

EUROMED2018 – COST ACTIONS' ABSTRACTS

CA17131 (26/10/2018-25/10-2018) THE SOIL SCIENCE & ARCHAEO- GEOPHYSICS ALLIANCE: GOING BEYOND PROSPECTION - DR CARMEN CUENCA-GARCIA

Archaeo-geophysics currently stands as a powerful discipline in European archaeological research to discover, study and record subsurface archaeological sites. Its importance lies in its capacity to reveal hidden archaeological assets in a non-destructive, rapid and detailed manner in comparison with traditional and more invasive archaeological methods such as excavation or test-trenching. Less-invasive and cost-effective field procedures, such as those provided by geophysical means, are increasingly becoming a top priority to mitigate the destructive effects on our cultural heritage from intensified land use, climate change and the current conflict panorama. By using geophysical techniques, archaeological remains can be detected remotely, from the ground surface, sea surface or from the air. These techniques measure and map spatial variations of a range of physical properties of the subsoil which may be representative (the proxies) of the subsurface archaeology. In the last decade, a major technological development in archaeo-geophysics has been the introduction of multi-sensor and motorised instrumentation. This has revolutionised archaeological prospection by allowing extremely fast and high-resolution surveys to explore large areas.

Whilst the discipline of archaeo-geophysics is going through an exciting phase of technological development, a major problem concerning researchers and practitioners is that our ability to interpret the full suite of information extractable from geophysical datasets has not kept pace with developments in technology and is still very limited. This deficiency prevents geophysical survey moving beyond basic prospection and becoming a significant tool for answering nuanced questions about archaeology and the landscapes it is part of. The reason for this limitation is that there is still much to learn about the relationships between soil properties and geophysical measurements. Since the publications of Clark (1990), Scollar et al. (1990), Fassbinder & Stanjek (1993) or Weston (2001 & 2002), back in the early stages of the application of geophysics to archaeology, most of the progress achieved in this topic has come from some significant but very fragmented studies. Also, much of the work has focused on understanding of soil magnetic properties whilst other soil properties that contribute to geophysical contrast have been considered to a lesser extent.

Bridging this gap requires fine-tuned and multidisciplinary teams, experimental approaches, testing field and analytical methods and solutions for multivariate data integration and analysis. The lack of continuity in the development of this topic should be understood, partly, because of the scarcity in funding that has been devoted to Humanities in Europe during the last decade and the consequent research priorities followed by many institutions. These have been more interested in being at the foreground of technological development rather than competing with more time-consuming and resource-demanding projects devoted to in-depth understanding and interpretation of proxy data. Besides, there has been little scholarly discussion devoted to distilling the outcomes and structuring the achievements of the projects that have been completed in this topic into validated and shared “lessons learned”. Overcoming these challenges is a prerequisite for maximising the cost-effectiveness of geophysical methods, harvesting the expected benefits of large-scale investments in instrumentation and allowing a broader uptake of geophysical methods in the cultural heritage sector.

Our principal reason to apply for a COST Action was to build a multi-disciplinary international network in order to bring together geophysicists, archaeologists, soil scientists and a wide range of experts in other sub-disciplines in geoscience to make a major push forward in our capability to interpret geophysical data for archaeological purposes. Our prospects are that after four years of intensive collaborative work, SAGA will have created a framework for emerging field procedures and enhanced data-interpretation solutions. SAGA will have facilitated a broader understanding and use of integrated geophysical methods in cultural resource management routines in countries where these methods were not previously common. In countries that already integrate geophysical prospection in cultural heritage management, SAGA will have educated practitioners and curators in the cutting edge of our improved understanding following the integration and synthesis of concepts, methods and knowledge from adjacent disciplines.

