapidly survey sites at low-cost. Historical and archaeological data can now be visualized in new ways, allowing a better picture of what historic ships looked like, and how they were operated. The Internet is being harnessed for outreach, allowing the interested public to visit these inaccessible sites and connect with their maritime heritage.

These computerized methods are allowing much greater accuracy and higher speeds of recording, at a low cost. They are allowing fragmentary or sparse data from the archaeological and historical record to be reconstructed into models of complete ships, providing new information about usage, construction, rigging, and performance about these vessels - in some cases, vessels that are heavily deteriorated or even only existent in the historical record. Finally, all this data can be presented via virtual museums and the Internet, allowing public outreach with minimal site disturbance - a photograph requires no destruction of the site.

This session explores the particulars of some of these new methods. Papers in this session will detail new applications of computerized technology in a maritime context, including research, data collection and surveying, photogrammetry, reconstruction and modeling, and outreach and presentation methods.

Topics: 3D data capture and modeling, photogrammetry and imaging, high precision surveying, virtual museums
Keywords: maritime, reconstruction, visualization, surveying, photogrammetry

Papers:

8:30 – 9:00   The Nature and Potential Benefits of Geographic Information Systems in Submerged Cultural Resource Management
Gordon P. Watts, Jr., Tidewater Atlantic Research, Inc., United States of America and the Institute for International Maritime Research, Inc., United States of America
Paper ID: 336

9:00 – 9:20   Site Digitization and steps towards E-publication, Visualization and Comparative Data Analysis
Amer Bazl Khan, Flinders University, Australia
Paper ID: 338

9:20 – 9:40   Virtual 3D Approximation of a Phoenician 7th Century B.C. Boat: Mazarrón 1
Carlos Cabrera Tejedor, Texas A&M University, United States of America
Paper ID: 251

9:40 – 10:00   Reconstruction of archaeological features in mediterranean coastal environment by means of non-invasive techniques and its digital musealization.
Gaetano Ranieri, Francesco Loddo, University of Cagliari Italy; Alberto Godio, Stefano Stocco, University of Turin Italy; Pietro Lucio Cosentino, Patrizia Capizzi, Paolo Messina, University of Palermo Italy; Alessandra Savini, Vittorio Bruno, University of Milan Italy; Miguel Angel Cau,University of Barcelona Spain; and Margherita Orfila, University of Granada Spain
Paper ID: 281

10:00 – 10:15 Coffee break

10:15 – 10:45 3D Reconstruction of an 18th Century Sloop
Eric Dennis Ray, East Carolina University, United States of America
Paper ID: 390

10:45 – 11:15 High tech and low cost archaeological recording: Total station, Rhino CAD, and RhinoPhoto
Peter Campbell, East Carolina University
Paper ID: 389

11:15 – 11:45 Archaeological Documentation and Reconstruction of the 17A Derelict Vessel, Back River, Georgia
Joshua A. Daniel, Tidewater Atlantic Research, Inc., United States of America
Paper ID: 315

CyArk Digital Preservation (Part 1)

Session ID: 136M

Session Type: Papers

Chair: Elizabeth A. Lee, CyArk, United States of America

Date: Monday March 23, 2009, 1:30 pm – 3:00 pm   Room: Tidewater B

Session Abstract:

3D data capture is widely used for documentation and proves invaluable to cultural heritage. As 3D documentation becomes the standard for heritage sites, new problems arise around the complete process of capturing, producing, presenting, and archiving this digital media. Using CyArk's Digital Preservation Process as the session theme, several presentations will be given on the widespread implementation of this process. Presentations will be given by CyArk partners who have leveraged newly developed web-based applications to manage digital media and make it accessible to the general public. Presentations will also demonstrate how to add value to data by producing rich digital media and placing it within a spatial and cultural context. Presentations will also examine the CyArk web-based archive (http://archive.cyark.org) and its emphasis on user interactivity.

Papers presented will be selected from a wide range of disciplines, including professional survey firms, universities, the media and foundations.

The goal of the session is to foster awareness of the CyArk methodology and to encourage discussion about its adaptation for more widespread implementation.

Topics: 3D data capture and modeling, data management systems and other field applications, high precision surveying
Keywords: 3D, web-based, digital, interactivity

Papers:

1:30 – 2:00   Large Scale Implementation of Digital Preservation Methods
                Elizabeth A. Lee and Ben Kacyra, CyArk, United States of America
                Paper ID: 374

2:00 – 2:20   The Role of 3D Laser Scanning in Rescue Archaeology and Heritage Preservation, Case Studies from Ireland.
                Conor Graham, Gridpoint Solutions Limited, United Kingdom
                Paper ID: 286

2:20 -2:40   Designing the Next Generation Virtual Museum: Making 3D Artifacts Available for Viewing and Download
                Angelia Michelle Payne, Keenan Cole, Katie Simon, Center for Advanced Spatial Technologies and the University of Arkansas; Christopher Goodmaster, GeoMarine, Inc.; and Fredrick Limp, Center for Advanced Spatial Technologies and the University of Arkansas
                Paper ID: 348

2:40 – 3:00   High Definition Scanning of the Basilica of the National Shrine of the Immaculate Conception
                Alfred Amago, Precision Measurements, Inc., United States of America
                Paper ID: 392

CyArk Digital Preservation (Part 2)

Session ID: 136T

Session Type: Papers

Chair: Elizabeth A. Lee, CyArk, United States of America

Date: Tuesday March 24, 2009, 1:30 pm – 3:00 pm   Room: Patriot

Papers:

1:30 – 2:00   Large Scale Implementation of Digital Preservation Methods
Elizabeth A. Lee and Ben Kacyra, CyArk, United States of America
Paper ID: 374

2:00 – 2:20   LD3 Technology and Historical Preservation
John R. Brown and Chris Royak, CH2MHILL
Paper ID: 394

2:20 -2:40   Using 3D Laserscanning for the additional 3D documentation of new excavations from
different time periods
Erwin Christofori, Christofori Und Partner, Germany
Paper ID: 393

2:40 – 3:00   RADAAR Department experience in documentation and digital preservation of Ancient
Performing Spaces: from the Rome Coliseum to Athena Project.
Carlo Bianchini, Dipartimento RADAAR - "La Sapienza" Università di Roma, Italy
Paper ID: 354

Data Management (General Session)

Session ID: GS4

Session Type: Papers

Chair: Jeffrey Clark, North Dakota State University, United States of America

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Tidewater D

Papers:

8:30 – 9:00   Complex Networks in Archaeology
Maximilian G. Schich, Northeastern University, Boston, USA
Paper ID:335

9:00 – 9:30   An interactive system for storage, analysis, query and visualization of archaeological pottery
Ana Luisa Martínez-Carrillo, Arturo Ruiz-Rodriguez, Andalusian Center of Iberian Archaeology,University of Jaén, Spain; Francisco Mozas-Martinez and Jose Manuel Valderrama-Zafra, Department of Graphic Engineering, Design and Projects, University of Jaén, Spain
Paper ID: 169

9:30 – 10:00   Deducing event chronology in an archaeological documentation system
Øyvind Eide, Jon Holmen and Christian-Emil Ore, University of Oslo, Norway
Paper ID: 301

10:00 – 10:15   Coffee break

10:15 – 10:35   Structured data – vivid archaeology
Karin Lund, National Heritage Board Sweden, Sweden
Paper ID: 212

10:35 – 10:55   Storing and structuring archaeological information
Håkan Thorén, National Heritage Board, Sweden
Paper ID: 269

10:55 – 11:15   Web GIS supported implementation of the CIDOC CRM
Gerald Hiebel and Klaus Hanke, University of Innsbruck, Austria
Paper ID: 321

11:15 – 11:45   Project FNR 02/05/24 -- Espace & Patrimoine Culturel: assessment, critical analysis and perspectives
Jean-Noël Anslijn, National d'Histoire et d'Art du Grand-Duché de Luxembourg, Luxembourg; Frank Broniewski, Service d'histoire de l'art et d'archéologie de la Grèce antique, Belgium; Susanne Rick, Fonds National de la Recherche Luxembourg, Luxembourg and Foni Le Brun-Ricalens, National d'Histoire et d'Art du Grand-Duché de Luxembourg, Luxembourg
Paper ID: 388

Digital Approaches for Coins (General Session)

Session ID: GS6

Session Type: Papers

Chair: Jeffrey Clark, North Dakota State University, United States of America

Date: Monday March 23, 2009, 1:30 pm – 3:00 pm   Room: Constitution

Papers:

1:30 – 1:50   Simulacra Database Management System - An Object-Oriented approach towards
Knowledge Retrieval
Brienne R. Cignarella, Rutgers University, United States of America
Paper ID: 344

1:50 – 2:20   Encoded Archival Description for Numismatic Collections
Ethan Gruber, University of Virginia Library, United States of America
Paper ID: 150

2:20 – 2:40   Image Based Measurement of Ancient Coins
*Michael Herrmann, Sebastian Zambanini and Martin Kampel, Vienna University of
Technology, Austria*
Paper ID: 198

2:40 – 3:00   Discussion

Digital Humanities and Pedagogy

Session ID: 127

Session Type: Papers

Chairs: Arne R. Flaten, Coastal Carolina University, U.S.A and Alyson Gill, Arkansas State University, United States of America

Date: Wednesday March 25, 2009, 8:30 am – 3:00 pm   Room: Patriot

Session Abstract:

Digital Humanities projects address a wide range of locations, periods, physical materials and technical innovations, and their methodologies are as diverse as the topics they cover. While many programs focus on in-the-field tools or secondary research applications, others emphasize the end user and the dissemination of their materials. End users can be primary or secondary students, undergraduates, the general public, or museum audiences, but all of the designers of web pages, portable lecture/display units or kiosks are concerned with the platform appearance, accessibility, what materials are offered, and how intuitively the platform or interface functions. Digital Humanities projects also offer exceptional opportunities for collaborative research between faculty and students. The introduction of various hands-on technologies in the "classroom" can energize and heighten the learning experience.

The organizers of this session are interested in the diverse perspectives offered by data providers, producers, and end users of various Digital Humanities projects. These might include 3D models and virtual environments, GIS database construction and population, games, laser scanning, Podcasting, data retrieval matrices, software innovations, hardware installations for a variety of venues, or any combination thereof. Papers might address in-class methods and experiential learning, end user problems and solutions in various contexts, demographics, interdisciplinary opportunities and challenges, or any number of issues concerning the design, construction, implementation or use of Digital Humanities projects.

Topics: databases, 3D data capture and modeling, GIS, North American archaeology and digital technology, open source software in archaeology, photogrammetry and imaging, virtual museums, virtual reality
Keywords: digital models, digital humanities, virtual environments

Papers:

8:30 – 9:00   Using Computers in Romanian Archaeology. An Anthropological Approach
                 Cristian Francisc Schuster and Alexandru Morintz, Vasile Parvan Institute of Archaeology, Romania
                 Paper ID: 173

9:00 – 9:20   Reclaiming a Sense of Place: Geospatial Technologies and the Flat Rock Cemetery Project
                 Jeffrey Glover, Georgia State University; Kathryn Jackson, Greater Atlanta Archaeological Society; and Johnny Waits, Flat Rock Archive
                 Paper ID: 363

9:20 – 9:40   Shadows of Canaveral: The Application of VR to a Post World War II Subject.
Lori C. Walters, Charles E. Hughes and Eileen M. Smith, University of Central Florida, United States of America
Paper ID: 313

9:40 – 10:00   Sharing Archaeological Collections: The Virtual Vault Project
Douglas W. Gann, Center for Desert Archaeology
Paper ID: 291

10:00 – 10:15   Coffee break

10:15 – 10:35   National extensive databases in Norway – pitfalls in a bright future
Espen Uleberg and Mieko Matsumoto, Museum of Cultural History, University of Oslo, Norway
Paper ID: 339

10:35 – 10:55   Developing an Intuitive GIS Interface for Archaeological Data at the Pyrgos Museum, Greece
Todd Brenningmeyer, Maryville University, United States of America; and Sara Franck, University of Minnesota, United States of America
Paper ID: 205

10:55 – 11:25   Narrative and Content Combine in a Learning Game for Virtual Heritage
Jeffrey Jacobson, PublicVR, Boston, USA; Kerry Handron,Carnegie Museum of Natural History, Pittsburgh, USA; and Lynn Holden, PublicVR, Boston, USA
Paper ID: 334

11:25 – 11:45   *Outbreak*: Best practices and potential for the development of games for archaeology and history
Kevin Kee, Brock University, Canada
Paper ID: 302

11:45 – 1: 30   Lunch break

1:30 – 2:00   Learning history with the interactive mobile game Mediacaching
Thomas van Reimersdahl, Center for Applied Informatics, University of Cologne, Germany; Luca Vezzadini, Giuseppe Donvito, Virtual Reality & Multi Media Park, Torino, Italy; and Reinhard Förtsch, Institute of Archaeology, University of Cologne, Germany
Paper ID: 329

2:00 – 2:20   Learning, Access and Mobility (LAMB) for Cultural Heritage Education
Kari Uotila, Muuritutkimus company, Finland;University of Turku; Isto Huvila, bo Akademi University; Jari-Pekka Paalassalo, Ilkka Helenius, Jani Lindholm, Turku University of Applied Sciences; Minna Lääperi, Eura commun; Laura Puolamäki, University of Turku; and Sirpa Wahlqvist, Eura commun
Paper ID: 273

2:20 – 2:40   Developing Next-generation Virtual Museum of Traditional Japanese Arts based on Multi-view Image Analysis
Xin Yin and Hiromi T. Tanaka, Ritsumeikan University, Japan
Paper ID: 289

2:40 – 3:00   Exploring Thule Culture - Constructing virtual worlds for 3D theatres
                Richard M. Levy and Peter Dawson, University of Calgary, Canada
                Paper ID: 237

Electronic Cultural Atlas Initiative (ECAI) Sessions

Session Type: Papers

Organizer: Lewis Lancaster

Dates: Monday March 23, 2009 8:30 am – 3:00 pm   Room: Liberty
        Tuesday March 24, 2009, 8:30 am – 3:00 pm
        Wednesday March 25, 2009, 8:30 am – 11:45 am

Frontiers of Digital Culture

Session ID: ECAI_M1

Monday March 23, 2009, 8:30 am – 10:00 am

Chair: Lewis Lancaster, University of California, Berkeley, United States

Session Abstract:

The opening panel of ECAI deals with the current state of technology in terms of how representations of data are constructed and managed. Stephen Griffin of the National Science Foundation sets the theme while two leaders in software and data development, discuss Web 2.0 and the new uses of Virtual Reality in cultural studies.

