Evolutionary and Dynamical Systems

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SCHOOL OF INTERACTIVE ARTS + TECHNOLOGY

SFU SIMON FRASER UNIVERSITY ENGAGING THE WORLD

Evolutionary and Dynamical Systems

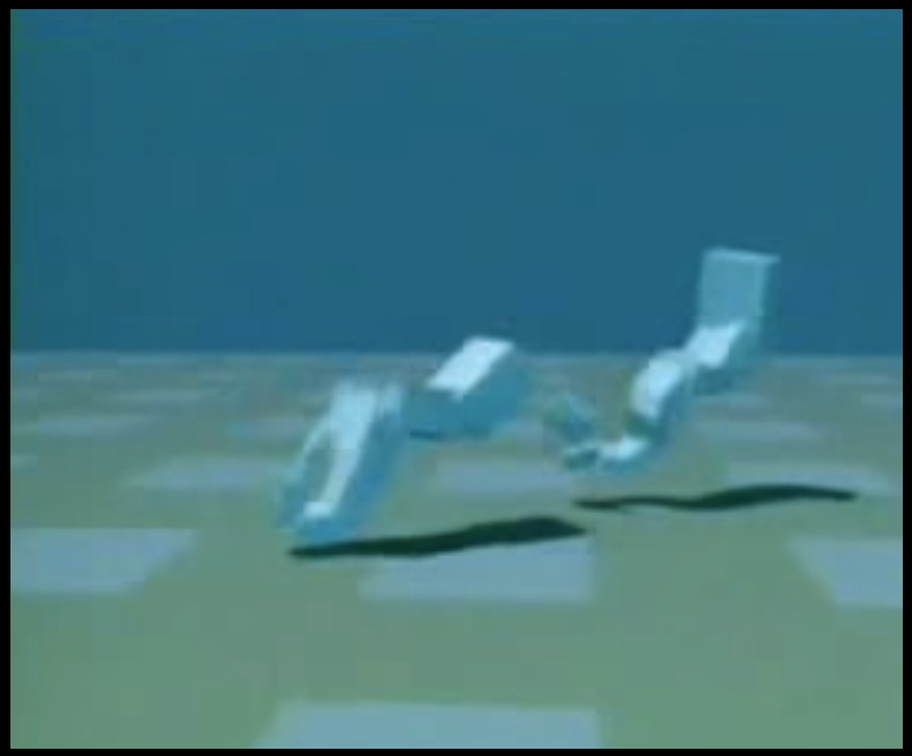
- Cybernetics
- Artificial Life
- Optimisation

Evolutionary and Dynamical Systems

Emergent sources of autonomy?

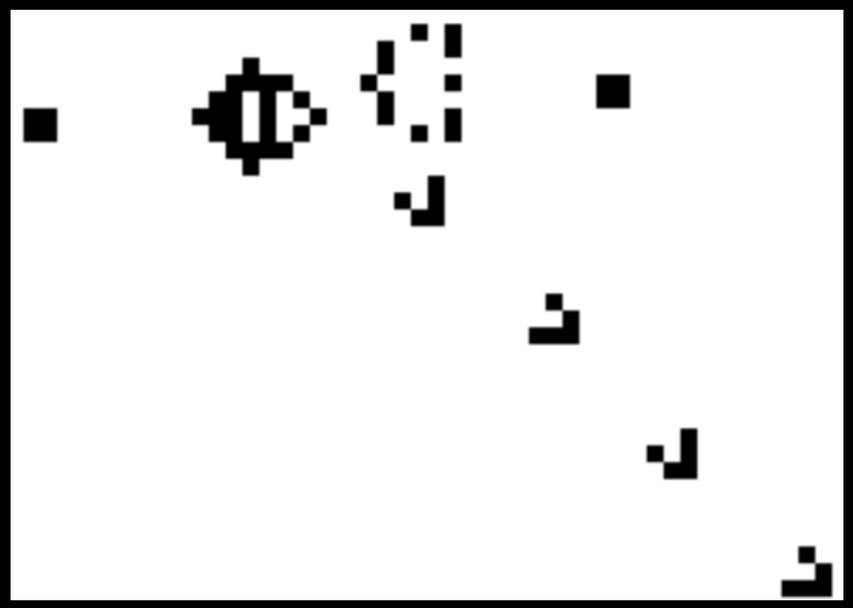
In contrast to learning systems where behaviour is derived from a corpus.