CA15201 (06/10/2016-05/10/2020) ARCHAEOLOGICAL PRACTICES AND KNOWLEDGE WORK IN THE DIGITAL ENVIRONMENT – PROF. ISTO HUVILA

From the perspective of the COST Action Archaeological Practices and Knowledge Work in the Digital Environment (ARKWORK), there is a lot of relevant on-going work in different European countries for increasing the understanding of digital and digitalising archaeological and archaeology-related work and knowledge production. Two years of activities within the Action has confirmed some of the earlier assumptions and observations of the proposers but at the same time, underlined the significance of other factors that were not considered to be as problematic as they appear to be. The focus of the Action on practices has at the same time confirmed the importance and difficulty of conducting research on what people do and how to leverage on that understanding to inform practitioners. One of the most important take-away so far has been by far the significance of reaching a common understanding on what research is about – both for successful scholarly and scientific collaboration, communication and dissemination of results and societal impact of the work. The presentation will discuss briefly key insights into the 'articulation work' carried out in COST-ARKWORK to reach a common understanding of the research field and its linkages to the archaeological practice, and its implications for overcoming fragmentation of research and practice in archaeology and material cultural heritage in Europe.

TD1406 (0605/2015-05/05/2019) INNOVATION IN INTELLIGENT MANAGEMENT OF HERITAGE BUILDINGS - PROF. JOAO MARTINS

Europe is one of the World's regions presenting the areas (pillars): scientific wisdom, systems & data and social engagement.

A multidisciplinary interoperable approach is of national heritage of every country and culture. They usually consist of multiple facets and materials often altering dramatically throughout their life span due to changes imposed by society, their environment and usage. It is through the conservation and restoration of these buildings, and the collections therein, that the cultural identity of our past can be preserved and transferred into our future.

The aforementioned three pillars should be the bases for a “rooftop” interoperability layer. It is mandatory to identify what is homogenous, heterogeneous and synergetic amongst the three pillars, highlighting interdependencies and gaps while identifying best approaches in order to progress towards this common interoperable framework.

In this context, COST Action TD1406 (Innovation in Intelligent Management of Heritage Buildings) was extremely relevant and timeless, gathering under the “rooftop” layer of interoperability the basic three pillars of HBs, bringing together that sparse knowledge and confined operations on HBs to develop a common framework providing an integrated multidisciplinary expertise, technology and know-how through a novel and independent global framework.

IS1310 (28/04/2014-27/04/2018) REASSEMBLING THE REPUBLIC OF LETTERS, 1500-1800 A DIGITAL FRAMEWORK FOR MULTI-LATERAL COLLABORATION ON EUROPE'S INTELLECTUAL HISTORY – PROF. HOWARD HOTSON

Europe urgently needs a reinforced sense of transnational identity. Such an identity can only be fashioned from shared cultural histories, shared accomplishments, and shared values. But how can we piece together the scattered fragments of such histories and traditions into a coherent mosaic capable of reshaping our collective self-understanding? COST Action IS 1310 addressed these general questions by focusing on one of Europe's most important transnational integrative communities during the formative centuries of the Renaissance, the scientific revolution and the Enlightenment: namely, ‘the republic of letters’.

In their more idealistic moments, leading European scholars, philosophers and scientists in this period saw themselves as living the most meaningful parts of their lives in a new kind of imagined community which they called the *respublica litteraria* or *république des lettres*. This was an open society, formed by multilateral scholarly communication in script and print as well as face-to-face contact; a non-traditional society in which bonds and duties were created not by blood, law, custom, or power relations but by mutual services to the cause of learning; a meritocratic society in which status was determined neither by birth nor by wealth but by learning and insight; a transnational and tolerant community, existing above and beyond the narrower bounds of ethnicity, nationality, profession, and even religious confession; a society held together above all by the excitement generated by the intellectual discoveries and breakthroughs of the period. This ideal is remarkably relevant to Europe's idealised self-image today. So why has it disappeared so completely from Europe's collective self-understanding?

Part of the problem is that the postal communication which helped bind this community together scattered the archive of materials needed to understand it. Letters only achieve their communicative function by being dispersed; and scholars attempting to reconstruct this community have subsequently had to comb the archives and libraries of Europe looking for stray letters to or from specific individuals. The republic of letters therefore poses, in extreme form, the challenge of reassembling fragmented cultural heritage.