Papers:

8:30 – 9:00   Developments in Digital Representation of Material Culture
                Steve Griffin, National Science Foundation

9:00 – 9:20   Reinventing the ECAI Clearinghouse - a Web 2.0 approach to research data
                Ian Johnson, University of Sydney

9:20 – 9:40   The Virtual Museum of the Western Han Dynasty
                Maurizio Forte, UC Merced

9:40 – 10:00   Discussion

Technology and Cultural History

Session ID: ECAI_M2

Monday March 23, 2009, 10:15 am – 11:45 am

Chair: Michael Buckland, University of California, Berkeley, United States

Session Abstract:

The emerging research and methodologies of technology and the study of cultures and their histories will be the theme of this panel. Lewis Lancaster, Director of ECAI opens the discussion with questions regarding approaches to markup of archival data as "event" rather than "object". The two presenters bring examples of how these applications can be used with historical examples in China and Vietnam.

Papers:

10:15 – 10:35   Archive as Event
                Lewis Lancaster, UC Berkeley

10:35 – 10:55   Hanoi 4D Analysis: Area Informatics Approach
                Mamoru Shibayama, Kyoto University

10:55 – 11:15   The Digital Gazetteer of Song Dynasty China
                Ruth Mostern, UC Merced

11:15 – 11:45   Discussion

Creating Digital Human Records

Session ID: ECAI_M3

Monday March 23, 2009, 1:30 pm – 3:00 pm
Chair: Timothy Tangherlini, UCLA, United States

Session Abstract:

The panel takes three areas of the world as examples for exploring the ways in which records of human activity are recorded and presented. David Blundell will initiate the exploration by reviewing the need of dealing with the local communities who are the object of research. Examples of both contemporary and ancient information provide the basis for dealing with the differing needs and problems of each period.

Papers:

1:30 – 1:50   Initiating a Sustainable Ethnographic Cultural Atlas from the Grassroots
                David Blundell, National Chengchi University, Taiwan

1:50 – 2:10   The Paradigm Changes of the Study of Chinese Buddhism: Perspectives from the Atlas
                of Chinese Religion Project
                Jiang Wu, University of Arizona

2:10 – 2:30   TBA
                David Germano, University of Virginia

2:30 – 3:00   Discussion

Digital Mapping as Communication

Session ID: ECAI_T1

Tuesday March 24, 2009, 8:30 am – 10:00 am
Chair: Paul Ell, Queens University, Belfast, Ireland

Session Abstract:

The issues of how digital mapping can be used to communicate information occupy the presentations of this session. Susan Whitfield, Director of the International Dunhuang Project of the British Library

provides a narration of how mapping can be used to deal with material related to the "Silk Road." The following presenters give examples of how the mapping can best be done and finally used in pedagogy.

Papers:

8:30 – 8:50   Mapping the Silk Road
               Susan Whitfield, IDP, British Library

8:50 – 9:10   GIS and Cultural Data
               Jianxiong Ge, Fudan University, Shanghai

9:10 – 10:00   Discussion

e-Resources - Space, Time and Text

Session ID: ECAI_T2

Tuesday March 24, 2009, 10:15 am – 11:45 am

Chair: Susan Whitfield, British Library, United Kingdom

Session Abstract:

Each of the panelists provides an existing and expanding project of how resources can be used from the full scope of the humanities and social science. Paul Ell gives the first report on the large project to capture Irish history data. The other speakers give examples in North America and Australia.

Papers:

10:15 – 10:35   Structure or Serendipity: e-Resource Development in Ireland, a Case Study
                Paul Ell, Queens University, Belfast, Ireland

10:35 – 10:55   Issues in Visualizing History - Early California Culture
                Jeanette Zerneke, UC Berkeley

10:55 – 11:15   Locating Missions in Space and Time: Lessons from the North American Missions Project
                Tracy Neal Leavelle, Creighton University

11:15 – 11:35   EarthTextSpaceTime: Making Historical Sources in Cities Available Through the Agency of GIS
                Felicity Morel-EdnieBrown, Department of the Premier and Cabinet, Australia

11:35 – 11:45   Discussion

Inventing paths in Digital Data

Session ID: ECAI_T3

Tuesday March 24, 2009, 1:30 pm – 3:00 pm

Chair: David Blundell, National Chengchi University, Taiwan

Session Abstract:

The Co-Director of ECAI, Michael Buckland opens this part of the conference with a report on explorations of how to assist users of digital libraries. The presenters will provide differing approaches to this task of assisting users. Imaging of data and special metadata for searching provide new approaches for users and creators of databases.

Papers:

1:30 – 1:50	Empowering Readers to Find Explanations: A 4W Approach *Michael Buckland, iSchool, UC Berkeley*
1:50 – 2:10	Spatiotemporal Tools and Metadata for Area Studies *Shoichiro Hara, Kyoto University*
2:10 – 2:30	Blue Dots - Visualization of Text Corpus *Howie Lan, UC Berkeley*
2:30 – 3:00	Discussion

Technology for Recreating the Past

Session ID: ECAI_W1

Wednesday March 25, 2009, 8:30 am – 10:00 am

Chair: Jiang Wu, University of Arizona, United States

Session Abstract:

A special panel with three international leaders in the fields of humanities, linguistics and robotics bring examples of recent research and findings. Tim Tangherlini shows how GIS can be used for folklore with unexpected results. Ruzena Bajcsy gives a demonstration of her current research on immersive photography while Fan I-chun shows how the large National Digital Archive of Academia Sinica can be exploited.

Papers:

8:30 – 8:50	Folklore Excavations: Machine Learning and historical GIS in a Folklore Corpus *Tim Tangherlini, UCLA*
8:50 – 9:10	Taiwan and Mainland China's Folklore Religion in terms of GIS and GPS *Fan I-chun, Academia Sinica*
9:10 – 9:30	Tele immersive environments: Meeting history in present *Ruzena Bajcsy, CITRIS, UC Berkeley*
9:30 – 10:00	Discussion

Text, Artifact and Narrative

Session ID: ECAI_W2

Wednesday March 25, 2009, 10:15 am – 11:45 am

Chair: Ruth Mostern, UC Merced, United States

Session Abstract:

The final panel of the ECAI series deals with how narrative can be traced along the mercantile routes. The textual tradition of Sanskrit moving from India into Central Asia is being digitized as a means of dealing with cultural heritage. Vietnam gives an example of how inscriptions become essential to a study of history.

Papers:

10:15 – 10:35   Silk Road - Path of Transmission of Avalokitesvara
Dorothy Wong, University of Virginia

10:35 – 10:55   A Sanskrit Buddhist Canon for the 21st Century
Miroj Shakya, University of the West

10:55 – 11:15   Mapping Buddhism in Vietnam
Hau Le Choung, Vietnam Buddhist University

11:15 – 11:45   Discussion

Envisioning the Past: Virtual Reconstructions of Archaeological Sites

Session ID: 121

Session Type: Papers

Chairs: Alyson Gill, Arkansas State University, United States of America; and Arne Flaten, Coastal Carolina University, United States of America

Date: Tuesday March 24, 2009, 8:30 am – 3:00 pm   Room: Tidewater A

Session Abstract:

Over the past decade various digital technologies ranging from three-dimensional reconstructions or models, laser scanning, GIS databases and digital mapping have been used to contribute to our understanding of various aspects of ancient sites. In some cases these tools have led to the creation of three-dimensional virtual models of buildings or of entire sites, while in others they have been used in a variety of contexts to address specific archaeological problems.

While acknowledging that there are some problems native to the creation and use of digital models, digital technologies can be an exceptionally powerful tool when used in reconstructions and there is information that can be gained from them that is not available through traditional archaeological means. Virtual reconstructions allow scholars to consider a vast array of theoretical issues for the built environment, including sight lines, the ways in which space would have functioned in antiquity, and how buildings would have interacted with each other. Three-dimensional digital models also allow us to engage a diverse set of experimental architectural problems, including lighting and engineering issues.

The organizers of this session are interested in the diverse perspectives offered by data providers, producers, and end users of three-dimensional models with respect to problems and possibilities presented by digital technologies as research tools in archaeology. This session is intended to foster discussion between these groups. Papers should focus on the ways in which digital technologies might be used as research tools, or the presentation of a specific project that models a specific digital research tool or set of tools in the study of a specific archaeological problem or site.

Topics: data management systems and other field applications, GIS, Google Earth and archaeology, North American archaeology and digital technology, virtual museums, virtual reality
Keywords: archaeology, 3D models, reconstructions, archaeometric, digital

Papers:

8:30 – 8:50   "The Storeroom of the Pithoi" at Akrotiri (Thera)- 3d Reconstruction
                Demetra Kriga, College Year in Athens, Greece
                Paper ID: 259

8:50 – 9:10   Architectural Analysis and 3d Reconstruction: A Case Study of Leopoli - Cencelle in
                Italy
                Giovanna Liberotti, Corrado Alvaro and Daniele Nepi, University of Rome "La Sapienza", Italy
                Paper ID: 151

9:10 – 9:30   Interactive visit of the city of Rome in the fourth century A.D
Philippe Fleury and Sophie Madeleine, Université de Caen Basse-Normandie, France
Paper ID: 166

9:30 – 9:50   Multimedia, Mythos and Mimesis: on the use of IST for the research, conservation and public outreach of CH - the Pafos roman mosaics as a case-study
Sorin Hermon, STARC - The Cyprus Institute, Cyprus and Demetrios Michaelides, Archaeological Research Unit University of Cyprus
Paper ID: 247

10:00 – 10:15   Coffee break

10:15 – 10:35   Virtual Sambor Prei Kuk: Weaving the Tangible and Intangible Cultural Heritage
Daniel Michon, Claremont McKenna College, United States of America; Yehuda Kalay, University of California, Berkeley; and Selina Lam, University of California, Berkeley
Paper ID: 364

10:35 – 10:55   The Study of the Armenian historical architectural heritage: the numerical model and the reconstruction of the geometric-structural model of Ereruk church
Hilde Romanazzi, Polytechnical University of Bari, Italy - School of Architecture, Italy
Paper ID: 345

10:55 – 11:15   3D technological platform at the Ausonius Institute (CNRS-University of Bordeaux)
Vergnieux Robert, Centre National de la Recherche Scientifique, France
Paper ID: 265

11:15 – 11:35   Participatory Research in Cyber Archaeology
Maurizio Forte, University of California, Merced, United States of America; and Eva Pietroni, CNR ITABC, Institute of Technologies Applied to Cultural Heritage
Paper ID: 206

11:45 – 1:30   Lunch break

1:30 – 1:50   Cyber-archaeology: embodiment experiments of training and research
Maurizio Forte and Nicolo' Dell'Unto, University of California, Merced, United States of America
Paper ID: 184

1:50 – 2:10   The Digital Shakers Project: First steps towards an online database on Shaker Architecture
Jose Kozan, University of Cincinnati, United States of America and Iara Beduschi Kozan
Paper ID: 382

2:10 – 2:30   Embedding Metadata into Virtual Reconstruction Models
Christopher Paul Redmann, Drexel University, United States of America
Paper ID: 201

2:30 – 2:50   Using Primary Resources, Geographic Information Systems (GIS) and 3D to Visualize Green Spring Virginia in the 18th Century.
David Clinton Frederick, National Park Service, United States of America
Paper ID: 337

Excavation to publication: developing and applying integrated digital technologies

Session ID: 115 and 116

Session Type: Papers and Round Table

Chair: Stephen Stead, Paveprime LTD, United Kingdom

Date: Monday March 23, 2009, 8:30 am – 5:30 pm   Room: Tidewater D

Session Abstract:

The UK JISC funded VERA (Virtual Environments for Research in Archaeology) project is a collaboration between the University of Reading (Department of Archaeology and School of Systems Engineering), University College London and York Archaeological Trust. Over the last two years, the project has looked at various aspects of the acquisition, management and dissemination of the digital record of the large research excavation at Silchester Roman Town, Hampshire, England. The project is centered on the IADB (Integrated Archaeological Database), which has been used as the excavation recording system at Silchester since the start of the archaeological project 12 years ago. A key aim of the VERA project has been to improve the accessibility of the digital records to co-workers, particularly those, such as artefact specialists who are not generally physically present on the excavation. In practical terms this has involved a number of themes:

- Trials of digital recording devices including hand held Internet tablets, digital pens and digital clipboards to speed up the availability of the digital records.