Inspiration from Sims, Kauffman, etc.



Evolutionary and Dynamical Systems

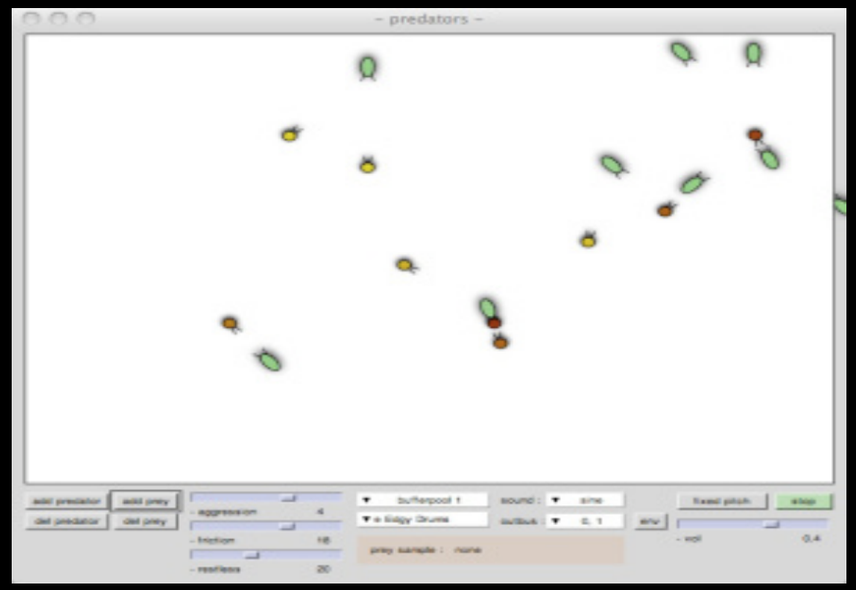
CA music – Eduardo Miranda



Swarms/dynamic oscillators – Impett, Blackwell and Young

Dynamic agents – Magnusson

Chaotic and complex systems - Di Scipio



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Evolutionary and Dynamical Systems

Jon McCormack, *Eden*.

One of a number of “ecosystemic” artworks.

Evolutionary and Dynamical Systems

Uses of evolution:

