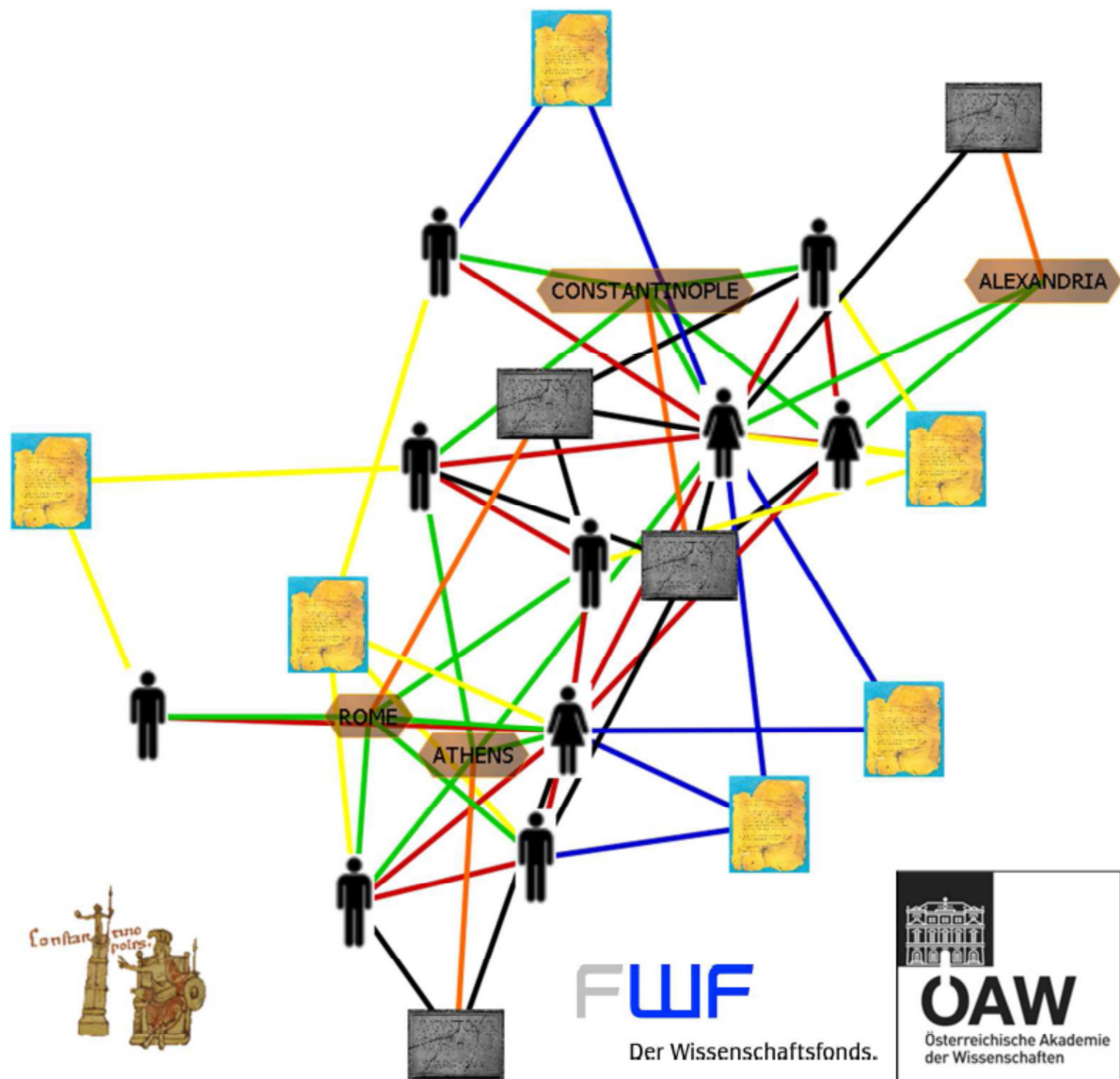# *Connecting the dots*
The analysis of networks and the study of the past (Archaeology and History)

A half-day Workshop at the Institut für Byzanzforschung (IBF), Österreichische Akademie der Wissenschaften

Wohllebengasse 12-14/Erdgeschoss (Seminarraum 1), 1040 Wien
Friday, 10. 06. 2011, 14:30–17:30

Further information: http://www.oeaw.ac.at/byzanz/

Schedule:
14:30 Introduction

14:40 Tom Brughmans (Univ. Southampton, UK): "*Complex Networks in Archaeology: Urban Connectivity in Roman Southern Spain*"

15:20 Mihailo Popović (IBF): "*Networking the historical geography of Byzantium*"

15:30 Johannes Preiser-Kapeller – Ekaterini Mitsiou (IBF): "*Social Networks of Byzantium*"