- Extensive user needs analysis, linked to these trials, to ensure that the solutions created fit problems exposed.

- New visualization techniques, both 2D through enhancements to the traditional stratigraphic matrix diagram, and 3D mechanisms.

- Improvements to IADB functionality and the user interface.

- Standardization of the IADB within a portal framework to improve security, accessibility and sustainability.

- Direct web report and database publication within the IADB framework.

During the course of the VERA project a number of important issues have arisen, including:

- The fragility of on-site infrastructure,

- The robustness and usability of digital recording devices,

- The central role of the Context Recording Sheet in excavation recording,

- Managing the introduction of new technologies and techniques into long running fieldwork projects with well established management and recording systems,

- The importance of training,

- The need for well established management and data validation procedures,

- The importance of extensive and detailed user needs analysis,

- The role of appropriate and useful visualization techniques, and whether legacy data can have a role in 3D visualizations.

- The appropriate open source model for applications such as the IADB and the data they contain.

In two ninety minute sessions, these issues will be covered in a number of papers to be submitted by members of the VERA team. Proposed topics include:

- Managing Change: introducing innovation into well established systems.

- User Needs Analysis: what do users really need and want?

- Innovation in Visualization: using data in innovative ways, which fulfils researcher needs.

- Evaluating Innovation: does it work? Is it worth it?

Papers are also invited from other CAA members who would like to address any of these issues, particularly from their own practical experience. The VERA project session will be chaired by Steve Stead.

It is proposed that the formal paper session should be followed by a round table discussion which would focus on the implications of the VERA project for the wider archaeological community. The round table will be chaired and moderated by Steve Stead and the panel will include both VERA and non-VERA participants.

Topics: databases, 3D data capture and modeling, data management systems and other field applications, open source software in archaeology
Keywords: VERA, IADB, User Needs, 3D

Papers:

8:30 – 9:00   Managing Change: Introducing Innovation into well-established systems
Emma Jane O'Riordan, Amanda Sarah Clarke and Michael Fulford, Department of Archaeology, University of Reading, United Kingdom
Paper ID: 203

9:00 – 9:30   Integrating New Technologies into Established Systems: a case study from Roman Silchester
Claire Rebecca Fisher, Claire Warwick and Melissa Terras, University College London, United Kingdom
Paper ID: 191

9:30 – 10:00   Preserving the Record - Context Recording in the Digital Age
Michael John Rains, York Archaeological Trust, United Kingdom; and Claire Rebecca Fisher, University College London, United Kingdom
Paper ID: 190

10:00 – 10:15 Coffee break

10:15 – 10:45 Ask not what GIS can do for you: current limitations and how to overcome them
Benjamin Ducke, Oxford Archaeology Digital Ltd, United Kingdom
Paper ID: 179

10:45 – 11:15 : iDAI.field and more - Documenting field projects at the German Archaeological Institute (DAI)

Felix Falko Schäfer, German Archaeological Institute, Germany, Institute for Classical Archaeology, University of Cologne, Germany, and Rainer Komp, German Archaeological Institute, Germany
Paper ID: 208

11:15 – 11:35   Large-scale preventive archaeological fieldwork: data collection and recording in France
Pablo Ciezar, Inrap, France / ArScAn UMR 7041
Paper ID: 204

11:45 – 1:30   Lunch break

1:30 – 1:50   The VERA information environment
Hugo Ranger Mills and Mark Baker, University of Reading, United Kingdom
Paper ID: 277

1:50 – 2:10   Accessing grey literature: Present and past
Catherine Suzanne Hardman
Archaeology Data Service, United Kingdom
Paper ID: 147

2:10 – 2:30   Precision Recording of Pompeian Standing Remains Via Stitched Rectified Photography
Michael Anderson, San Francisco State University, United States of America
Paper ID: 296

2:30 – 3:00   Solving old problems with new methods. Considerations about a Neolithic cemetery
Raluca Kogalniceanu, Giurgiu County Museum, Romania; and Alexandru Morintz, Vasile Parvan Institute of Archaeology, Romania
Paper ID: 174

3:00 – 3:15   Coffee break

3:15 – 5:30   Round Table (Session ID 116)
Chair: Stephen Stead, Paveprime LTD, United Kingdom

Participants: Michael John Rains, York Archaeological Trust, United Kingdom; Amanda Clarke, University of Reading, United Kingdom; Claire Fisher, University College London, United Kingdom; Carla Schroer, Cultural Heritage Imaging, USA; Eric Kansa, University of California, Berkeley, USA; Sarah Whitcher Kansa., Alexandria Archive Institute, USA; Julian Richards, Archaeology Data Service, United Kingdom; and Benjamin Ducke, Oxford Archaeology, United Kingdom

From Access to Collaboration and Synthesis: How do we get there?

Session ID: 140

Session Type: Round Table

Chair: Fraser D. Neiman, Thomas Jefferson Foundation, Monticello, United States of America

Participants: Worthy Martin, Steven Plog,University of Virginia; Jillian Galle, Thomas Jefferson Foundation, Monticello, United States of America Julian Richards, Archaeological Data Service; Willeke Wendrich, University of California at Los Angeles; and Watkinson Charles, The American School of Classical Studies at Athens

Date: Wednesday March 25, 2009, 3:15 pm – 5:30 pm   Room: Tidewater C

Round Table Description:

Increasingly, archaeologists have found that their quests to understand the past and to evaluate that understanding objectively require comparative analysis of multiple sites and assemblages, scattered across temporal scales ranging from decades to millennia and at spatial scales ranging from single sites to entire continents. The emergence of web-enabled database technologies has solved the base-level problem of access to data. However, the simple feasibility of web access is not enough to advance historical understanding.

This roundtable session is devoted to a wide-ranging consideration of the serious additional obstacles that remain, the assessment of recent strategies designed to overcome some of them, and a consideration of novel strategies that might successfully address others. Among the outstanding issues we consider are the difficult problems of coalescing existing datasets into large-scale databases to facilitate comparative and synthetic analysis.

Although some commonalities exist in the intellectual organization of the content of digital resources, the categories, allowable value ranges and modes of expression of that content vary widely: some incidentally, many substantially. These varieties occur across the full range of conceptualization: data storage forms, indexing mechanisms, collection management techniques, finding-aid forms, base archaeological classification measurement protocols, and levels of data aggregation. To what extent might these problems be solved by the post-hoc use of ontologies in integrating existing datasets? Can large-scale collaborative projects that seek to collect and integrate data related to a particular region or problem, on scales that have been previously unimaginable in the discipline, encourage sharing of measurement protocols and the data that result from their application, along with comparative and synthetic analysis? In the wake of two decades of post modernism and the correlated disengagement of much of our discipline with comparative research and the computing and quantitative skills required to execute it on large amounts of data, how can we ensure that curious archaeologists everywhere can receive the technical training required to take advantage of the new analytical opportunities? How can we foster the wider understanding of the critical roles that digital data sharing and preservation play in professional ethics?

In considering these and other questions, we emphasize not only the technical issues, but the social and cultural ones as well. Panelist contributions will feature case studies designed to illustrate concretely the issues involved and to catalyze discussion with the audience.

Topics: databases, data management systems and other field applications
Keywords: data sharing, collaboration, synthesis

GIS Applications (General Session)

Session ID: GS3

Session Type: Papers

Chair: Maurizio Forte, University of California, Merced, United States of America

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Tidewater C

Papers:

8:30 – 9:00   Multidisciplinary Integrative Georelational Database for Spatio-Temporal Analysis of
                 Expansion Dynamics of Early Humans
                 Michael Maerker, Volker Hochschild and Zara Kanaeva, Universitaet Tuebingen,
                 Germany
                 Paper ID: 297

9:00 – 9:30   Complex Social-Landscape's Data in GIS: a cognitive-processual methodology.
                 Simone Bonzano, Freie Universitaet Berlin, Germany
                 Paper ID: 242

9:30 – 10:00   From Pencil to Pentium: Digitizing the Classic Period Maya City of Chunchucmil,
                 Yucatán, Mexico
                 Aline Magnoni and David Hixson, Tulane University, New Orleans, United States of
                 America
                 Paper ID: 236

10:00 – 10:15   Coffee break

10:15 – 10:35   Over the hills and far away? Cost surface-based models of prehistoric settlement
                 hinterlands
                 Axel G. Posluschny, Roman-Germanic Commission of the German Archaeological
                 Institute, Germany
                 Paper ID: 228

10:35 – 10:55   Determining Function of Pompeian Sidewalk Features through GIS Analysis
                 Claire Jeanette Weiss, Via Consolare Project, United States of America
                 Paper ID: 295

10:55 – 11:15   Magura Uroiului (Hunedoara County, Romania) archaeological site from the perspective
                 of landscape archaeology
                 Liviu Maruia, Dorel Micle, Adrian Cintar, West University of Timisoara, Romania;
                 Angelica Balos, The Board of Culture, Cults and National Cultural Heritage of the
                 Hunedoara County, Romania; and Adriana Pescaru, University of Petrosani, Romania
                 Paper ID: 311

11:15 – 11:45   Analysing conflicts: battlefield archaeology and computers
                 Xavier Rubio Campillo, Universitat de Barcelona, Spain
                 Paper ID: 159

High Definition 3D-Surface Scanning in Arts and Cultural Heritage

Session ID: 122

Session Type: Workshop

Bernd Breuckmann, Breuckmann GmbH, Germany and William Mongon, Accurex Measurement Inc., United States of America

Date: Wednesday March 25, 2009, 3:15 pm – 5:30 pm   Room: Tidewater B

Workshop Abstract:

Prior to the invention of photography, there was only limited possibility to capture the real world in an objective way, main reason being that all kind of literature and arts, especially paintings and sculptures, contain an intrinsic subjective component. Although photography, and later on digital image processing, have provided complete new possibilities for archiving and documentation tasks, any 2D-technique is inherently characterized by strong limitations to reproduce the 3-dimensional world. However, within the last 5 years, advanced 3-dimensional surface scanners have been developed, now opening the 3rd dimension to digital image processing techniques.

The workshop will concentrate on topometrical high definition 3D-surface scanners, optimized for the requirements of arts and cultural heritage, allowing the 3-dimensional digitization of art objects and paintings at the highest level of resolution and accuracy.

- Focus of attention will be given on the following applications:
- Digitization of archaeological findings with highest definition
- Documentation and archiving of archaeological treasures
- Generating a digital fingerprint of paintings, incl. texture and 3D-information
- 3D-data capturing for the manufacturing of certified high accurate copies

Covering these subjects, the workshop is equally addressed to archaeologists, anthropologists, paleontologists as well as photographers, computer scientists, restaurateurs, conservators.

The workshop will consist of three parts:

- Part 1 will give an overview about the state of the art of high definition 3D-surface scanners
- In Part 2, two typical system configurations of high definition 3D-scanners are demonstrated.
- In Part 3, the audience can actively participate in the workshop.

Participants without previous knowledge in the field of 3D-scanning will be given the opportunity to gain their first experience in scanning archaeological objects. Attendees already familiar or experienced with 3D-scanning can broaden their knowledge in this field by getting in touch with the latest developments.

Participants for the Part 3 should at least have some basic experience using a PC under the Windows operating system.

For the presentation in Part 1 of the workshop, no limitation for the number of participants is required. The number of participants for Part 2 should not exceed 40, and for Part 3 it should be limited to 20.

The first two parts of the workshop will take 30 min. each, followed by a break of 15 min. For the third interactive part we suggest a length of 60 min. In total, the workshop will thus cover 135 minutes, including the break.

Topics: 3D data capture and modeling
Keywords: 3D data capturing, white light scanning, digital fingerprint of paintings, certified copies of archaeological treasures

Integration and Sharing of Cultural Information Resources

Session ID: 113

Session Type: Papers

Chair: Klaus E. Werner, Capitoline Museums, Italy

Date: Tuesday March 24, 2009, 8:30 am – 3:00 pm   Room: Tidewater D

Session Abstract:

Cultural heritage organizations – public or private museums; national and federal heritage agencies, cultural institutions, public archives – rely on many different kinds of information resources for their day-to-day work. Most of these are held in autonomous containers like word documents, databases, spreadsheets, image files, &c. which were not originally meant to interact with other resources.

This scenario is gradually beginning to change. We think it was actually the introduction of XML as lingua franca of most underlying file formats (or, where not as file format, so at least as meta data format) to make people aware of the potentialities of seeing data and documents as differently structured, but mere containers of information, which can and should to be accessible via a common API.

The in-house use of standardized APIs and the subsequent opening up and linking of information resources inside the cultural organizations themselves inevitably led to the idea of federated networks which would connect these same information resources between different cultural heritage organizations, too. Technically simple mechanisms like RDF/RSS feeds would allow ad-hoc aggregation of resources from different "knowledge domains" (Englebart).

Much of this is still in an early phase but one thing is clear: the possibility of search, retrieval, re-purpose, and aggregation of structurally different information resources originating from different knowledge domains will finally lead to greater contextualization of cultural objects – something, which seemed to have been lost long ago, even before every institution began storing its information in closed data silos – and, as a side-effect, lead to more collaboration between different cultural heritage organizations.

The session will therefore concentrate on three points: (1) the **content** of the information resources we think worth exposing, (2) the laborious re-construction of the **context** between cultural objects and information resources, (3) the **collaboration** (technical and organizational) between different cultural heritage institutions.

