Abstract Submitted
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Microscopic to Macroscopic Dynamical Models of Sociality[1] CITLALI SOLIS SALAS, THOMAS WOOLLEY, Mathematical Institute, University of Oxford, EILUNED PEARCE, ROBIN DUNBAR, Department of Experimental Psychology, University of Oxford, PHILIP MAINI, Mathematical Institute, University of Oxford, SOCIAL AND EVOLUTIONARY NEUROSCIENCE RESEARCH GROUP (SENRG) COLLABORATION — To help them survive, social animals, such as humans, need to share knowledge and responsibilities with other members of the species. The larger their social network, the bigger the pool of knowledge available to them. Since time is a limited resource, a way of optimising its use is meeting amongst individuals whilst fulfilling other necessities. In this sense it is useful to know how many, and how often, early humans could meet during a given period of time whilst performing other necessary tasks, such as food gathering. Using a simplified model of these dynamics, which comprehend encounter and memory, we aim at producing a lower-bound to the number of meetings hunter-gatherers could have during a year. We compare the stochastic agent-based model to its mean-field approximation and explore some of the features necessary for the difference between low population dynamics and its continuum limit. We observe an emergent property that could have an inference in the layered structure seen in each person's social organisation. This could give some insight into hunter-gatherer's lives and the development of the social layered structure we have today.

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