CoCo Seminar Series Spring 2022

The Challenges of Modeling Ancient Population Dynamics: A Rapa Nui (Easter Island) Case Study

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Fully online (via Zoom; meeting link available on http://coco.binghamton.edu/)

Among the most important issues in archaeology are how to measure changes in ancient population sizes and the relationship between demography and paleoenvironmental change. While archaeologists have developed many proxy measures for inferring demographic change, the use of summed probability distributions (SPD) of radiocarbon dates is the most widely applied method in this research area. Paleodemographic reconstructions and modeling with SPDs, however, are stymied by a lack of accepted methods for model fitting, tools for assessing the demographic impact of environmental or climatic variables, and a means for formal multi-model comparison. These deficiencies severely limit our ability to reliably resolve crucial questions and debates surrounding past human-environment interactions. In this talk, I present an Approximate Bayesian Computation (ABC) approach for fitting demographic models to archaeological data using a case study from Rapa Nui (Easter Island), a location that has long been the focus of debate regarding the impact of environmental and climatic changes on its human population.

Robert DiNapoli is an archaeologist who uses computational modeling and geospatial methods to study the interaction between human populations and the environment. His primary research focuses on the island societies of Polynesia, in particular questions surrounding ancient migrations, demographic patterns, emergence of social complexity, and sustainable resource use. He is a Research Development Specialist in the Office of Strategic Research Initiatives at Binghamton University, where he works with faculty in developing individual and collaborative research projects and external funding proposals.

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