Topics: databases, data management systems and other field applications, Other
Keywords: information resources, cultural heritage, API, mashup, knowledge domain

Papers:

8:30 – 8:50   A Unified System for the Management of Information Resources. The Case of the Capitoline Museums, Rome
Klaus Werner, Capitoline Museums, Italy
Paper ID: 391

8:50 – 9:10   Archiving Archaeological Spatial Data: Standards and Metadata
                   Robert Shaw, Anthony Corns, The Discovery Programme, Ireland (Republic of); and
                   John McAuley, Digital Media Centre, Dublin Institute of Technology
                   Paper ID: 187

9:10 – 9:30   Development of an Archaeological Spatial Data Infrastructure (SDI): Democratising
                   tools and data
                   Anthony Corns, Robert Shaw, The Discovery Programme, Ireland (Republic of) and John
                   McAuley, Digital Media Centre, Dublin Institute of Technology, Ireland (Republic of)
                   Paper ID: 188

9:30 – 10:00   Site Geographic Information System's technological development ,status and benefit at
                   Taiwan
                   Jr Jie Jang and I Chun Fan, Taiwan, Taiwan
                   Paper ID: 307

10:00 – 10:15   Coffee break

10:15 – 10:35   AMASDA Online: Creation and Implementation of an Online Site and Project
                   Management System and GIS for the State of Arkansas
                   John Richard Samuelsen, Arkansas Archeological Survey, United States of America and
                   the University of Arkansas
                   Paper ID: 220

10:35 – 10:55   How to establish national database systems: cooperate or dictate?
                   Espen Uleberg, Museum of Cultural History, University of Oslo, Norway and Joel Boaz,
                   Directorate for Cultural Heritage
                   Paper ID: 340

10:55 – 11:15   Grass-roots imaging: a case-study in sustainable heritage documentation at Chersonesos,
                   Ukraine
                   Adam Rabinowitz, University of Texas at Austin, United States of America; Carla
                   Schroer and Mark Mudge, Cultural Heritage Imaging, United States of America
                   Paper ID: 360

11:15 – 11:45   Integrating and querying diverse digital resources in classical epigraphy
                   Mark Hedges, Tobias Blanke, Stuart Dunn and Gabriel Bodard, King's College London,
                   United Kingdom
                   Paper ID: 167

11:45 – 1: 30   Lunch break

1:30 – 1:50   Sharing interpretation with Virtual Reality Web labs
                   Sofia Pescarin, CNR, Italy
                   Paper ID: 215

1:50 – 2:10   Visualizing the Past: Tools and Techniques for Understanding Historical Processes
                   James W. Wilson, James Madison University, United States of America
                   Paper ID: 353

2:10 – 2:30   Digitizing the Material World of Williamsburg
Jeffrey Eugene Klee, Colonial Williamsburg Foundation, United States of America
Paper ID: 342

2:30 – 3:00   Extending Archival Standards to support graphical documentation
Jose M. Aroza, Celia Moncada and F. Javier Melero, Univ. Granada, Spain
Paper ID: 330

New Dimensions in Profile Modeling: Rapid Digitization of Archaeological Objects

Session ID: 119

Session Type: Workshop

Chair: Douglas W. Gann, Center for Desert Archaeology, United States of America

Date: Tuesday March 24, 2009, 3:15 pm – 5:30 pm   Room: Tidewater B

Workshop Abstract:

Profile modeling allows for the rapid, accurate, and low-cost digitization of three dimensional objects or artifacts without the use of expensive and cumbersome LIDAR scanning. Within the profile modeling process, digital representations of three dimensional artifacts are created through the use of calibrated digital photography. Photo-realistic texture maps are then automatically generated, along with associated U V mapping data. The resulting three dimensional models generated by this process have tremendous utility in research and interpretive contexts, with the most obvious applications being in virtual museum and virtual reality display systems.

A NEH funded prototype of this technology, currently being used for the digitization of large collection of southwestern ceramics, is available on-line at http://www.cdarc.org/vv/vv-example-1.html. A pdf version of this prototype is available at http://www.cdarc.org/vv/gp-4730.pdf.

This workshop will critically examine the benefits and drawbacks of profile modeling by demonstrating the profile modeling process on a variety of real or replica artifact types. Different profile modeling systems will be compared for the discussion of suitable applications in archaeological research.

Workshop participants will be given a DVD Rom with raw data sets and trial versions of all of the software necessary to create a detailed three dimensional artifact model of their own choice. Workshop participants will need to either bring a suitable MS Windows based laptop, or be provided with a similar workstation for participating in the creation of three dimensional artifact models. Should time and the setting allow an extended demonstration, workshop participants should be able to generate their own data set for an artifact model of their choice.

This demonstration will utilize end user instruction with the programs 3d Solid Object Modeler Professional Version 2, Strata Photo 3d and Strata Live 3d. Additional demonstrations will employ the use of Virtual Reality Markup Language (VRML) display software, 3d Studio Max and Adobe Acrobat to highlight additional refinements and applications of the end result of profile modeling projects.

Upon completion of this 2 hour workshop, participants should be able to begin using profile modeling for the rapid digitization of the morphology and texture of three dimensional artifacts. Workshop participants will also be provided with a basic working knowledge of the techniques used to share these models over the internet through HTML using Javascript, Flash, or Shockwave as well as PDF and VRML display systems.

Topics: 3D data capture and modeling, photogrammetry and imaging, virtual museums, virtual reality
Keywords: 3d, Digitizing, Modeling, Virtual, Museum

The New ICOMOS Ename Charter (2008) on the Interpretation and Presentation of Cultural Heritage Sites: What Impact Can Digital Technologies *Really* Have on Public Heritage?

Session ID: 141

Session Type: Papers

Chairs: Neil Silberman and Elizabeth Chilton, University of Massachusetts Amherst, United States of America

Date: Monday March 23, 2009, 8:30 am – 11:45 am   Room: Tidewater B

Session Abstract:

Heritage professionals in the humanities and social sciences have turned their attention in recent years to questions of contemporary social significance and context as well as to documentation and research. This has become increasingly important to the conduct of economically-sustainable, community-based heritage activities. Such international documents as the 2003 UNESCO Intangible Heritage Convention, the 2005 Council of Europe Faro Framework Convention for the Role of Heritage in Society, and the 2008 ICOMOS Ename Charter on the Interpretation and Presentation of Cultural Heritage Sites (www.enamecharter.org) have provided guidelines for action.

The purpose of this session will be to present new approaches and methodologies that go far beyond the traditional aims of academic research and tourist promotion—toward a new, more socially conscious heritage of the 21st century. This session will bring together technologists, humanities scholars, and social scientists to examine the potential role of Cultural Heritage ICT in the following areas of emerging interest:

  • **Intangible Heritage and Collective Memory** – The domain of heritage has today moved from a primary involvement with the physical preservation of built structures and historical sites to a wider focus on evolving urban landscapes, cross-cultural routes, vernacular architecture, intangible heritage, minority and indigenous heritage, and collective memory. In a word, public reflection on the **significance** of the past for contemporary society has become as important as the conservation of its physical remains. What will Cultural Heritage ICT play in the coming years?

  • **Community Participation** – Through community-based initiatives and innovative public pro-grams, growing numbers of people from all walks of life have been become involved—not only as passive consumers and visitors, but as active partners—in the development and support of historic sites and heritage-related activities. In what practical ways can CH ICT facilitate this emerging trend?

  • **Heritage Conflict and Consensus** – Everyone knows about the role of ICT in the virtual reconstruction of the Buddhas of Bamyan. Yet what role can CH ICT play to contain or even prevent future explosions of inter-ethnic violence—and destruction of heritage resources—in other regions of the world?

The session will be divided into two 90-minute sections, each with three 20 minute papers and 30 minutes for general discussion. The emphasis will be on interdisciplinary collaboration and specific tools to implement ICT applications and to measure their success in contemporary social contexts.

Topics: Other

Keywords: Social Context, Public Heritage, Community, Collective Memory

Papers:

8:30 – 8:50   Introduction: What is the ICOMOS Ename Charter and How Does it Relate to Digital Technologies?
Neil Silberman, University of Massachusetts Amherst, United States of America
Paper ID: No ID

8:50 – 9:10   Hidden cities: authenticity and city fabric
Felicity Morel-EdnieBrown, Department of the Premier and Cabinet, Australia
Paper ID 320

9:10 – 9:30   Public Involvement in Multiple Interpretation of Cultural Heritage through 3D Blog and Photo-logging
Rieko Kadobayashi, National Institute of Information and Communications Technology, Japan
Paper ID: 327

9:30 – 10:00   Discussion

10:10 – 10:15 Coffee break

10:15 – 10:35 Creating a Sense of Place Through Archeology: Transforming Communication and Engaging Community Through the Internet
Giovanna Peebles, State of Vermont, United States of America
Paper ID: 376

10:35 – 10:55 Re-locating Meaning in Heritage Archives: A Call for Participatory Heritage Databases
Angela Labrador and Elizabeth Chilton, University of Massachusetts Amherst, United States of America
Paper ID: 386

10:55 – 11:45 Discussion

Poster Session 1

Session ID: P_M2

Session Type: Posters

Chair: TBD

Date: Monday March 23, 2009, 10:00 am – 11:45 am   Room: Colony

Posters:

The Archaeology of Deforestation in Ancient Rough Cilicia (Turkey)
Nicholas K. Rauh, Purdue University, United States of America; Christopher Dore, sricrm.com, United States of America; Martin Doyle, UNC-Chapel Hill, United States of America; Hulya Caner and Unal Akkemik Istanbul U., Turkey
Paper ID: 161

Automatic pen-and-ink drawings of 3D archaeological objects
Beatriz Ramos and Fco. Javier Melero, Univ. Granada, Spain
Paper ID: 331

From virtuality to reality: contributions of 3D printing
Bruno Dutailly, Hélène Coqueugniot, Pascal Desbarats, Stefka Gueorguieva and Rémi Synave, CNRS / University Bordeaux 1, France
Paper ID: 271

How to create a virtual mountain with a map, compass and camera
Ralf Gehrke, University of Applied Sciences Berlin, Germany
Paper ID: 274

RICH Results
Guus Lange, National Service for Archaeology, Cultural Landscape, and Built Heritage, Netherlands; Laurens van der Maaten, Paul Boon and Hans Paijmans, Tilburg Centre for Creative Computing, University of Tilburg, the Netherlands
Paper ID: 283

A Sanskrit Buddhist Canon for the 21st Century
Miroj Shakya, University of the West, United States of America
Paper ID: 317

SHARE I.T. (Spatial Heritage & Archaeological Research Environment I.T.)
Anthony Corns, Robert Shaw, The Discovery Programme, Republic of Ireland; John McAuley, Digital Media Centre (DMC), Dublin Institute of Technology, Republic of Ireland; Robert Sands, UCD School of Archaeology, Republic of Ireland; and Kieron Goucher, Margaret Gowen & Co. Ltd, Republic of Ireland
Paper ID: 189

Tagged – Digital Photography and Archaeologists
Hugh Southgate Corley, English Heritage, United Kingdom
Paper ID: 279

The 3D Documentation Labor of the Madrid's Community Archaeological Heritage
Jorge López Quiroga, Universidad Autónoma de Madrid (UAM), Spain; Francisco José López Fraile, Jorge Morín De Pablos, Departamento de Arqueología, AUDEMA, Spain; Artemio M. Martínez Tejera and Laura García Pérez, Universidad Autónoma de Madrid (UAM), Spain
Paper ID: 402

3D Reconstructions of Archaeological Sites from Madrid's Community
Jorge López Quiroga, Universidad Autónoma de Madrid (UAM), Spain; Francisco José López Fraile, Jorge Morín De Pablos, Departamento de Arqueología, AUDEMA, Spain; Artemio M. Martínez Tejera and Laura García Pérez, Universidad Autónoma de Madrid (UAM), Spain
Paper ID: 403

A Toolbox for Manuscript Analysis
Melanie Gau, University of Vienna, Austria; Maria Vill, Florian Kleber, Markus Diem, Vienna University of Technology, Austria; Heinz Miklas, University of Vienna, Austria; and Robert Sablatnig, Vienna University of Technology, Austria
Paper ID: 385

Poster Session 2

Session ID: P_T1

Session Type: Posters

Chair: TBD

Date: Tuesday March 24, 2009, 8:30 am – 10:15 am   Room: Colony

Posters:

Aerial and Near-Surface Remote Sensing at the Prehistoric Old Town Ridge Site in Northeastern Arkansas
Jami J. Lockhart, Juliet E. Morrow and Shaun McGaha, Arkansas Archeological Survey / University of Arkansas, United States of America
Paper ID: 219

The Application of a Georelational Database and Data Mining Technologies for Predictive Site Modeling for the Paleolithic of the Iranian Plateau
Michael Maerker, Saman Heydari, Nicholas Conard, Zara Kanaeva and Volker Hochschild, Universitaet Tuebingen, Germany
Paper ID: 298

Commerical application of archaeological predictive modeling for B.C. forestry
Kimberly Lynn Jankuta and Kristin Elizabeth Soucey, Altamira Consulting Ltd., Canada
Paper ID: 258

Communication Routes and its Role in the Structuration of the Late Antique Territory of Majorca (Balearics Islands, Spain)
Catalina Mas Florit, Patricia Murrieta Flores, David Wheatley, and Miguel Angel Cau Ontiveros
Paper ID: No ID