15:40 Coffee break

16:00-17:30 Short presentations of projects and discussion

Connecting the dots. The analysis of networks and the study of the past (Archaeology and History)
The exploration of linkages between individuals, groups, localities or objects with the help of the concepts and tools of (Social) Network Analysis (NA) has boomed in the last decade; also in historical and archaeological studies, the number of researchers working with network-analytical methods has significantly increased. The aim of this workshop is to bring together scholars from various historical disciplines as well as beyond who are working or interested in this field in order to discuss the possibilities of, experiences with and problems of NA for the study of the past.
As keynote speaker, Tom Brughmans from the Archaeological Computing Research Group, University of Southampton (UK) will present his project on Archaeological Network Analysis; he has established an online blog for this new field of archaeological research (http://archaeologicalnetworks.wordpress.com/) as well as a network of researchers interested in NA. Most recently, he has organized a session on Archaeological and Historical NA for the "39th Annual Conference of Computer Applications and Quantitative Methods in Archaeology" (CAA 2011) in Beijing (China; cf. http://archaeologicalnetworks.wordpress.com/caa-2011/).
After the presentation of Tom Brughmans, the research on NA at the Institut für Byzanzforschung will be briefly presented. Then there will be opportunity for all participants to present and discuss their experiences with NA (participants are invited to briefly – 5 minutes – present their ongoing projects– laptop and video-beamer will be provided).
In particular we would like to discuss central questions of Archaeological and Historical NA such as: How can NA be applied to different disciplines of historical studies and different sources (objects, documents)? What is the significance of network analytical results from a historical point of view? How can we cope with fragmentary source evidence and incomplete samples? Is it possible to use the research on large scale and complex modern day networks for the study of the past? A summary of the results of our discussion will be presented online afterwards.

For further information on NA in historical studies see also:
http://www.oeaw.ac.at/byzanz/historicaldynamics.htm
http://www.oeaw.ac.at/byzanz/routes.htm
https://sites.google.com/site/historicalnetworkresearch/home

For registration and further questions please contact:
Johannes.Preiser-Kapeller@oeaw.ac.at

Keynote Presentation:
Complex networks in archaeology: urban connectivity in Roman southern Spain

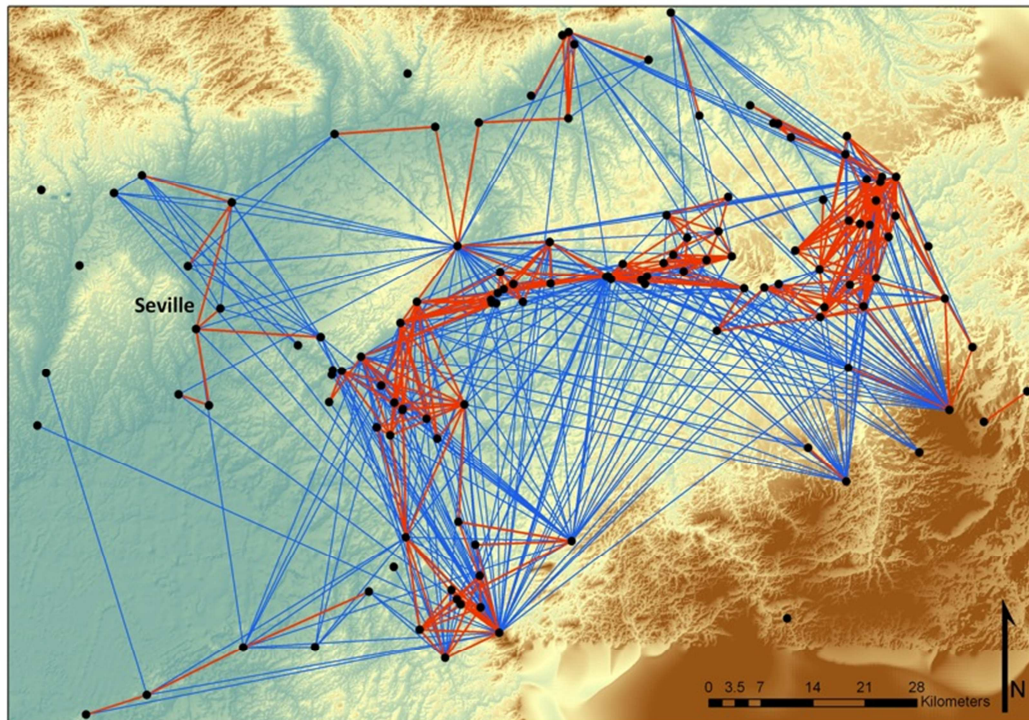Tom Brughmans, Simon Keay, Graeme Earl

Figure: two networks showing the patterns of visibility (arcs) between sites (nodes) in Roman southern Spain. The red network restricts visibility to 20km around sites, whilst the blue one is unrestricted.

Complex systems existed in the past just as they exist now and will continue to exist in the future. Until recently, however, there was no suitable analytical framework for examining the properties of such systems and their emergence from local interactions. This paper suggests a new research perspective for Roman archaeology – complex network analysis.

The last decade has seen a growing number of pioneering archaeological applications of network-based techniques, mainly influenced by social network analysis and popular network models in physics. Typical applications adopted from these disciplines have already proven to provide innovative and interesting approaches to understanding the diffusion of people, objects and ideas, belief systems and interregional interaction. The archaeological applications are still dealing with some growing pains, however. The list of published applications is short and they have not yet tapped into the full potential of the networks perspective. But more importantly, there is a realisation that the nature of archaeological data as indirect and fragmentary reflections of the past confronts network analysts with a unique challenge - one that will allow archaeologists to make valuable contributions to the "new" science of networks.

This paper aims to confront this challenge. It will demonstrate how a complex networks approach can be used to explore archaeological datasets as well as to understand properties of complex systems in the past. It will illustrate this with examples drawn from the 'Urban connectivity in Roman southern Spain' project. A large and complex database has been assembled for this project in an attempt to explore the diverse ways in which ancient cities were related. It includes diverse data types including coins, ceramics, statues and visibility in the landscape. This case-study will raise issues related to how this complexity can be explored and its behaviour understood, how urban connectivity in the past as attested indirectly through complex graphs of multiple relationships is reflected. In doing so, this paper aims to work towards original and valuable archaeological contributions to network science.