

Venice meeting on Fluctuations in small complex systems VII

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Istituto Veneto di Scienze, Lettere ed Arti - Palazzo Franchetti

presents



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Public Lecture

The Nature of Societies

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Abstract: In the enormous catalog of innovation that is life—past and present—there are some events that mark major turning points. Examples include the evolution of multicellular organisms from a world dominated by single cells; the evolution of insect sociality culminating in the intricate complexity of ant colonies; and the evolution of social mammals, with human culture at the pinnacle. These rare events, known as major evolutionary transitions, have had a disproportionate impact on the history of life. The three examples listed here are also perhaps nature's most astounding attempts at constructing societies from 'humble' beginnings. By taking a comparative lens to the evolution and organization of societies of cells, insects, and people I will shed light on fundamental similarities and differences and reflect on what keeps some societies together while others break apart.

Corina Tarnita is a professor of Ecology and Evolutionary Biology at Princeton University and a recipient of several major awards, such as the Guggenheim Fellowship, the Kavli Frontiers of Science Fellowship of the US National Academy of Sciences, or the Sloan Fellowship in Computational and Evolutionary Biology. Before Princeton, Tarnita was a Junior Fellow in the Harvard Society of Fellows. Born in Romania, Tarnita moved to the US in 2002 to pursue a BA'06 and subsequently a PhD'09 in Mathematics at Harvard University. During her PhD, by a twist of fate, she discovered that it was from biology that the most meaningful research questions were to come for her. Tarnita's research program crystallized into a comparative cross-scales approach to the study of complex adaptive systems; in other words, those systems that cannot be understood by a reductionist approach because their properties and behavior emerge from complex interactions between the parts. Focusing especially on what are called major evolutionary transitions—the evolution of multicellularity, of insect eusociality, and of human culture—Tarnita and her group ask how they originate, assemble, interact with their environment, and change.