- Interactive
- Targeted
- Exotic
- Novelty search

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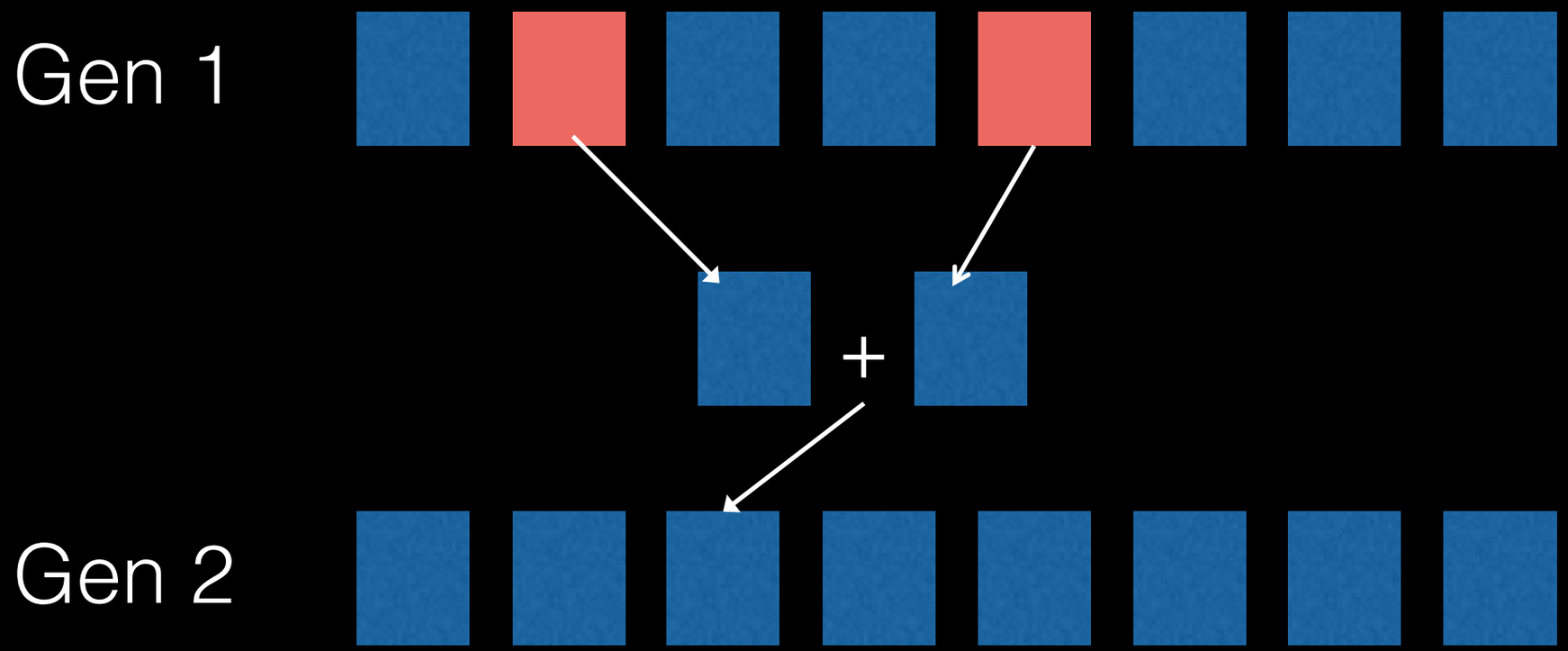


