DEEP LEARNING GROUP TALKS

# NEURO EVOLUTION OF AUGMENTED TOPOLOGIES

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- Evolutionary algorithms always heavily mirror biology
- Key evolutionary processes: Selection, Mutation, Crossover

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  - Encoding are much more compact
  - Can result in a heavy bias within the search space

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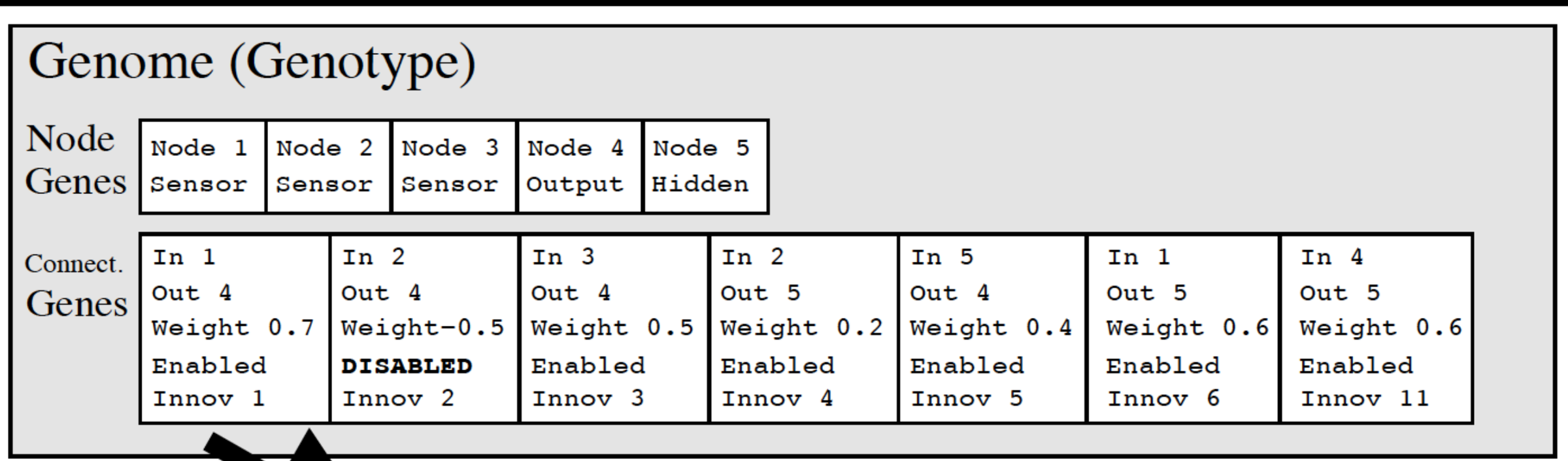

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    - Helps mitigate issues with new structural additions

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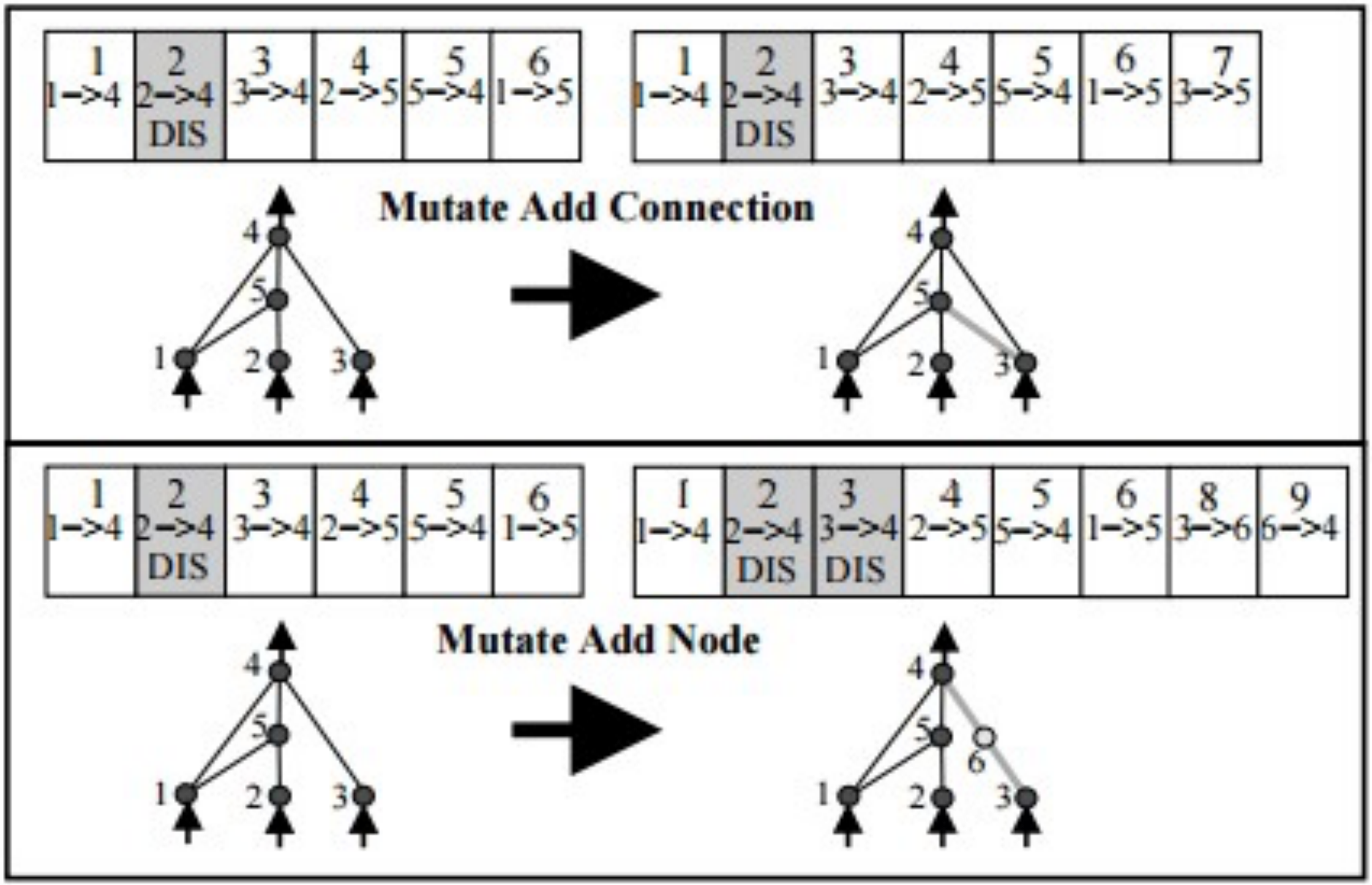

