CSE/ECE 848
Introduction to
Evolutionary Computation

Module 3 - Lecture 11 - Part 5
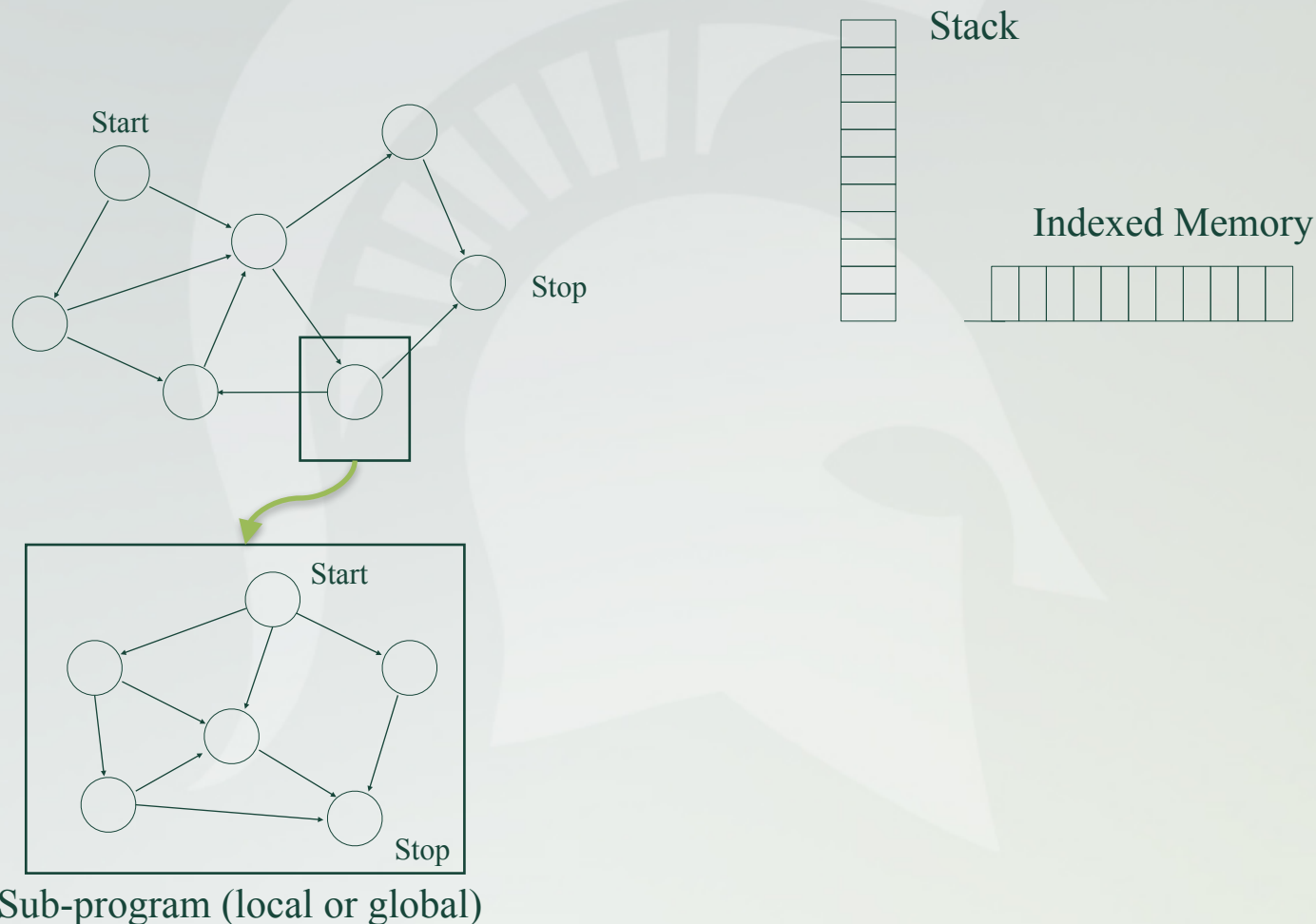# Genetic Programming -
Other Representations

