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| **TRAC 2018 (Theoretical Roman Archaeology Conference)**  **Edinburgh, 12th -14th April 2018**  **CALL FOR PAPER FORM** | |
| **Title of the Paper** | An agent-based model of trade in the Roman East (25BC-150AD) |
| **Speaker Information** | Simon Carrignon, Barcelona Supercomputing Center & Univ. Pompeu Fabra, [simon.carrignon@bsc.es](mailto:simon.carrignon@bsc.es) (speaker)  Tom Brughmans, University of Oxford  Iza Romanowska, Barcelona Supercomputing Center |
| **Session** | 1E-2E |
| **Abstract**  300 words max | Traces of the processes driving economic activity in past societies are scarce and unevenly distributed. The archaeological record shows changes in the volume or in the kind of goods that were traded, but it is difficult to infer from it   the social, economic and cultural mechanisms that resulted in these changes.   On the other hand, economists have developed models that link observable patterns of trade with the underlying economic principles. As a result a huge arsenal of tools and models exists nowadays that address a wide range of research        question. However, the challenge of incorporating key aspects of past societies into such models remains unresolved.   Here, we present an agent-based model that fills this gap by bringing economic models and historical and archaeological knowledge together. The overarching goal is to develop a tool to test and compare different hypothesis regarding the    socio-economic processes that have resulted in the observed patterns in the archaeological record.   In this particular study we want to explore the social mechanisms behind changes observed in the distribution of different types of tableware used in the Roman East from 25 BC to 150 AD. These changes have been identified in  an extensive dataset of 5121 tableware from 222 different sites in the Eastern Mediterranean, and involved four major types of tableware used during this period in the region. Our aim is to illustrate that simple social interactions, such  has the frequencies of social interactions between cities can generate the pattern observed in the dataset.   To that end, the original economic model has been modified to reflect the particularities of the region and the time period of interest. In the first step, we run and record a series of experiments where the probability of social           interactions between the cities varies. We show how the results of those simulations can be related to the pattern observed in the dataset. |
| **Bibliography**  *Please provide recent relevant publications* | Bentley, R. A., Hahn, M. W., & Shennan, S. J. (2004). Random drift and culture change. *Proceedings of the Royal Society of London B: Biological Sciences*, *271*(1547), 1443-1450.  Brughmans, T., & Poblome, J. (2016). MERCURY: an agent-based model of tableware trade in the Roman East. *Journal of Artificial Societies and Social Simulation*, *19*(1), 3.  Carrignon, S., Montanier, J. M., & Rubio-Campillo, X. (2015). Modelling the co-evolution of trade and culture in past societies. In *Winter Simulation Conference (WSC), 2015* (pp. 3949-3960). IEEE.  Chen, S. H., Chie, B. T., Kao, Y. F., & Venkatachalam, R. (2017). Agent-Based Modeling of a Non-tâtonnement Process for the Scarf Economy: The Role of Learning. *Computational Economics*, 1-37.  Steele, J., Glatz, C., & Kandler, A. (2010). Ceramic diversity, random copying, and tests for selectivity in ceramic production. *Journal of Archaeological Science*, *37*(6), 1348-1358. |
| **Specific requirements**  *Please provide a description of your equipment or support needs* | Video projector |