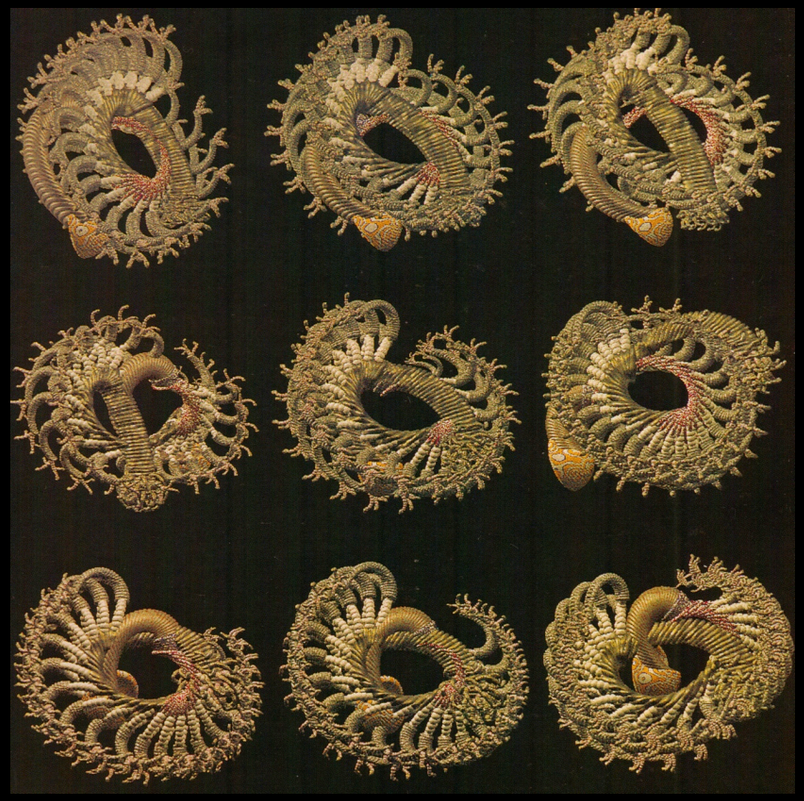
Evolutionary and Dynamical Systems

Evolving structure versus evolving behaviour

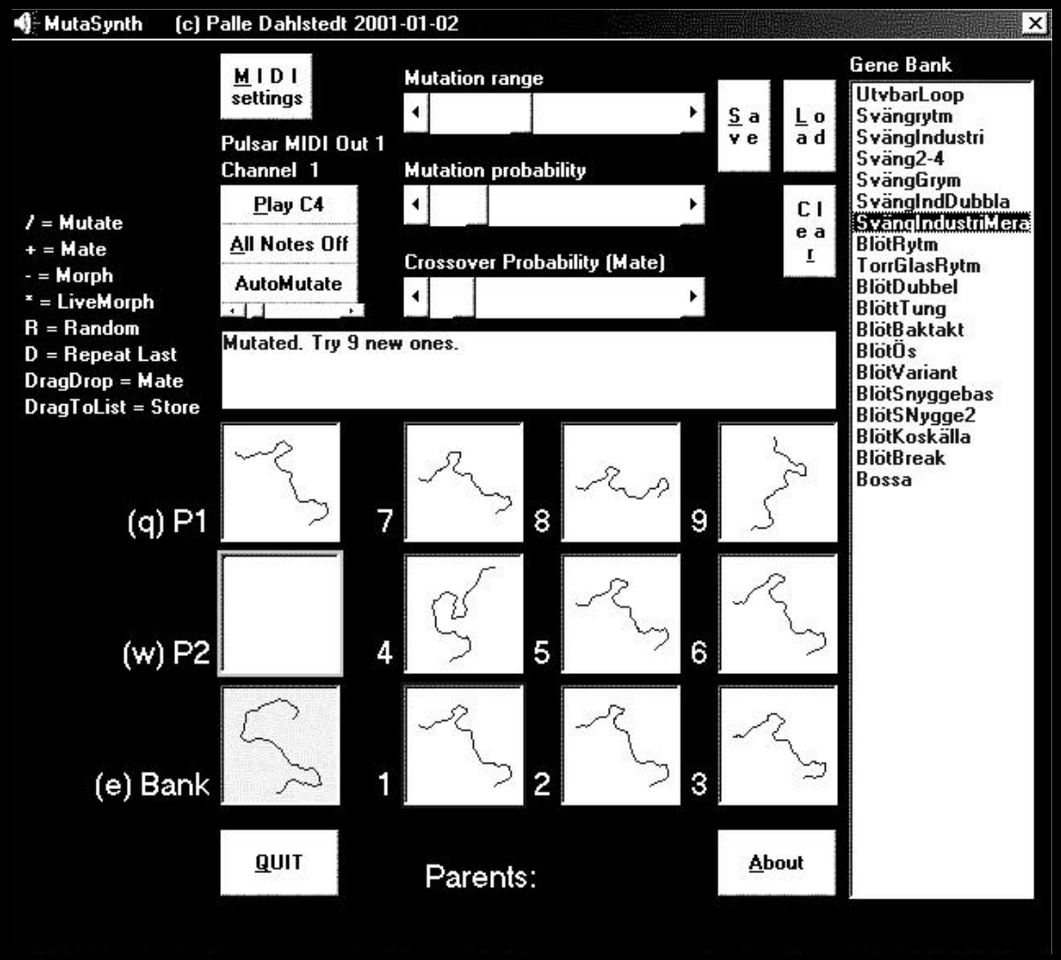
Evolution as a means for achieving novel complexity in hard-to-comprehend systems

Evolutionary and Dynamical Systems

Latham, Mutator (1987)



http://latham-mutator.com/1987/05/mutator-1/



Palle Dahlstedt, MutaSynth (2001)

