



ANTS, CIRCLE PITS & PETER
JACKSON*

ANTS, CIRCLE PITS & PETER JACKSON*

**and tangentially related mathematics*

TODAY'S GOALS

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1. Understand what self-organisation is

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1. Understand what self-organisation is
2. Reason about its evolutionary advantages

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3. Think mathematically about self-organisation

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4. Consume cake

Theorem 1:

Theorem 1: Pictures > Words

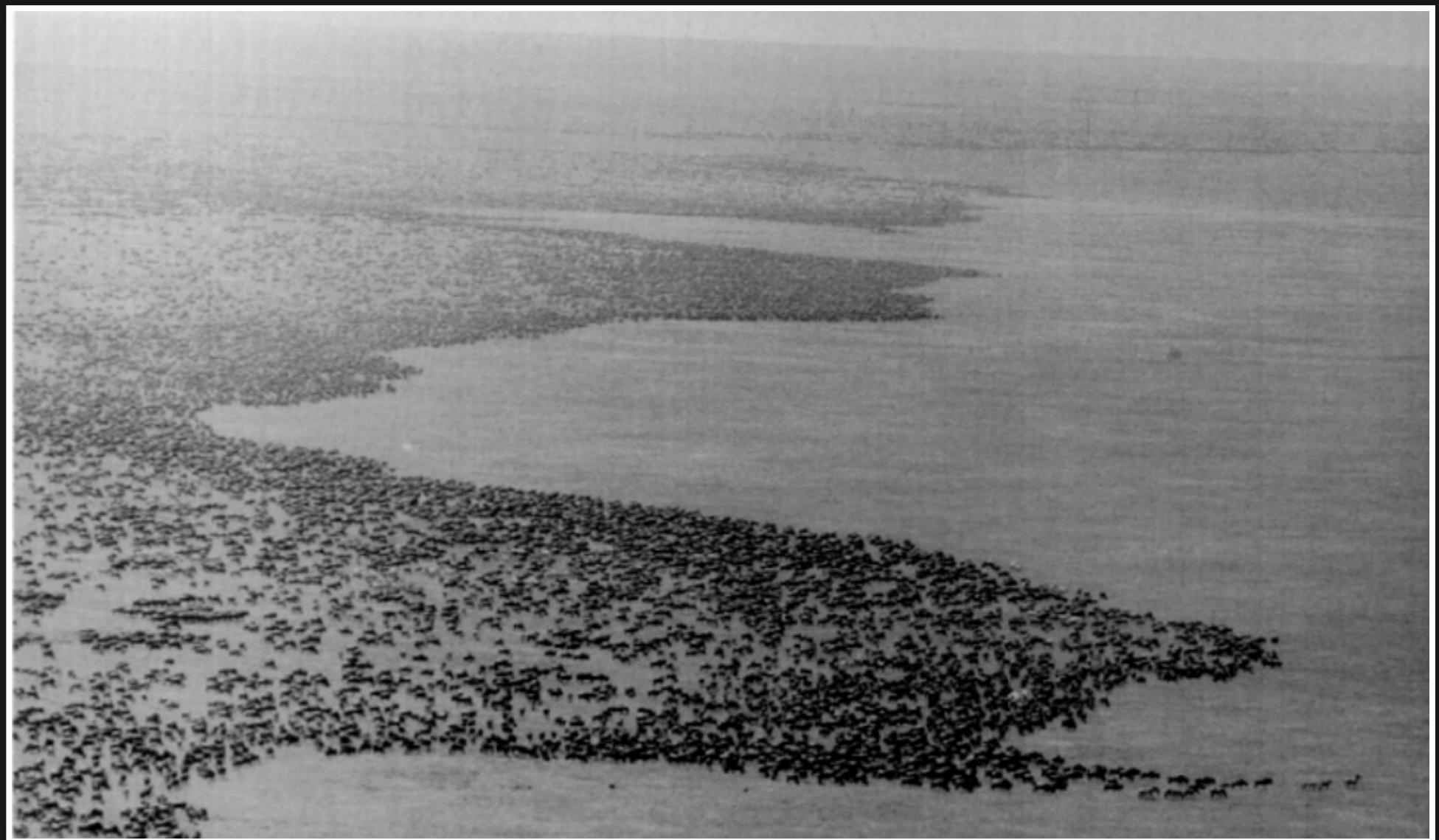
PROOF OF THEOREM 1:

Flight of the Starlings: Watch This Eerie but Beautiful Phenomenon | Short Film Showcase









Self-organisation is the spontaneous emergence of large-scale structure from the interactions between individuals.