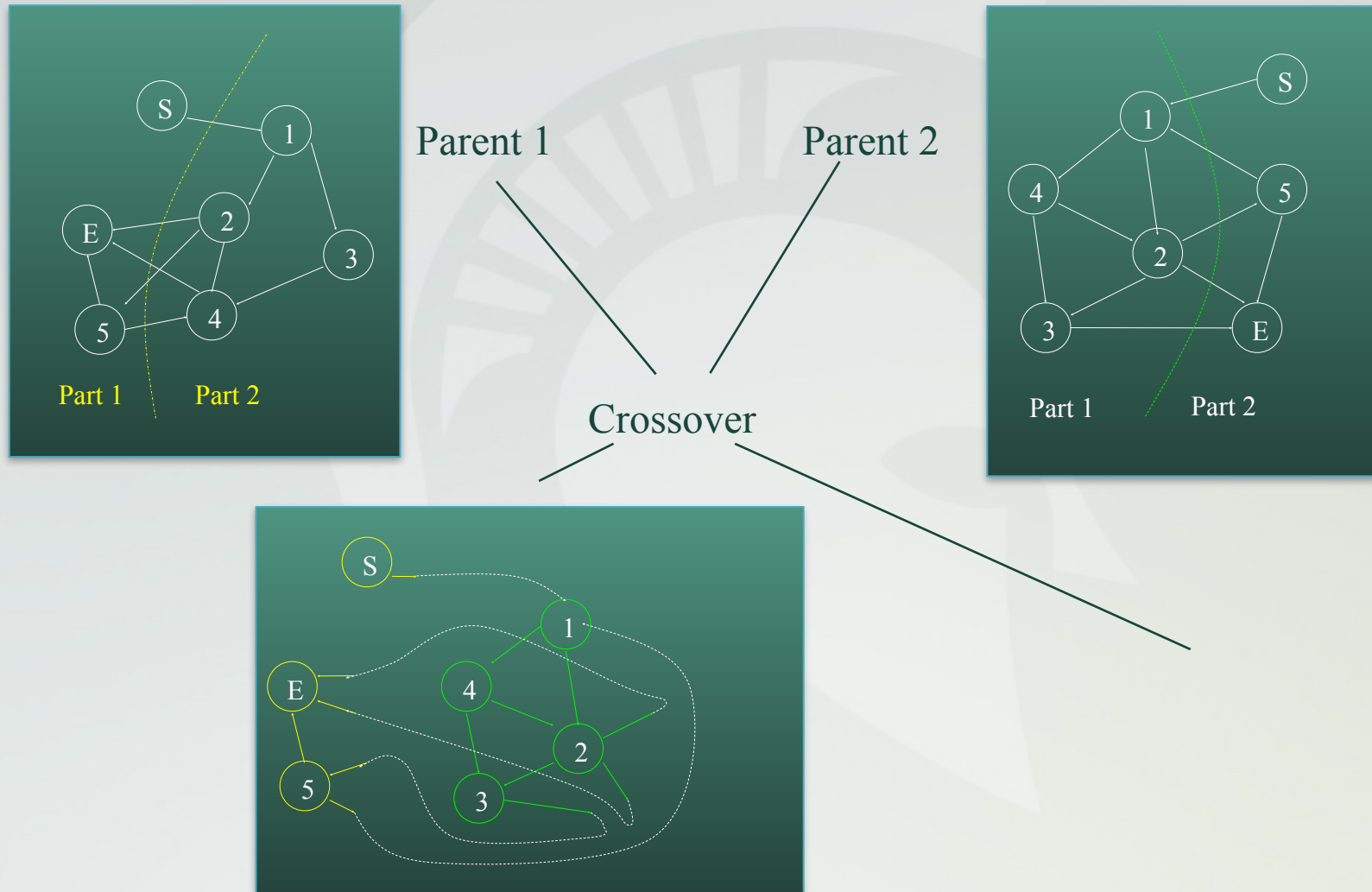**Wolfgang Banzhaf, CSE**
John R. Koza Chair in Genetic Programming

CSE/ECE 848 Introduction to
Evolutionary Computation

Representations

- Tree GP

- Linear GP

  - AIM GP

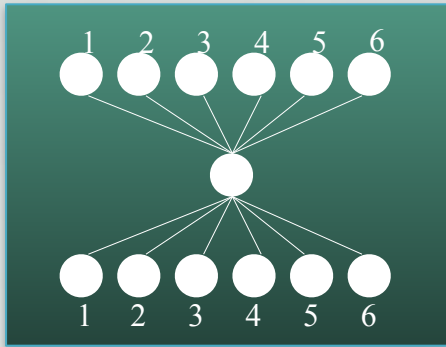- Graph GP (PADO example)

- Cellular Encoding

- CF Grammar GP

CSE/ECE 848 Introduction to
Evolutionary Computation

Graph GP: PADO

Stack

Indexed Memory

Start

Stop

Start

Stop

Sub-program (local or global)