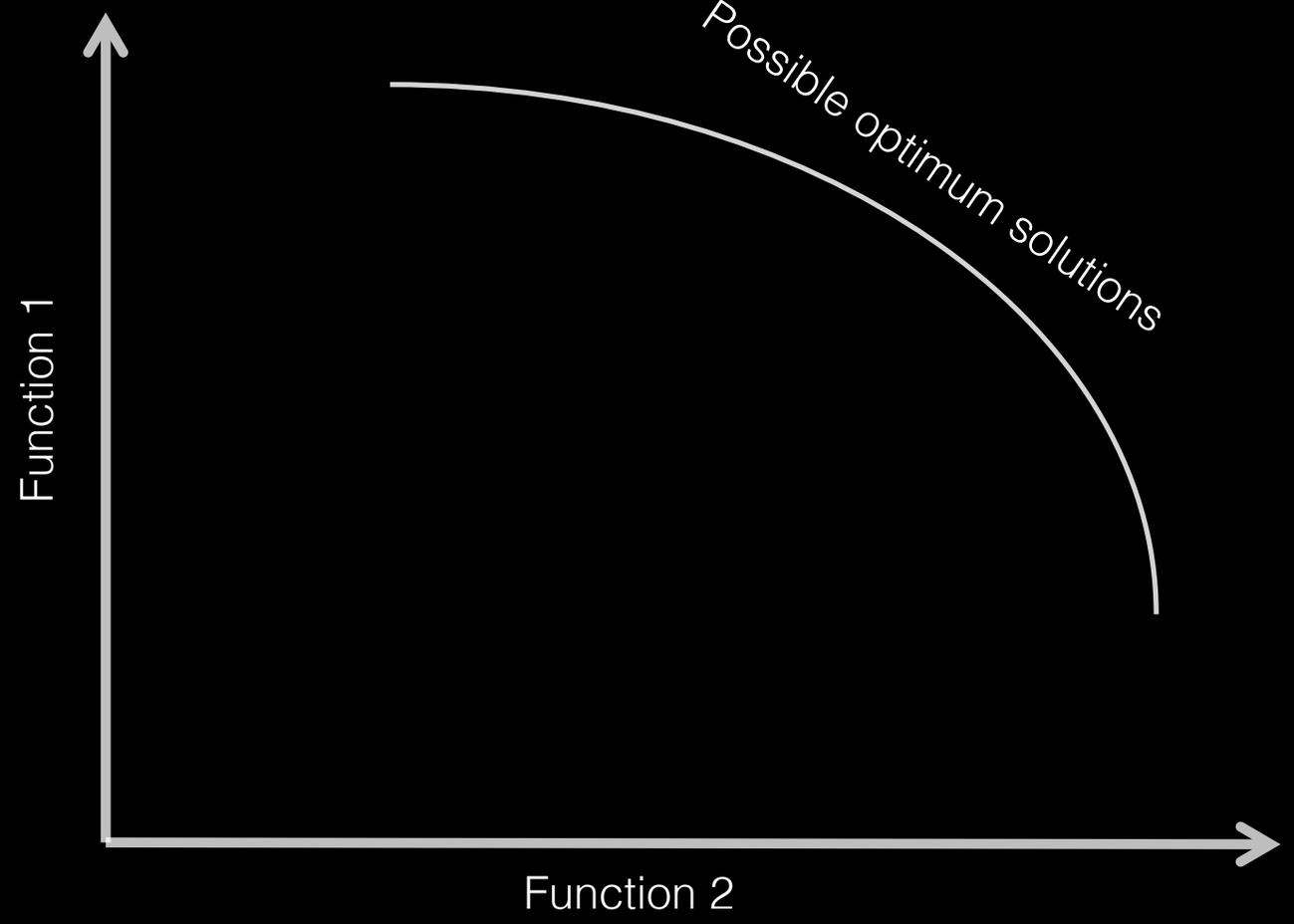
Evolutionary and Dynamical Systems

Exotic:
e.g.,
Biles: GenJam,
Gartland-Jones, Parameter Interpoloation.