Moreover, interactions are executed using only local information, without reference to the global pattern.

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BENEFITS OF GROUPING

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- Defence against predation

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 - Many-eyes theory

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- Energy conservation
 - Heat conservation
 - Aerodynamics

DANGERS OF GROUPING

GeoVideo 0020 Army Ant Death Spiral 1080p



DANGERS OF GROUPING

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Flock of 200 starlings that were found dead on road may have crashed into the Tarmac and died while swerving to escape a bird of prey, police reveal

- Dead starlings were discovered near Llyn Llywenan in Bodedern on December 10
- Post-mortem examination showed some of the birds had severe internal trauma
- Thought the birds had performed an 'avoiding action' to get away from the area

By TERRI-ANN WILLIAMS FOR MAILONLINE
PUBLISHED: 21:23, 16 January 2020 | UPDATED: 22:16, 16 January 2020

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DON'T MISS

EXCLUSIVE Images of Strictly's Kelvin Fletcher and Oti Mabuse arriving at ANOTHER hotel at 11pm the night AFTER their 3.30am drink emerge...

EXCLUSIVE ... just hours after Kelvin and

DANGERS OF GROUPING

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- Getting stuck in a circle pit

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- Increased risk of disease and parasitism

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- Getting stuck in a circle pit
- Increased risk of disease and parasitism
- Being featured in the daily mail

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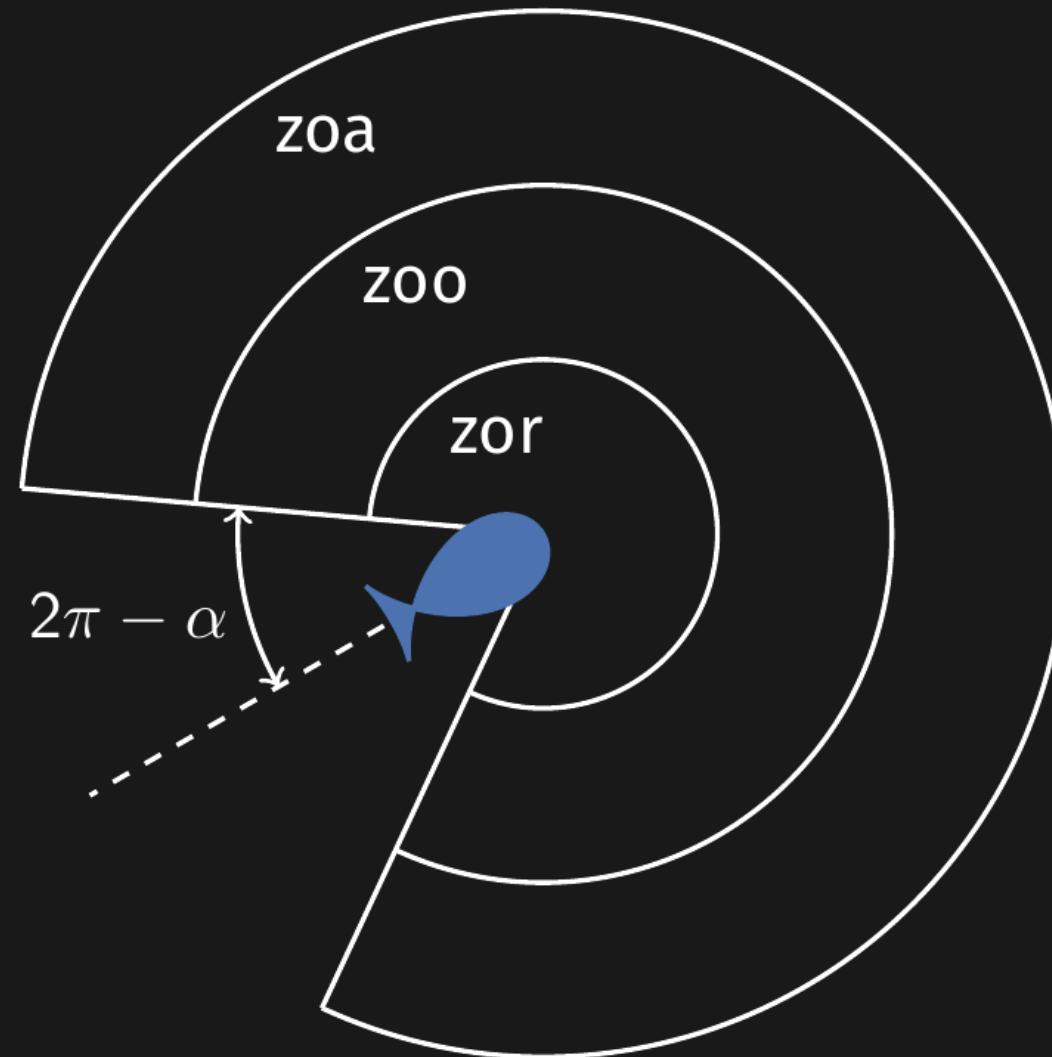
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ZONAL MODELS