CSE/ECE 848 Evolutionary Computation
for Search and Optimization

Graph Crossover

Parent 1

Parent 2

Crossover

CSE/ECE 848 Evolutionary Computation
for Search and Optimization
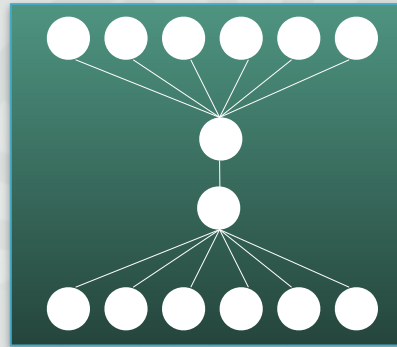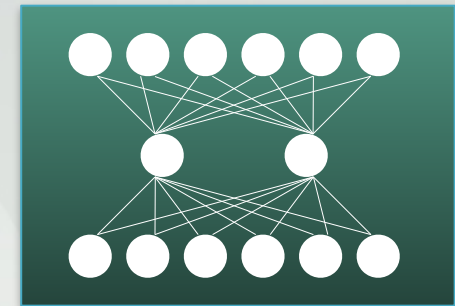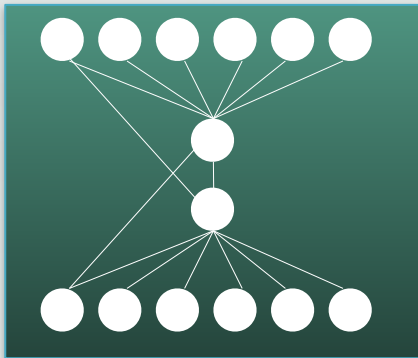
Cellular Encoding

(a) Start graph
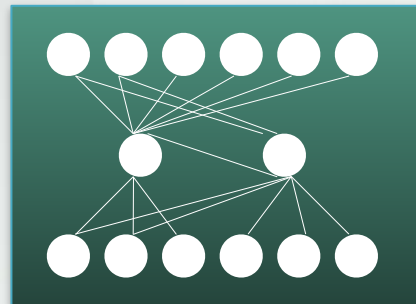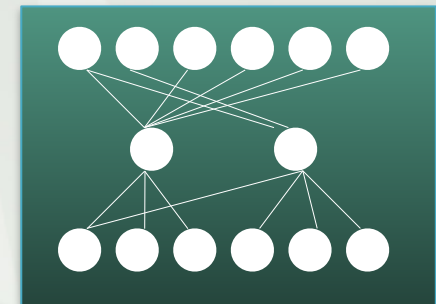
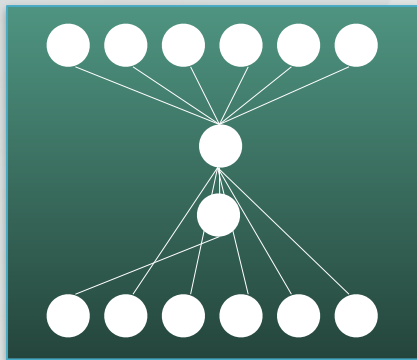(b) Sequential Division ‚S‘

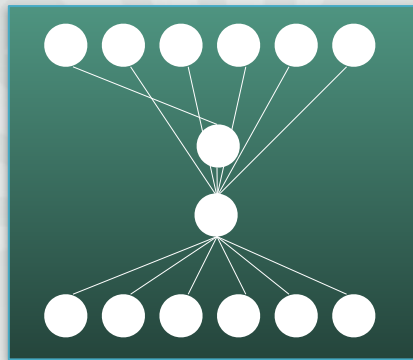(c) Parallel Division ‚P‘

(d) Division ‚T‘

(e) Division ‚A‘

(f) Division ‚A‘

CSE/ECE 848 Evolutionary Computation
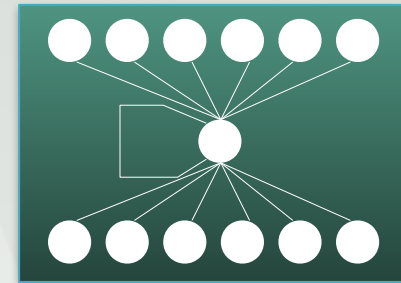for Search and Optimization

Cellular Encoding

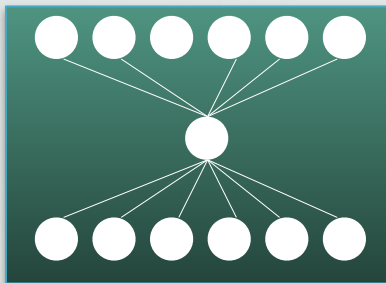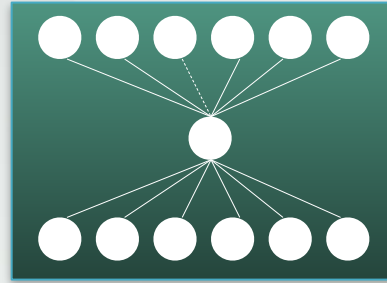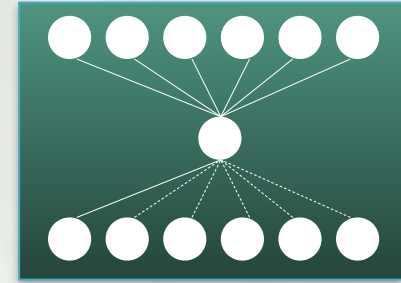

(g) Division ‚H'

(h) Division ‚G'

(i) Recurrent Link ‚R'

(j) Cut input link ‚C3'

(k) Change Input Weights ‚D3'

(l) Change Output Weights ‚K2'

CSE/ECE 848 Evolutionary Computation
for Search and Optimization

CF Grammar GP

CSE/ECE 848 Evolutionary Computation
for Search and Optimization