Development of New Technology for Virtual Georadar Modeling of Archaeological Memorials
Dmitry Leonidovich Shishkov, geor.ru, Russian Federation; and Anna Aleksandrovna Klochko, Lomonosov Moscow State University, Russian Federation
Paper ID: 323

Directions of magnetization
Bruce W. Bevan, Geosight, United States of America
Paper ID: 158

eGISpat Timis. Topographic 3D measurements using the Total Station and GIS processing in the analysis of the archaeological sites in Timis County, Romania
Dorel Micle, Maruia Liviu and Adrian Cintar, West University of Timisoara, Romania
Paper ID: 309

From Atlas to satellite, From Gsell to Quickbird through archaeological evidences
Anna Maria Marras, University of Siena, Italy
Paper ID: 359

Geomagnetic Survey at Zincirli Höyük, Turkey
Jason Thomas Herrmann and Jesse Casana, University of Arkansas, United States of America
Paper ID: 211

New discoveries from magnetic surveys at classical sites
Tatiana N. Smekalova, Moesgård Museum, Denmark/Danish National Research Foundation's Centre for Black Sea Studies University of Aarhus, Denmark
Paper ID: 149

Remote sensing and GIS applied to the study of an Iberian Iron Age oppidum's hinterland: La Carència project (Valencia, Spain)
Hector A. Orengo, Ana Ejarque, Catalan Institute of Classical Archaeology, Spain; and Rosa Albiach, Servei d'Investigació Prehistòrica de València, Spain
Paper ID: 303

Poster Session 2

Session ID: P_W3

Session Type: Posters

Chair: TBD

Date: Wednesday March 25, 2009, 1:30 pm – 3:15 pm   Room: Colony

Posters:

Architectural Analysis and 3D Reconstruction: A Case Study Of Leopoli - Cencelle In Italy
Giovanna Liberotti, Corrado Alvaro and Daniele Nepi, University of Rome "La Sapienza", Italy
Paper ID: 152

Costanziaco Project: an integrated archaeological approach to the study of settlements in the Northern Venetian Lagoon
Daniela Cottica, University of Venice, Italy; Arianna Traviglia and Luigi Fozzati, Soprintendenza per i Beni Archeologici del Friuli Venezia Giulia
Paper ID: 178

Large complex archaeological sites exploration: representation and interface perspectives
Camillo Trevisan, University IUAV of Venezia; and Fausto Brevi, Politecnico di Milano, Italy
Paper ID: 305

Modelling lithic distribution through GIS: A case study from Thessaly, Greece
Lia Karimali, Institute for Mediterranean Studies (I.M.S.) / Foundation of Research & Technology (F.O.R.T.H.), Greece; Dimitris Alexakis, Aristotle University of Thessaloniki, Greece; and Marilena Kokkinaki, Institute for Mediterranean Studies (I.M.S.) / Foundation of Research & Technology (F.O.R.T.H.), Greece
Paper ID: 253

NetConnect - Integrated System in Visualizing Archaeological Spaces
Ruth Beusing and Axel G. Posluschny, Roman-Germanic Commission of the German Archaeological Institute, Germany
Paper ID: 229

An Open-Source approach for the Syrian Landscape Archaeology
Simone Bonzano, Freie Universitaet Berlin, Germany
Paper ID: 241

Potential of an intra-site GIS in the excavation of a submerged wreck: the Napoleonic brigantine Mercure case study
Mariangela Nicolardi, Arianna Traviglia and Carlo Beltrame, University Ca' Foscari of Venice
Paper ID: 172

Strategic use of remote sensing and GIS in AIA for preservation of cultural heritage and archaeological landscapes.
Arianna Traviglia, University of Sydney, Australia
Paper ID: 238

Toward an anthropology of death: reconstruction of social dynamics in Roman necropolises using GIS and epigraphy
Angela Paveggio, Arianna Traviglia, Giovannella Cresci Marrone and Margherita Tirelli, Universita' Ca' Foscari di Venezia, Italy
Paper ID: 171

Virtual Rome
Valentina Vassallo, Sofia Pescarin, CNR, Italy; Luigi Calori, CINECA, Italy; Carlo Camporesi, Marco Di Ioia, CNR, Italy; Maurizio Forte, UCMerced, California, United States of America; Fabrizio Galeazzi, CNR, Italy; Silvano Imboden, CINECA, Italy; Alessia Moro, Augusto Palombini and Lola Vico, CNR, Italy
Paper ID: 249

Visualisation of culture heritage buildings and monuments using JAVA 3D
Carlos Acevedo Pardo, HafenCity University Hamburg, Germany; and Rolf Gabler-Mieck, Landesbetrieb Geoinformation und Vermessung Hamburg
Paper ID: 284

Practical resources and integrated services for preserving Cultural Heritage

Session ID: 125

Session Type: Workshop

Chair: Stephen Stead, Paveprime LTD, United Kingdom; Michael Ashley, Cultural Heritage Imaging, United States of America; Mark Mudge, Cultural Heritage Imaging, United States of America; Cinzia Perlingieri, University "l'Orientale" of Naples, University of California, Berkeley; and Carla Schroer, Cultural Heritage Imaging, United States of America

Date: Wednesday March 25, 2009, 8:30 am – 11:45 am　　　　　　　Room: Constitution

Workshop Abstract:

Themes addressed:

- Data acquisition and recording techniques for Cultural Heritage
- Documentation and Spatial Information Management
- Standards and documentation for Cultural Heritage
- Internet-based Cultural Heritage applications
- e-Libraries and e-Learning in Cultural Heritage
- Reports, activities and Integration of related disciplines and techniques

Purpose and benefits of this workshop: This workshop will take a holistic approach to comprehensive workflows that integrate best practices in the creation, management and preservation of digital resources for CH. We will explore the diverse standards for documenting cultural heritage sites, which can ensure 1) reliability of the resources; 2) open access to high quality resources; 3) long-term preservation; and 4) sharing and interoperability. Our aims for this workshop are three-fold, as is its structure:

Hour 1) Discuss and debate decision-making principles for digital informatics in cultural heritage documentation and preservation. What standards of practice mind both sides of the cultural/digital gap? Where are the decision-points in preservation workflows, and what are the alternatives? What technological solutions are of lowest risk and highest impact for heritage documentation? We will point to real-world standards in practice that are effective and will seek from the workshop participants other examples and resources in this critical domain.

Hour 2) Defining the digital universe of technological tools and practices already in use in heritage. While best practices and standards are useful when followed, the majority of legacy information for cultural heritage is squirreled away in hard drives, outdated software applications and outmoded methodologies. We raise this issue for discussion and offer an action plan for collecting a comprehensive list of risk areas and solutions for the digital deluge that is already upon us. We will outline mitigation, migration, archiving and repository strategies, and push for contributions from all participants.

Hour 3) Empirical provenance and 'process history'. Documenting the decision-steps in archaeological fieldwork and digital informatics - from photography, lab work, scanning, modeling, etc - are essential to building context, evaluating reliability and accuracy, as well as providing transparency and scientific replicability. Documenting documentation is rarely done to a sufficient level, for it is time

consuming and the perceived, present value is minimal. The CIDOC-CRM, an ISO standard, now includes options for 'empirical provenance,' where the entire process history of any event can be recorded and evaluated. We will demonstrate the phenomenal value of this approach to field and lab recording, and offer up solutions that make this documentation painless and immediately valuable.

Outcomes: Participants will come away with strategies for coping with their own digital deluges, as well as key opportunities to contribute to a growing network of digital heritage informatics professionals who are dedicated to the long term sustainability of our cultural past and digital future. We will work to integrate the outcomes from this workshop into existing working groups as well as form a new working community to carry on these particular subject areas.

Who should attend: Anyone interested in digital documentation and preservation strategies for cultural heritage are encouraged to attend.

Topics: CIDOC and other digital standards, databases, data management systems and other field applications, Other
Keywords: Cooperation, Integration, Standards, Requirements, Digital

Reality-based modeling and visualization of large and complex archaeological sites: theoretical achievements, current bottlenecks and technology perspectives

Session ID: 135

Session Type: Papers

Chairs: Gabriele Guidi, Politecnico di Milano, Italy and Carlo Bianchini, Università degli studi di Roma la Sapienza, Italy

Date: Monday March 23, 2009, 8:30 am – 3:00 pm   Room: Tidewater A

Session Abstract:

Several optical technologies are currently available for capturing the 3D digital shape of an archaeological site, based on satellite, aerial photogrammetry, GPS, laser scanning and close range photogrammetry with manual or automatic image matching. The attainable results are very much dependent on the intrinsic capability of each technology in terms of geometric resolution, accuracy, portability and flexibility. The possibility to integrate several 3D technologies in order to match different needs, allows the user to modulate the amount of geometrical points for properly describing a specific site or object. In addition, the use of digital photography for adding detailed textures involves another level of choice about how high the resolution of images should be for maximizing the archaeologically useful information. The final outcomes of each project directly refers to the construction of 2D representations or 3D models, where the former is comparable with the "traditional" archaeological iconography while the latter aims at exploiting the inner features of digital 3D representation.

In any case, the lack of a sound and shared methodology as well as bottlenecks at different stages constitute a strong limit in the whole pipeline. The impossibility to use active sensors in any condition or location might limit the acquisitions time during a field campaign forcing a consequent reduction in the collected data. The difficulties in creating and cleaning meshes (but sometimes even in producing conventional drawings from the acquired data), discourages some users from completing the process, leaving for example a survey in form of point clouds (maybe spectacular but not very useful in practical terms). The absence of commercial and powerful image processing tools able to derive automatically detailed and precise surface model from any data set orients users more towards active sensors than image-based approaches.

A relevant step certainly is then the visualization of the 3D model which can be done by means of videos (i.e. with sophisticate but time consuming off-line renderings) with fixed walk-thru paths, or real-time rendering - often in virtual reality environments -, that allows to freely navigate into the model, possibly linking the model with complementary information. The limitations in actual visualization packages may force users to simplify the geometric model with respect to the acquired high-resolution model for the impossibility of the platform to manage and visualize too many polygons. The difficulties in most 3D visualization systems of linking external information to the 3D models may keep off powerful and useful addictions to the representation of the site. Last but not least, the possibility to remotely manage the whole model through a web site is a project's feature often claimed by not always consistently fulfilled.

Session papers will focus on (i) discussing experiences in data acquisition and processing for archaeological sites documentation by means of integrated approaches, possibly with polygonal modeling and texture mapping and (ii) reporting the specific steps for local and remote visualization with the possible ways of connection to geographic information systems or archaeological databases.

Topics: 3D data capture and modeling, photogrammetry and imaging, high precision surveying, virtual reality
Keywords: 3D Recording, Data Acquisition, Laser Scanning, Photogrammetry, Texture Mapping, 3D Model Visualization, 2D and 3D representation from real data

Papers:

8:30 – 8:40   Introduction: Reality-based modeling and visualization: know how and know why
Gabriele Guidi

8:40 – 9:10   Towards a systematic theoretical approach in survey and modelling in archaeology.
Carlo Bianchini, RADAAR Department - "La Sapienza" Università di Roma, Italy
Paper ID:362

9:10 – 9:40   Digitizing the Pompeii Forum
Gabriele Guidi, Politecnico di Milano, Milan, IT; Fabio Remondino, ETH, Zurich, CH; FBK, Trento, IT; Michele Russo, Politecnico di Milano, Milan, IT; and Alessandro Rizzi, Trento, IT
Paper ID: 367

9:40 – 10:00   Integrated Methodologies for the study and the restoration of the Byzantine Saint Nicholas Monastic Complex.
Francesco Fassi, Federico Prandi, Raffaella Brumana, Luigi Fregonese, Politecnico di Milano, Milan Italy; and Gianclaudio Macchiarella, Università Cà Foscari, Venice Italy
Paper ID: 328

10:00 – 10:15 Coffee break

10:15 – 10:35 Research on 3D Reality-based modeling and 3D Virtual Walkthrough based on WebGIS for Large Archaeological Sites —Taking the Small Wild Goose Pagoda in Tang-Dynasty as the Case
Guo-hua GENG, Jun LIU and Xue-song WANG, Institute of Visualization Technology, Northwest University, Peoples Republic of China
Paper ID: 209

10:35 – 11:05 Virtual Rome VR webGIS
Sofia Pescarin, Augusto Palombini, Valentina Vassallo, CNR, Italy; Luigi Calori, CINECA, Italy; Carlo Camporesi, UC Merced, USA
Bruno Fanini, CNR, Italy; and Maurizio Forte, UC Merced, USA
Paper ID: 230

11:05 - 11:25 Multi-resolution tridimensional models for archaeological complex documentation.
Caterina Balletti, Università Iuav di Venezia, Italy; and Flora Gaetani, Politecnico di Milano, Italy
Paper ID: 361

11:25-11:45   Time constraints effects in 3D acquisition and data processing: the case of "Villa delle Vignacce"
Michele Russo, Dept. INDACO, Politecnico of Milano, Italy; and Darius A. Arya, American Institute for Roman Culture, Rome, Italy
Paper ID: 218