BOIDS (1987)

PETER JACKSON & MASSIVE

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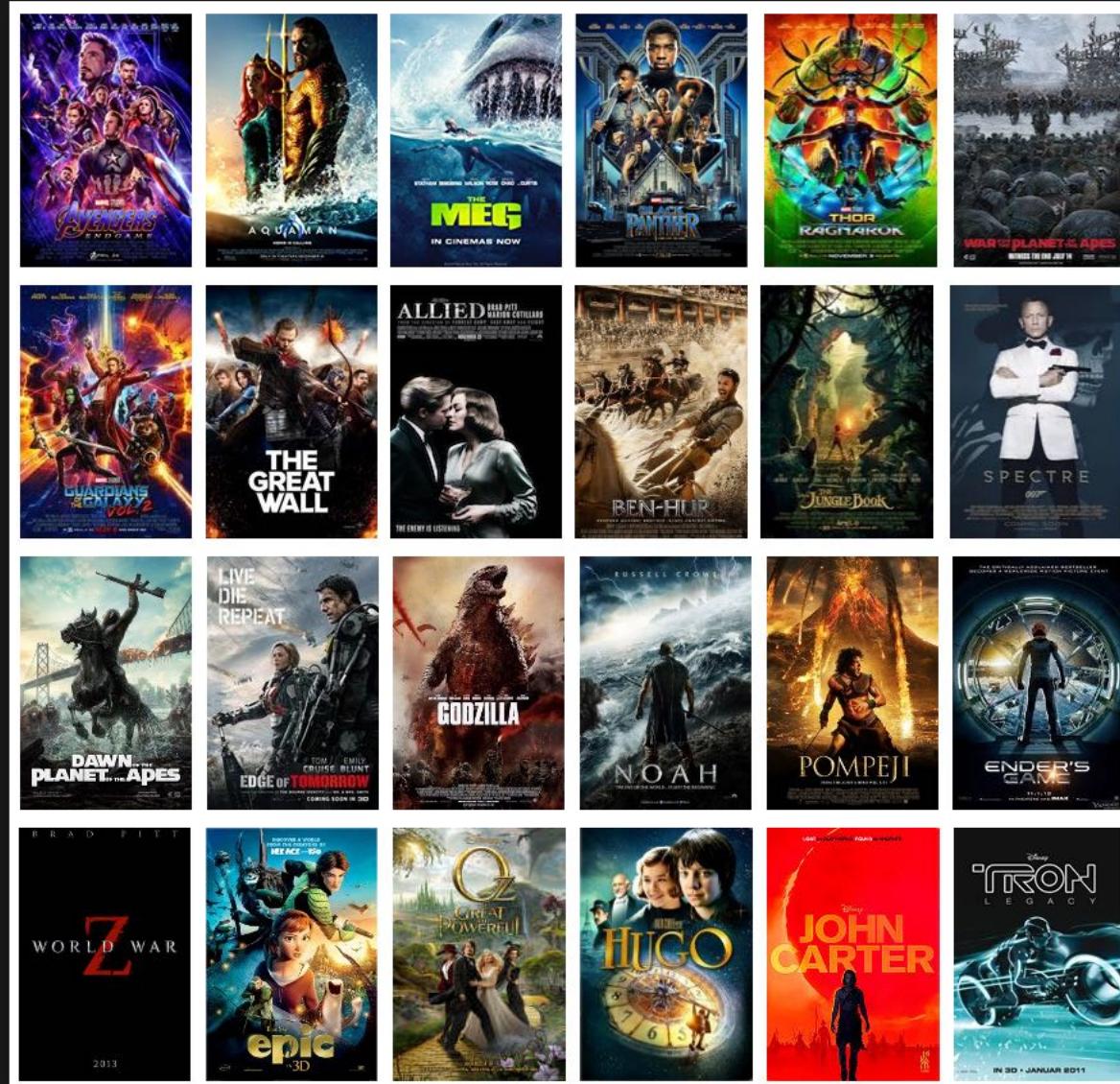
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- Used to animate intricate battle scenes

RECENT APPLICATIONS



FUTURE GOALS...



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Stephen Regelous, the lead developer of Massive, has since been awarded an Emmy award and an Academy award



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Thanks for (*hopefully*) listening