To reassemble the material scattered by the communications revolutions of the early modern period, we need to harness the digital communications revolution of our own day. Working out how best to do so was the objection of COST Action IS1310. The goal was to envisage open-access, open-source, transnational digital infrastructure capable of facilitating the radically multilateral collaboration needed to reassemble this scattered documentation and to support a new generation of scholarly methods and research questions. The means to that end was four years of structured discussions undertaken in a community which grew to include nearly 100 members and 100 affiliates, from 33 different countries, drawn from many different disciplines, including archivists, librarians, scholars from many fields, and experts in visualization, communication, intellectual property, and many different kinds of digital technology.

Four of the Action's six working groups scrutinized the standards needed to describe all the different dimensions of early modern learned correspondence: places and dates, people and networks, texts and topics, documents and collections. A fifth group described the tools and systems needed to assemble, reconcile, analyse, and model unprecedented quantities of epistolary data within a new kind of distributed infrastructure. A sixth working group sought to envisage the kinds of scholarship which might emerge from geographically disparate teams of scholars working within such infrastructure with unprecedented quantities of data in new ways. The fruits of these discussions are being drawn together by the chair and vice-chair into a collaboratively written book, entitled *Reassembling the Republic of Letters in the Digital Age: Standards, Systems, Scholarship* (Göttingen University Press). Once this conceptual framework is in place, the next big task will be to raise the funding necessary to build the infrastructure we need. Once standards, systems and new working relationships have been developed for reassembling material on this aspect of Europe's transnational cultural heritage, the objective will be to expand and adapt them to serve cognate areas as well.

TD1201 (07/11/2012-06/11/2016) COLOUR AND SPACE IN CULTURAL HERITAGE (COSCH) – PROF. FRANK BOOCHS

The COST Action TD1201: Colour and Space in Cultural Heritage (www.COSCH.info) contributed to the conservation and preservation of cultural heritage (CH) by enhancing the shared understanding, between experts from various disciplines, of the spectral and spatial recording of physical CH objects. Optimal recording, adapted to the needs of a CH application, should involve experts from multiple disciplines and industries. Such an interdisciplinary approach is necessary "in order to protect, preserve, analyse, understand, model, virtually reproduce, document and publish important CH in Europe and beyond" [CO12, p. 3]. In order to fulfil this goal, experts from 28 European countries entered into a multidisciplinary dialogue trying to establish a common understanding of spatial and spectral recording techniques best suited for particular CH applications. The dialogue addressed the characterization of spatial and spectral recording

techniques; the use of algorithms and processing chains; and requirements of analysis, restoration or visualization of cultural heritage surfaces and objects.

The implementation of available techniques has been tested through six COSCH case studies. A range of spectral and spatial techniques have been applied to selected cultural heritage objects, addressing cultural heritage research questions. The case studies demonstrate the possibilities offered by spatial and spectral recording techniques and highlight the challenges involved. The processing of acquired data and the possibilities for using these data to analyse and visualize CH objects and their surfaces have been considered.

It was possible, through an intensive discussion, to propose a novel structured view of recording techniques that takes into consideration the user's questions. A basic foundation for a semantic representation of these interrelations has been developed. The resulting COSCH^{KR} (knowledge representation) shows the potential of semantic technologies for a conceptual approach to this multidisciplinary research field.

Four years of work made visible which huge variety of CH objects, research questions, goals, scientific disciplines, personal views, financial margins, national frameworks and traditional strategies exist and may result in more or less different views of a problem and possible strategies to solve it. As consequence of this heterogeneity it is quite logic to face problems with a fragmentation of the field leading to redundancy in activities and missing awareness of already existing achievements. As COSCH showed it is possible to improve the situation through the development of mutual understanding, to make processes transparent, to transform experiences into a structured semantics, which have to be made accessible and visible to everybody acting in the field.