11:45 – 1: 30 Lunch break

1:30 – 2:00	The tools to operate reconstructions: an investigation on the vault systems of the Small Thermal Baths in Villa Adriana *Giorgio Verdiani, Sergio Di Tondo and Filippo Fantini, Università degli Studi di Firenze, Italy* Paper ID: 318
2:00 – 2:20	Real-time visualization of the Forum of Pompei *Alice Pignatel, Fausto Brevi and Sebastiano Ercoli, Politecnico di Milano, Italy* Paper ID: 325
2:20 – 3:00	Round Table on the session topic involving all the speakers and discussion with the audience

Seeing Beneath the Surface: Remote Sensing and Other Applications for Finding and Assessing Archaeological Sites (General Session)

Session ID: GS5

Session Type: Papers

Chair: Fraser D. Neiman, Department of Archaeology, Monticello, United States of America

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Patriot

Papers:

8:30 – 9:00   Digital Dunes: Site Structure as seen in GPR from Saruq al-Hadid, UAE
Jason Thomas Herrmann, University of Arkansas, United States of America
Paper ID: 210

9:00 – 9:20   Geophysical Prospection at Portus: An Evaluation of an Integrated Approach to Interpreting Subsurface Archaeological Features
Jessica Ogden, British School at Rome, Italy; Kristian Strutt, Archaeological Prospection Services of Southampton; Department of Archaeology, University of Southampton; Simon Keay, Graeme Earl, Department of Archaeology, University of Southampton; and Stephen Kay, British School at Rome, Italy; (APSS); Department of Archaeology, University of Southampton
Paper ID: 290

9:20 – 9:40   Ground penetrating radar, historic maps and GIS as operative tools in Swedish urban archaeology
Par Karlsson, National Heritage Board, Sweden
Paper ID: 270

9:40 – 10:00   A new grid balancing method for geophysics data
Jackson Cothren and Eileen Ernenwein, University of Arkansas, United States of America
Paper ID: 355

10:00 – 10:15   Coffee break

10:15 – 10:35   Tracing leveled earthworks at Petersburg
Bruce W. Bevan, Geosight, United States of America
Paper ID: 157

10:35 – 10:55   Geophysical Analysis of a Historic Archaeological Site
William J. Chadwick, John Milner Associates, Inc., United States of America
Paper ID: 387

10:55 – 11:25   Trenching On Trial: The Design of Effective and Efficient Trial Trenching Strategies for Discovering Archaeological Sites
Philip Verhagen, ACVU-HBS, The Netherlands and Arno Borsboom, Hazenberg Archeologie, The Netherlands
Paper ID: 264

11:25 – 11:55   Discussion

The Semantic Web: 2nd Generation Applications

Session ID: 134

Session Type: Papers

Chairs: Leif Isaksen, University of Southampton, United Kingdom and Tom Elliott, Institute for the Study of the Ancient World, New York University, USA

Date: Wednesday March 25, 2009, 8:30 am – 3:00 pm   Room: Tidewater D

Session Abstract:

Semantic Web technologies are increasingly touted as a potential solution to the data integration and silo problems which are ever more prevalent in digital archaeology. On other hand, there is still much work to be done establishing best practices and useful tools. Now that a number of projects have been undertaken by interdisciplinary partnerships with Computer Science departments, it is time to start drawing together the lessons learned from them in order to begin creating second generation applications. These are likely to move away from (or at least complement) the monolithic and large-scale 'semanticization' projects more appropriate to the museums community. In their place we will need light-weight and adaptable methodologies more suited to the time and cash-poor realities of contemporary archaeology.

This session will be a forum in which to present current work, appraise previous projects, identify best practices and look for collaborative opportunities. Papers are invited which explore the use of any Semantic technologies in archaeology – especially those recommended by the W3C: RDF(S), OWL and SKOS. Subject matter may be either abstract or with reference to a particular project but in either case should seek to engage with the unique technical challenges in this area. The target audience will have at least some previous experience in this field so a reasonably high level of technical discussion is expected. Specific areas of interest include (but are not restricted to):

- The role of the CIDOC-CRM as a domain ontology in archaeology
- Integrating live legacy databases
- Ontology mapping and alignment
- Spatial and temporal semantics
- Barriers to uptake amongst non-IT professionals
- Top-down (e.g. ontology-based) vs. bottom up (e.g. RDF/a-based) approaches
- CoolURIs and stable web dissemination
- Coreferencing
- Triple- and quad-stores
- Trust, authentication and reification
- Semi-antics: integration with RSS/Atom and Web 2.0 technologies
- Visualization and interfaces

Technical demonstrations are also welcomed. The session will conclude with time for general discussion and debate.

Topics: CIDOC and other digital standards, databases, data management systems and other field applications, Other
Keywords: Semantic Web, RDF, OWL, CIDOC CRM, data

Papers:

8:30 – 8:50   An Archaeologist's reflections on Semantics and the Web
Sorin Hermon, STARC - The Cyprus Institute, Cyprus; Achille Felicetti, PIN scrl - Universita degli studi di Firenze; Franco Niccolucci, STARC - The Cyprus Institute, Cyprus; and Denis Pitzalis, C2RMF-CNRS
Paper ID: 239

8:50 – 9:10   Extending and enriching the CIDOC-CRM ontology for task-ontological domain models
Achille Felicetti, PIN, University of Florence, Italy; and Andrea D'Andrea, CISA, Università degli Studi di Napoli "L'Orientale", Italy
Paper ID: 352

9:10 – 9:30   Implementing Semantic Web Software in the Field of Cultural Heritage Using the CIDOC CRM - Prospects and Challenges
Robert Kummer, Universität zu Köln, Germany
Paper ID: 225

9:30 – 9:50   Following a STAR? Shedding more light on Semantic Technologies for Archaeological Resources
Keith May, English Heritage, United Kingdom; Ceri Binding and Doug Tudhope, Glamorgan University, Faculty of Advanced Technology
Paper ID: 248

10:00 – 10:15   Coffee break

10:15 – 10:35   A Prototype for Managing Archeological Excavation Data in a Digital Library For the American School for Classical Studies at Athens
Thornton Staples, Fedora Commons, Inc., United States of America
Paper ID: 347

10:35 – 10:55   Implementing RDFa in the publication of ceramic data from Troy (Turkey)
Sebastian Heath, American Numismatic Society, United States of America; and Billur Tekkök, Baskent University, Turkey
Paper ID: 380

10:55 – 11:15   ArcheoInf -- Allocation of archaeological primary data
Matthias Lang, Institut für Archäologische Wissenschaften, Ruhr-Universität Bochum, Germany
Paper ID: 395

11:15 – 11:35   ArchaeoKM: toward a better archaeological spatial datasets management
Ashish Karmacharya, Institut i3mainz, am Fachbereich 1 - Geoinformatik und Vermessung, Germany; Christophe Cruz, Laboratoire Le2i, UFR Sciences et Techniques, Université de Bourgogne; France Frank Boochs, Institut i3mainz, am Fachbereich 1 - Geoinformatik und Vermessung, Germany; and Franck Marzani, Laboratoire Le2i, UFR Sciences et Techniques, Université de Bourgogne, France
Paper ID: 164

11:45 – 1: 30   Lunch break

1:30 – 1:50   Linking Archaeological Data
Leif Isaksen, Kirk Martinez, Graeme Earl, Nick Gibbins and Simon Keay, University of Southampton, United Kingdom
Paper ID: 217

1:50 – 2:10   Automatic Extraction of Archaeological Events from Text
Kate Frances Byrne and Ewan Klein, University of Edinburgh, United Kingdom
Paper ID: 282

2:10 – 2:30   Natural Language Processing within the Archaeotools Project
Michael D Charno, Stuart Jeffery, Julian D Richards, Archaeology Data Service, University of York, United Kingdom; Fabio Ciravegna, Natural Language Processing Research Group, University of Sheffield, United Kingdom; Stewart J Waller, Archaeology Data Service, University of York, United Kingdom; Sam Chapman and Ziqi Zhang, Natural Language Processing Research Group, University of Sheffield, United Kingdom
Paper ID: 288

2:30 – 3:00   Discussion

Short paper session for presentation of student's research projects

Session ID: 126

Session Type: Papers

Chair: Stephen Stead, Paveprime LTD, United Kingdom

Organizers: Stephen Stead, CAA Steering Committee, Paveprime LTD, United Kingdom; and Nick Ryan, CAA Steering Committee, University of Kent at Canterbury, United Kingdom

Sponsored by the CAA International Steering Committee

Date: Tuesday March 24, 2009, 10:15 am – 11:45 am   Room: Constitution

Session Abstract:

This session allows for students and new scholars to describe their current or new research project.

It is intended that this will provide a platform for students to give a brief (5 minutes maximum) presentation on their research. It is particularly aimed at first year Phd or Masters candidates who have only recently started their research. But all are welcome, young or old we do not care we are just interested in what you are up to!

It is hoped that this will give an opportunity for newcomers to gain some experience in giving papers at an international conference without the pressure of a full paper and the expectation of publication (although contributions can be submitted for publication if you want).

Some old CAA hands will be around to make suggestions as who might be a good person to "network" with (consumption of fluids is of course optional during such "networking").

It is organized as a series of short papers and additional time is available for late additions to the program. So you can submit a paper ahead of the conference or just turn up and give a brief outline of what you are embarking on. Pre-submitted papers may be considered by your department as a reason to help support you attending the conference.

So if you fancy getting you feet wet by presenting at CAA but don't fancy a full paper just yet or want a few pointers as to who might a good person to chat with, come along and tell us what you are up to!

As a final incentive the best contribution (as voted by the all attending the session) will receive a small prize (contributed by the CAA International Committee).

The session is organized by the CAA International Steering Committee as a part of the conference program. This is the third time such a session has been run.

Topics: Other
Keywords: Student presentations

Papers:

10:15 – 10:25   Revealing semantics behind user behavior in large scale object-oriented databases
        Andreas Geißler, German Archaeological Institute, Berlin; Research Archive for Ancient Sculpture at the University of Cologne; Research Institute in Computer Science for the Humanities at the University of Cologne
        Paper ID: 324

10:25 – 10:35   3D Visualization Interface for Cultural Landscapes and Heritage Information
Arnoud de Boer, Leen Breure and Hans Voorbij, Utrecht University, The Netherlands
Paper ID: 332

10:35 – 10:45   Collaboration of International Students and Spanish Archaeologists – A survey of Archaeological Excavations
Claudia Bothe, HafenCity Universität Hamburg, Germany
Paper ID: 333

10:45 – 10:55   Applying a Neutral Agent Based Model of Lithic Material Procurement to the Middle Atlantic Region, United States
Matthew D. Harris, John Milner Associates Inc., United States of America
Paper ID: 350

10:55 – 11:05   Archaeological Modeling in East Anglia and Norfolk
William Wilcox

11:05 – 11:15   Travelling in a Prehistoric Landscape: Exploring the Influences that Shape Human Movement
Patricia Murrieta Flores, Archaeology Department, University of Southampton, United Kingdom

11:15 – 11:45   Additional Student Papers and Discussion

Short paper session on research projects looking for collaborators

Session ID: 124

Session Type: Papers

Chair: Stephen Stead, Paveprime LTD, United Kingdom

Organizers: Stephen Stead, CAA Steering Committee, Paveprime LTD, United Kingdom; and Nick Ryan, CAA Steering Committee, University of Kent at Canterbury, United Kingdom

Sponsored by the CAA International Steering Committee

Date: Tuesday March 24, 2009, 8:30 am – 10:00 am   Room: Constitution

Session Abstract:

This session allows for projects, units, institutions, individuals and groups to ask for collaborators and data providers to help further their research.

It is a bit like a clearing house or brokerage session where you can find people that have data for you to test your new software on or have software to process some data that you have.

Students or their supervisors may be able to find research opportunities or projects for them to complete as part of a degree or masters program.

It is organized as a series of short papers and additional time is available for late additions to the program. So you can submit a paper ahead of the conference or just turn up and ask if anyone can help use up your free time or solve your problem!

So if you are looking for data or collaborators, need a project for a research student to work on or just have some free time, this is the place to come and announce it or volunteer!

The session is organized by the CAA International Steering Committee as a part of the conference program. This is the third time such a session has been run.

Topics: Other
Keywords: Collaboration

Papers:

8:30 – 8:50   Computer-aided Analysis of Michelangelo's Tool Marks
                David Koller, University of Virginia, United States of America
                Paper ID: 383

8:50 – 10:00   Additional Presentations and Discussion

Symposium on Digital Archaeology in North America

Session ID: NA

Session Type: Papers and Round Table

Chairs: Brian Rose, University of Pennsylvania, United States of America; Dean Snow, The Pennsylvania State University, United States of America; and Lu Ann De Cunzo, University of Delaware, United States of America

Sponsored by the Archaeological Institute of America (AIA); the Society for American Archaeology (SAA); and the Society for Historical Archaeology (SHA)

Date: Monday March 23, 2009, 8:30 am – 5:30 pm   *Room: Patriot*

Session Abstract

Led by the presidents of three of the largest professional archaeological associations based in North America-- the Archaeological Institute of America (AIA), the Society of American Archaeology (SAA), and the Society for Historical Archaeology (SHA)--this session has several goals: (1) to give North American archaeologists the opportunity to present their work utilizing digital technology to colleagues from elsewhere around the world in order to get feedback and constructive criticism; (2) to identify possible areas of new collaboration between North American digital archaeologists and their colleagues in CAA; and (3) to address problems, prospects, and challenges facing all archaeologists as they apply digital solutions to their research. It is hoped that through this session, the North American membership in CAA, which has grown steadily over the past decade, will expand at a faster pace as North American archaeologists have a chance to meet and interact with colleagues from elsewhere in the world who are making innovative contributions to the new field of digital archaeology.

