

Simon Carrignon - EPNet (ERC 340828)

PhD Research Proposal

This PhD is fully funded and part of the Economy and Political Network project (EPNet - ERC 340828), whose general objective is :

“[...]to investigate the political and economical mechanisms that characterised the dynamics of the commercial trade system during the Roman Empire.”

To attain this objective the project want to propose a new and innovative framework that bring together evolutionary thinking, economics, history and archaeology to study the evolution of the economical and cultural dynamics during the Roman Empire.

Within this framework, the thesis will investigate the conditions of the emergence of a free market in a pre-industrial context. To do so we will take the Roman Empire as a case study and apply actual economical model to Mediterranean historical context in order to see if this context allow a free market to evolve or not. The study will focus on the evolution of such system, when submitted to evolutionary cultural dynamics (such as random copy or learning of economical policies, imitation of the most successful individual, ...).

The goal of the thesis is to investigate an old debate in history and archaeology, which is to understand in what extent the roman economy was a fully integrated free market economy, or a heterogeneous network of small independent economics loosely connected, knowing the predominant role and control of the Roman Empire on this economy.

In the same time the thesis will illustrate the viability of bringing together economical model and cultural evolution into computer simulation in order to test hypothesis about such a complex past process that is the Roman Economy, which is difficult to study other way due to a lack of data and remaining knowledge. Cultural evolution and economical model give us ways to extrapolates those missing or erroneous data, while computer simulation allows us to integrate crucial spacial and behavioral specificities to better understand the historical process.

The first step of the research will consist on a theoretical exploration, to understand which cultural and economical dynamics lead to which type of economical system (centralized economy, free market or heterogeneous economy) given different geographical, demographics and political context.

In a second time, the thesis will use evolutionary archaeological tools and all available data to choose the more probable scenario among those previously explored and adjust them using the result of the data analysis.

To succeed in those tasks the PhD will be co-supervised by Serg Valverde from the Complex System Lab and Xavier Rubio from the Barcelona Supercomputing Center, thus it will benefit the expertise of their associated lab on modeling and analysing complex adaptive systems. Moreover it will rely on all team already engaged in the EPNet project, which include the other members of the team in the Barcelona Supercomputer Center where the theoretical model is already under development, the CEIPAC laboratory, specialised in Ancient History and the Roman Empire, and the PhysComp laboratory, specialised in network an big data analysis.