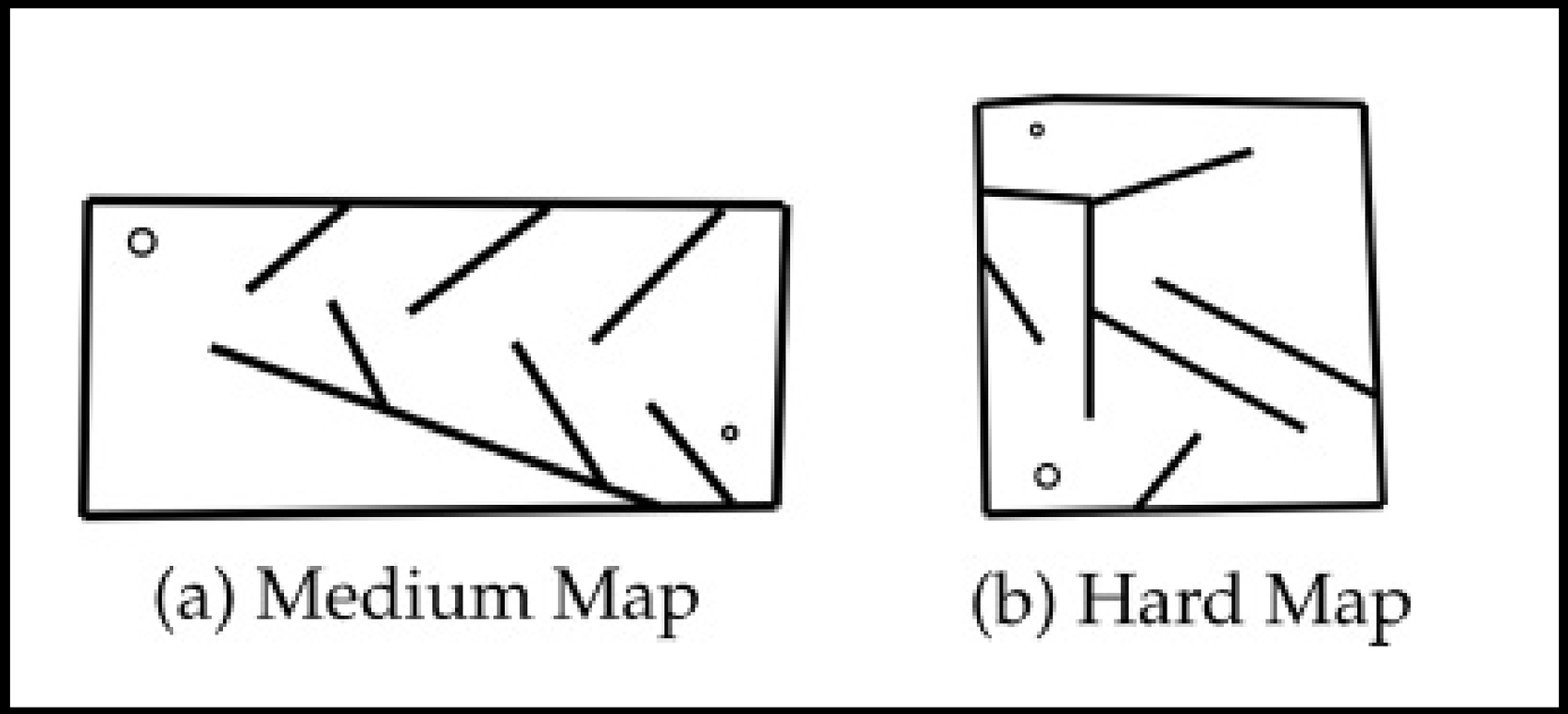
Hybrid:
e.g.,
Bown: Zamyatin

Evolutionary and Dynamical Systems

Multiobjective functions.



Evolutionary and Dynamical Systems



Lehman and Stanley. Abandoning Objectives: Evolution Through the Search for Novelty Alone. *Evolutionary Computation*, Volume 19 Issue 2, Summer 2011, Pages 189-223.