The session will be broken down by professional organization, with each president serving as session chair of a group of scholars presenting papers representative of how digital technology is being employed in a given society. The session will conclude with a roundtable discussion in which the presidents and several other invitees will reflect on the strengths, weaknesses, and grand challenges that are reflected in the papers and discussions earlier in the day.

The **Archaeological Institute of America** (www.archaeological.org) promotes a vivid and informed public interest in the cultures and civilizations of the past, supports archaeological research, fosters the sound professional practice of archaeology, advocates the preservation of the world's archaeological heritage, and represents the discipline in the wider world. The Archaeological Institute of America (AIA) is North America's oldest and largest organization devoted to the world of archaeology. The Institute is a nonprofit group founded in 1879 and chartered by the United States Congress in 1906. Today, the AIA has with nearly 250,000 members and subscribers belonging to 104 societies in the United States, Canada, and overseas. The organization is unique because it counts among its members professional archaeologists, students, and many others from all walks of life. This diverse group is united by a shared passion for archaeology and its role in furthering human knowledge.

The Society for American Archaeology (www.saa.org) is an international organization dedicated to the research, interpretation, and protection of the archaeological heritage of the Americas. With more than 7,000 members, the society represents professional, student, and avocational archaeologists working in a variety of settings including government agencies, colleges and universities, museums, and the private sector. Since its inception in 1934, SAA has endeavored to stimulate interest and research in American archaeology; advocated and aid in the conservation of archaeological resources; encourage public access to and appreciation of archaeology; oppose all looting of sites and the

purchase and sale of looted archaeological materials; and serve as a bond among those interested in the archaeology of the Americas.

Formed in 1967, the **Society for Historical Archaeology** (www.sha.org) is the largest scholarly group concerned with the archaeology of the modern world (A.D. 1400-present). The main focus of the society is the era since the beginning of European exploration. SHA promotes scholarly research and the dissemination of knowledge concerning historical archaeology. The society is specifically concerned with the identification, excavation, interpretation, and conservation of sites and materials on land and underwater. Geographically the society emphasizes the New World, but also includes European exploration and settlement in Africa, Asia, and Oceania.

Papers:

Archaeological Institute of America
Chair: Brian Rose

8:30 – 8:40	Introduction *Brian Rose, James B. Pritchard Professor of Archaeology, University of Pennsylvania, United States; President, Archaeological Institute of America*
8:40 – 9:00	Rome Reborn 2.0: A Framework for Virtual City Reconstruction Using Procedural Modeling Techniques *Kimberly Anne Dylla, IATH, University of Virginia, United States of America; Pascal Mueller, Andreas Ulmer, Simon Haegler, Procedural, Inc., Switzerland and Bernard David Frischer, IATH, University of Virginia, United States of America;* Paper ID: 341
9:00 – 9:20	"Rome Reborn" and "SAVE": Archiving and Sharing a 3D Model of an Ancient City *David Koller, University of Virginia, United States of America* Paper ID: 375
9:20 – 9:40	Rome Reborn in Google Earth *Bernard D. Frischer, Sarah Wells, Doug Ross and Chad Keller, University of Virginia, United States of America* Paper ID: 373

Society for American Archaeology
Chair: Dean Snow

9:40 – 10:00	Making Legacy Literature and Data Accessible in Archaeology *Dean Richard Snow, The Pennsylvania State University, United States of America* Paper ID: 254
10:00 – 10:15	Coffee break
10:15 – 10:35	The role of technical, operational and conceptual specifications in the development of digital archaeological archives: the Digital Antiquity initiative *Fred Limp, University of Arkansas, United States of America* Paper ID: 255

10:35 – 10:55 How do we pay for this stuff? The Challenges of Financing an Archaeological Digital Archive
Jeffrey Altschul, SRI Foundation
Paper ID: 256

10:55 – 11:15 Digital Antiquity – A view from across the pond
Julian Richards, University of York
Paper ID: 257

11:15 – 11:35 Envisioning the Digital Archaeological Record
Keith Kintigh, Arizona State University, United States of America
Paper ID: 287

11:45 – 1:30 Lunch break

Society for Historical Archaeology
Chair: Lu Ann De Cunzo

1:30 – 1:40 Computer Applications in Historical Archaeology: Introduction
Lu Ann De Cunzo, University of Delaware, United States of America
Paper ID: 399

1:40 – 2:00 Jamestown Rediscovery
David Givens, Jamestown Rediscovery, United States of America
Paper ID: 397

2:00 – 2:20 Engaging a Twenty-First-Century Audience with the Eighteenth Century: Using Digital Technologies at Colonial Williamsburg
Lisa Fischer, The Colonial Williamsburg Foundation, United States of America
Paper ID: 400

2:20 – 2:40 Digital Data Sharing in Historical Archaeology: a DAACS Perspective
Fraser D. Neiman, Department of Archaeology, Monticello, United States of America; and Jillian E. Galle, DAACS, Monticello, United States of America
Paper ID: 401

3:00 – 3:15 Coffee break

3:15 – 3:35 Virtual Vessel - Universal Digital Ship Construction Database
Dan Warren, United States of America
Paper ID: 398

3:35 – 3:55 The Museum of Underwater Archaeology: A Collaborative Approach to Getting Underwater Archaeologists on the Internet
T. Kurt Knoerl, Museum of Underwater Archaeology, United States of America
Paper ID: 396

3:55 – 5:30 Round Table Discussion with the Presidents of the AIA, SAA, and SHA
Participants: Brian Rose, Dean Snow, Lu Ann De Cunzo, and speakers

3D Modeling and Scanning Applications (General Session)

Session ID: GS1

Session Type: Papers

Chair: David Koller, University of Virginia, United States of America

Date: Thursday March 26, 2009, 8:30 am – 11:45 am   Room: Tidewater A

Papers:

8:30 – 8:50   Feature preserving simplification of point clouds from large range laser scanners.
D. Martin, Fco. Javier Melero, P. Cano and J.C. Torres, Univ. Granada, Spain
Paper ID: 371

8:50 – 9:10   ISReal: Advanced Computer Graphics Methods for Archeology
Philipp Slusallek, German Research Center for Artificial Intelligence (DFKI), Germany; Saarland University, Germany; Michael Repplinger, Alexander Löffler, Dmitri Rubinstein, Saarland University, Germany and Hilko Hoffmann, German Research Center for Artificial Intelligence (DFKI), Germany
Paper ID: 314

9:10 – 9:30   Computer Assisted Recovery Technology of Broken Rigid Objects and Its Applications in Terra Cotta Warriors and Horses
Mingquan Zhou, Zhongke Wu and Wuyang Shui, College of Information Science and Technology,Beijing Normal University, Peoples Republic of China
Paper ID: 326

9:30 – 9:50   Integrated Computer modeling of archaeological potsherd pavement site at Ajaba-Kajola, Southwestern Nigeria
Adekunle Abraham Adepelumi, Olajide Temitayo Ajigo and Dele Ebenezer Falebita, Obafemi Awolowo University, Nigeria
Paper ID: 252

10:00 – 10:15   Coffee break

10:15 – 10:35   Digital Technologies and Cultural Heritage: the Muscatatuck Project
Nicoletta Adamo-Villani, Purdue University, United States of America
Paper ID: 275

10:35 – 10:55   3D Model of an Ancient Literary 'Topos' Visualized in the 18th Century: Pliny the Younger's Villa at Laurentum
Jerzy Miziolek, Warsaw School of Social Sciences and Humanities, Poland
Paper ID: 358

10:55 – 11:15   Modelling the masonry surfaces of the Temple of Divo Claudio in Rome
Alfonso Ippolito, Università di Roma "La Sapienza", Italy
Paper ID: 232

11:15 – 11:35   Reliving the Past: 3D models and Virtual Reality as supporting tools for Archaeology and the Reconstruction of Cultural Heritage: The case study of the Roman Villa of Freiria
Maria Helena Rua and Pedro Alvito, Instituto Superior Técnico, Portugal
Paper ID: 221

Three-Dimensional Surface Recording, Analysis, and Interpretation in Archaeology and Anthropology

Session ID: 131

Session Type: Papers

Chair: Maria Jacobsen, Clemson Conservation Center, Clemson University, United States of America

Organizers: Michael P. Scafuri, Maria Jacobsen, and Benjamin Rennison, Clemson Conservation Center, Clemson University, United States of America

Date: Wednesday March 25, 2009, 8:30 am – 3:00 pm   Room: Tidewater B

Session Abstract:

This session will focus on presenting and discussing the most recent technologies and methodologies for three-dimensional surface recording, analysis, and interpretation currently utilized in the fields of archaeology and anthropology; the specific emphasis will be on the use of structured light (optical tomography) and laser-based scanning techniques.

The latest generation of structured light and laser scanners offers unique capabilities in terms of their flexibility of range, speed of operation, and accuracy. In addition, they allow for the ability to perform non-destructive/ non-contact data collection, and, in some cases, the capacity to capture high-resolution photographic surface information that is automatically linked and integrated with surface topography captured during the scanning process. Going beyond highly accurate and fast three-dimensional surface mapping, these new techniques and features greatly enhance our ability to analyze and interpret data captured in both field and laboratory environments. They also lay the foundation for novel ways to manipulate, publish, and display the results of archaeological and anthropological investigations. However, there are unique challenges and inherent problems with applying these technologies to archaeological and anthropological data recording and interpretation that should be addressed as well.

Session papers will focus on discussing experiences with data acquisition, interpretation, analysis, and visualization/ dissemination utilizing structured light (optical tomography) and laser-based three-dimensional scanning techniques and methodologies.

Looking to the future, this session is also designed to provide a forum for a discussion on how to improve our current methodologies, as well as explore new avenues for implementing structured light and laser scan techniques for archaeological data processing, manipulation, and dissemination. Therefore, we welcome contributions from researchers that are dealing with data collection under adverse or extreme conditions, or teams that otherwise are testing the range and pushing the capabilities of the currently available scan systems.

Topics: 3D data capture and modeling, photogrammetry and imaging
Keywords: 3D Recording; Data Acquisition; Laser Scanning; Structured-Light metrology

Papers:

8:30 – 8:50   Inside Greek Vases - on examining the skill of ancient greek craftsmen producing complex 3D shapes using nowadays technologies
Martin Arthur Boss, Martin Meister and Dominik Rietzel, Friedrich-Alexander University Erlangen-Nuremberg, Germany
Paper ID: 160

8:50 – 9:10   Combining 3D Laser-Scanning and Close-Range Photogrammetry - An Approach to Exploit the Strength of Both Methods
Marko Koch, TFH Berlin, University of Applied Sciences, Germany
Paper ID: 278

9:10 – 9:30   Symbols and Stories in Stone: Extracting Details from Mesoamerican Monumental Sculpture
Lori D. Collins and Travis F. Doering, University of South Florida, United States of America
Paper ID: 180

9:30 – 10:00 Reflectance Transformation Imaging: The Next Generation
Mark Mudge, Carla Schroer, Marlin Lum and Michael Ashley, Cultural Heritage Imaging, United States of America
Paper ID: 384

10:00 – 10:15 Coffee break

10:15 – 10:35 Reverse Engineering a Sculpture from an Incomplete 19th Century Mold
Melvin Joseph Wachowiak, Basiliki Vicky Karas, Smithsonian Institution; and Robert E Baltrusch, Survice Metrology
Paper ID: 231

10:35 – 10:55 3-Dimensional DIGITAL FINGERPRINT of Paintings and Frescos using Multi-Spectral 3D-Acquisition
Bernd Breuckmann, Breuckmann GmbH, Germany, Hubert Mara, University of Heidelberg, Germany and Zsofia Vegvari, Tondo Bt, Hungary
Paper ID: 213

10:55 – 11:15 The Alabama Yardstick - Three Dimensional Data Capture Techniques and Best Practice
Benjamin Rennison, Clemson University, United States of America; Mel Wachowiak, Smithsonian Institute; Laurence Hassebrook, University of Kentucky; Stuart Robson, University College London; Arvid Engström, Vasa Museum; and Maria Jacobsen[11]Clemson University, United States of America
Paper ID: 349

11:15 – 11:35 Using Structured-Light Scanning Technology for Artifact Assessment, Analysis, and Modeling on the _H.L. Hunley_ Project
Maria Jacobsen, Michael P. . Scafuri, Benjamin Rennison and Paul Mardikian, Clemson Conservation Center, Clemson University, United States of America
Paper ID: 366

11:45 – 1: 30 Lunch break

1:30 – 1:50   Scanning in the Rain: A study of some of the unique challenges of employing a structured-light scanning system in the archaeological recording of maritime artifacts. *Michael P. Scafuri, Maria Jacobsen and Benjamin Rennison, Clemson Conservation Center, Clemson University, United States of America* Paper ID: 356

1:50 – 2:10   Scanning the Laocoon: Combining 3D Data Capture of an Original Sculpture and a Plaster Cast *David Koller, Bernard Frischer, Chad Keller, University of Virginia, United States of America; Bernd Breuckmann and Laurent Wurmser,ᐟ Breuckmann GmbH* Paper ID: 369

2:10 – 2:40   Non-Contact Fiducial Based 3-Dimensional Patch Merging Methodology and Performance *Laurence G Hassebrook, Charles J Casey and Walter F Lundby, University of Kentucky, United States of America* Paper ID: 346

2:40 – 3:00   Surface scanning – new perspectives for archaeological data management and methodology? *Bernd Breuckmann, Breuckmann GmbH, Germany; Pablo Arias Cabal, Universidad de Cantabria, Spain; Nicolas Melard, Institut National du Patrimoine and C2RMF, France; Roberto Ontanon Peredo, Universidad de Cantabria, Spain; Andreas Pastoors, Neanderthal Museum, Germany; Luiz Cesar Teira Mayolini, Universidad de Cantabria, Spain; Pedro Angel Fernandez Vega, Museo de Prehistoria y Arqueología de Cantabria, Spain; and Christian Weniger, Neanderthal Museum, Germany* Paper ID: 214

Visual archaeologies for the digital age. Rethinking representation in archaeology.

