

SPEAKER: Graeme Ackland, Professor of Computer Simulation, School of Physics, University of Edinburgh.

TITLE: 2D Daisyworld - A Complex Interacting Ecology.

DATE AND TIME: Friday, 26 November 2004, 12:30 pm

LOCATION: Gibbs Room, Keble College

ABSTRACT:

The daisyworld model was invented to demonstrate how evolution could occur without direct natural selection. A planet is inhabited by a single species of life - daisies - which have a single trait, colour. Pale daisies reflect sunlight and cool their environment, dark ones absorb and warm. Daisies reproduce fastest at a particular temperature: the emergent property is that the mean colour of the daisies adjusts to regulate the temperature.

In 2D, this simple model and minor variants exhibits a range in interesting features: catastrophic desert formation, critical fluctuations, and a statistical description based on various emergent constraints such as "maximum life" and principles such as maximum entropy.

I will discuss how the model illuminates both ecology and statistical mechanics of replicator dynamics.

REFERENCES:

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