Session ID: 143

Session Type: Papers

Chair: Gareth Beale, University of Southampton, United Kingdom

Date: Wednesday March 25, 2009, 8:30 am – 3:00 pm   Room: Tidewater A

Session Abstract:

Visualization has been central to the archaeological process from the inception of archaeology as a discipline. Visual representations have been created to aid every stage of the archaeological process from the capturing of field data to the representation of complex theories, interpretations and concepts. In turn representations have shaped and directed many aspects of archaeological thought. Computer graphics introduce a new range of new visual media to archaeology. Many of these new representative forms are grounded in established archaeological practice. However, others provide new challenges to a critical archaeology.

In this session we wish to discuss the interface between computer graphics and the archaeological process. In particular we are interested in the extent to which computer graphics produced in an archaeological context are themselves a form of archaeological practice. We encourage papers demonstrating computer graphics not only as alternatives to traditional illustrations but also as new tools for engagement and knowledge formulation.

Some of the ideas we wish to explore include:

1. Graphical recording techniques. How have computer graphics altered the way that we record archaeological data and how have these changes altered the way that we think about archaeological practice?

2. Graphics as collaborative environments. Computer graphics allow us to construct a vast range of interactive and non-interactive archaeological spaces, places and environments. What impact have these played on archaeological interpretation?

3. Performative Graphics. CGI encourages new modes of representation that can communicate to a diverse audience in ways impossible through traditional archaeological modes of expression. How do these changes alter our perception of archaeological subjects and how can this be of use to us?

Topics: 3D data capture and modeling, virtual museums, virtual reality
Keywords: Computer Graphics, Representation, Performance

Papers:

8:30 – 8:50   Documenting authenticity: the publication and citation of sources used in the reconstruction of papyrus-bundle columns from the pyramid of Senwosret III
David Sherratt Johnson, The Museum of Reconstructions, United States of America
Paper ID: 234

8:50 – 9:10   Harmonizing Archaeologies: Digital Reconstructions of Pisidian Antioch and the Sanctuary of the Great Gods, Samothrace
J. Matthew Harrington, University of Michigan, United States of America
Paper ID: 294

9:10 – 9:30   A System of Pottery Shape Recovery and Repairing
Mingquan Zhou, School of Information Science and Technology,Beijing Normal University, Peoples Republic of China ;Guohua Geng, School of Information Science and Technology,Northwest University, Peoples Republic of China
Zhongke Wu and Wuyang Shui, School of Information Science and Technology,Beijing Normal University, Peoples Republic of China
Paper ID: 261

9:30 – 9:50   A scientific approach using computer graphics to reconstruction potential original architectural unity of archaeological ruins.
Valentina Castagnolo, Politecnico of Bari, Italy
Paper ID: 168

10:00 – 10:15   Coffee break

10:15 – 10:35   Towards a strategy for evaluating heritage visualizations
William Limp, Center for Advanced Spatial Technologies, United States of America
Paper ID: 233

10:35 – 10:55   Talks, Articles and Exhibitions: Does Interactive History need New Metaphors?
Catja Alexandra Pafort, Independent Researcher, United Kingdom
Paper ID: 319

10:55 – 11:15   Representing the Present Past: Interacting with archaeological information in museums and on the World Wide Web.
Christopher Aaron Sevara, Per Stenborg, Johan Ling, University of Gothenburg, Sweden; Mats Sodorstrom, Swedish University of Agricultural Sciences, Sweden; Jonas Tornberg and Liane Thuvander, Chalmers University of Technology, Sweden
Paper ID: 185

11:15 – 11:35   Intra-site spatial analysis of a Neolithic cemetery (Cernica, Bucharest)
Alexandru Morintz, Vasile Parvan Institute of Archaeology, Romania and Raluca Kogalniceanu, Giurgiu County Museum / "Al. I. Cuza" University of Iasi
Paper ID: 193

11:45 – 1: 30   Lunch break

1:30 – 1:50   "A picture is worth a thousand words" - Visualising archaeological textiles
Hembo Pagi, University of Southampton, United Kingdom
Paper ID: 155

1:50 – 2:10   Hole Filling for Cultural Relics Restoration Based on the Geometry Image
Mingquan Zhou, Wuyang Shui, Beijing Normal University, Peoples Republic of China; Guohua Geng, NorthWest University, Peoples Republic of China; and Zhongke Wu, Beijing Normal University, Peoples Republic of China
Paper ID: 262

2:10 – 2:30   Excavation and 3-Dimensional Data Visualization at the La Brea Tar Pits
Andrea Karoline Thomer, George C. Page Museum of La Brea Discoveries, Los Angeles CA, United States of America; Michael Dale Wilson, Natural History Museum of Los Angeles County, United States of America; and Tara S Thara, George C. Page Museum of La Brea Discoveries, Los Angeles CA, United States of America
Paper ID: 370

2:30 – 3:00   Discussion

Web-based GIS for Data Management and Dissemination

Session ID: 136W

Session Type: Workshop

Chair: Elizabeth A. Lee, CyArk, United States of America

Date: Wednesday March 25, 2009, 1:30 pm – 5:30 pm   Room: Liberty

This workshop will be an introduction to using CyArk's web-based GIS system, SiteManager. CyArk Site Manager is an integrated suite of software that organizes, manages, and provides access to High Definition Documentation (HDD) and other cultural heritage data for heritage site managers, researchers and the public. CyArk Site Manager integrates seamlessly with the CyArk 3D Heritage Archive website, providing a global outlet for dissemination of data. All data is georeferenced to and accessible from appropriate maps and plans as well as from media pages. CyArk SiteManager allows site managers and researchers organized access to their own HDD data and the opportunity to further develop and annotate that data as ongoing needs require. Moreover, site managers and researchers may add other record data, such as scanned copies of old record site surveys, historical photographs, etc., to keep all such record data of their site in one organized digital archive.

The workshop will provide sufficient training such that participants will understand the functionality of SiteManager and will be able to utilize the software following the workshop. Participants wishing to experience the hands-on portion of the workshop should bring their own wireless enabled computer. Workshop participants are not required to have any background in GIS. Minimal computer skills are encouraged.

Why did it take so long? spatio-temporal modeling and GIS

Session ID: 139

Session Type: Papers

Chairs: Ian Johnson, University of Sydney, Australia; Ruth Mostern, University of California Merced; and Cathy Campbell, University of Sydney, Australia

Date: Tuesday March 24, 2009, 8:30 am – 3:00 pm   Room: Tidewater C

Session Abstract:

One might expect archaeologists and historians to be early adopters – or indeed demanders – of spatio-temporal GIS, dealing as we do with objects and events situated in space and time. Yet GIS and 3D reconstruction has remained largely atemporal – where time is addressed at all, it is generally in the form of layers or alternative views at different periods (snapshots), more rarely in the form of objects with time stamps allowing filtering of extant material for different dates. Little serious attempt has been made to address issues such as the representation of temporal uncertainty.

The reasons, we believe, are to do with the often imprecise nature of historical and archaeological dating - we deal with periods, with *terminus post* and *ante quem* dates, with indirect observations, with observations made during an extended period rather than dating the beginning or end, with statistical dating errors, with dating by association and so forth. The resolution of our observations often varies within a single corpus depending on the circumstances of discovery or the nature of the phenomenon recorded (site, shard, settlement, battle etc.).

For these reasons, most research in the area of spatio-temporal systems deals with contemporary phenomena where the data is more easily defined and collected. Archaeologists and historians therefore have particular needs which are less likely to be addressed by mainstream spatio-temporal research.

However, over the last couple of years, papers on temporal modeling and temporal GIS have started to appear in the CAA program. It therefore seems timely to bring these papers together into a special session to review the current status of spatio-temporal work and its application in our domain, to share ideas, to define how our needs differ from work on contemporary material, and perhaps to stimulate new collaboration.

We invite papers which review attempts to integrate spatial and temporal information, papers which provide theoretical or methodological insight into the issues of spatio-temporal modeling and analysis in the history and archaeology, and papers which provide practical examples of spatio-temporal GIS or visualization in action. Papers proposing original approaches and new directions are also invited.

To provide a concrete outcome for the session, we plan to produce a short annotated bibliography of spatio-temporal applications in archaeology and history, which will be published on the web using Heurist (HeuristScholar.org), allowing ongoing addition and discussion around the topic. We will ask participants to provide key bibliographic references and/or web sites prior to the session for inclusion in the bibliography and to kick off discussion - we plan to conclude the session with a roundtable discussion, with the aim of developing a 'manifesto' identifying the current status and particular needs of this domain.

Topics: agent-based models, GIS, Other
Keywords: spatio-temporal systems, spatio-temporal modeling, simulation, historical events, timelines

Papers:

8:30 – 8:50   Finding the white mice: there's more to spatio-temporal GIS than what, where and when…
Ian Johnson, University of Sydney, Australia; Ruth Mostern, University of California Merced; and Cathy Campbell, University of Sydney, Australia
Paper ID: NO ID

8:50 – 9:10   Spatio-temporal Dimensions of Population History, Settlement Patterns, and Landscape Archaeology in Orkney (1750 to 2000)
Timothy Michael Murtha, James Wood, Patricia Johnson and Stephen Matthews
Penn State University, United States of America
Paper ID: 379

9:10 – 9:30   Niche Based Subsistence: Foraging in heterogeneous landscapes
Jubin J Cheruvelil, Michigan State University, United States of America
Paper ID: 199

9:30 – 9:50   Time as a hidden dimension in archaeological information systems: spatial analysis within and without the geographic framework
Ladislav Smejda, University of West Bohemia, Czech Republic
Paper ID: 316

10:00 – 10:15   Coffee break

10:15 – 10:35   ToToPI (Topography of Tours pre-Industrial), a GIS for understanding urban dynamics based on the OH_FET model (Social Use, Space and Time)
Xavier Rodier, Laboratoire Archéologie et Territoires CITERES UMR6173, CNRS - Université de Tours, France; Laure Saligny, Maison des Sciences de l'Homme de DIjon UMS2739, CNRS - Université de Bourgogne, France; and Bastien Lefebvre, Laboratoire Archéologie et Territoires CITERES UMR6173, CNRS - Université de Tours, France
Paper ID: 227

10:35 – 10:55   How to describe and show dynamics of urban fabric? Cartography and Chronometry
Lefebvre Bastien, Laboratoire Archéologie et Territoires, UMR 6173 CITERES, CNRS - Université de Tours, France
Paper ID: 224

10:55 – 11:15   Models for complex spatio-temporal relationships and their implementation using open source components
Riyaz Fazal, Recording Heritage Network, United States of America
Paper ID: 378

11:15 – 11:45   Roundtable Discussion – developing a manifesto for event-based spatio-temporal modeling and visualization,

11:45 – 1:30   Lunch

1:30 – 1:50   eWilliamsburg2: Spatio-Temporal Modeling the Colonial Past
*Joshua Travis Muse, Peter Anthony Inker and Jessica Curci Krop, Colonial
Williamsburg Foundation, United States of America*
Paper ID: 351

1:50 – 2:10   Reconstruction of _Machiya_ Landscape:4DGIS Comprising Spatial and Temporal
Dimensions
*Ayako MATSUMOTO KATSUMURA, Ritsumeikan University, Japan; Takafusa IIZUKA,
Ritsumeikan University, Japan; Keiji YANO, Ritsumeikan University, Japan; Tomoki
NAKAYA, Ritsumeikan University, Japan; Tatsunori KAWASUMI, Ritsumeikan
University, Japan; Yuzuru ISODA, Ritsumeikan Asia Pacific University, Japan; ; Yutaka
TAKASE, Ritsumeikan University, Japan; Keigo MATSUOKA, Ritsumeikan Asia Pacific
University, Japan; Toshikazu SETO, Ritsumeikan University, Japan; Dai KAWAHARA,
CAD CENTER CORPORATION, Japan; Akihiro TSUKAMOTO, Ritsumeikan University,
Japan; Manabu INOUE, St.Agnes, University, Japan; and Takashi KIRIMURA,
Ritsumeikan University, Japan*
Paper ID: 263

2:10 – 2:30   GIS data base on the state of deterioration of the buildings in Volubilis archaeological
site (Morocco): example of a risk map
*Abdelilah Dekayir, Moulay Ismail University, Meknes, Morocco; Sihame Essalmi,
National Institute for Archaeology and Cultural Heritage (INSAP), Rabat, Morocco;
and Hassane Limane, National Institute for Archaeology and Cultural Heritage (INSAP),
Rabat, Morocco*
Paper ID: 177

2:30 – 2:50   A contribution to the Study of the Defence of the City of Lisbon
Maria Helena Rua, Instituto Superior Técnico, Portugal
Paper ID: 244

2:50 – 3:00   Discussion