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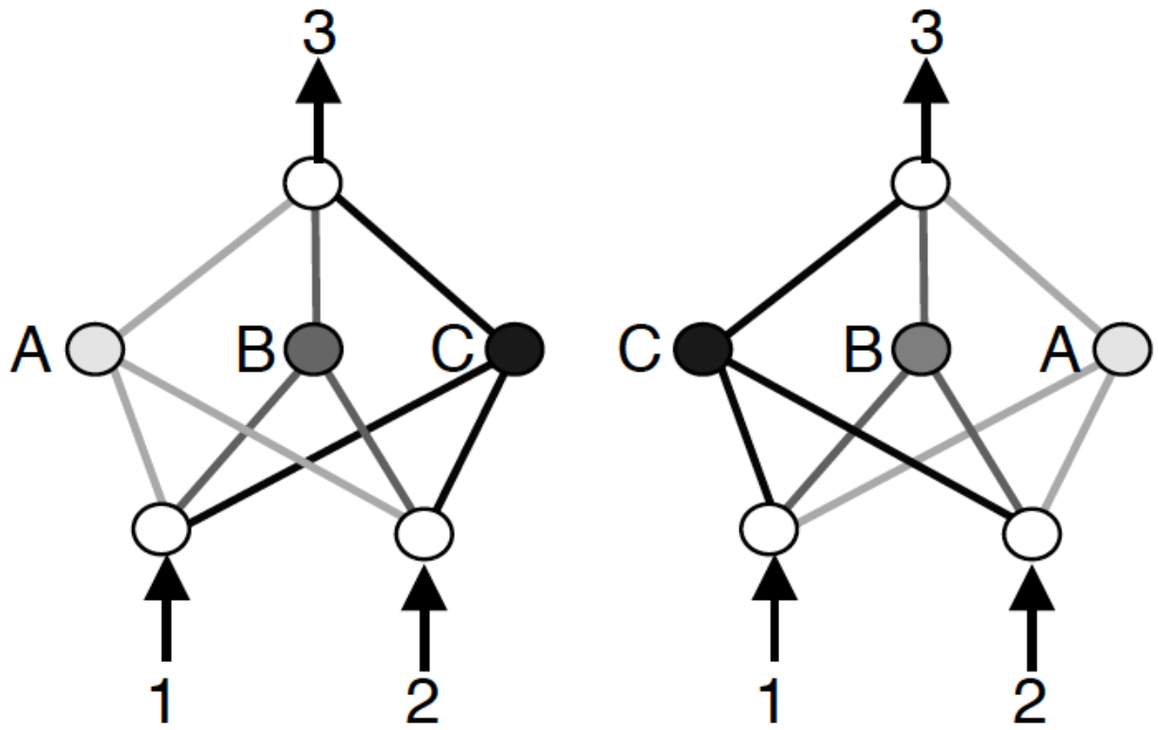


[A,B,C]
**X**[C,B,A]

Crossovers: [A,B,A] [C,B,C]
(both are missing information)

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  - Each gene can be aligned and potentially crossed-over
  - Each time a new node/connection occurs -> historical marking assigned

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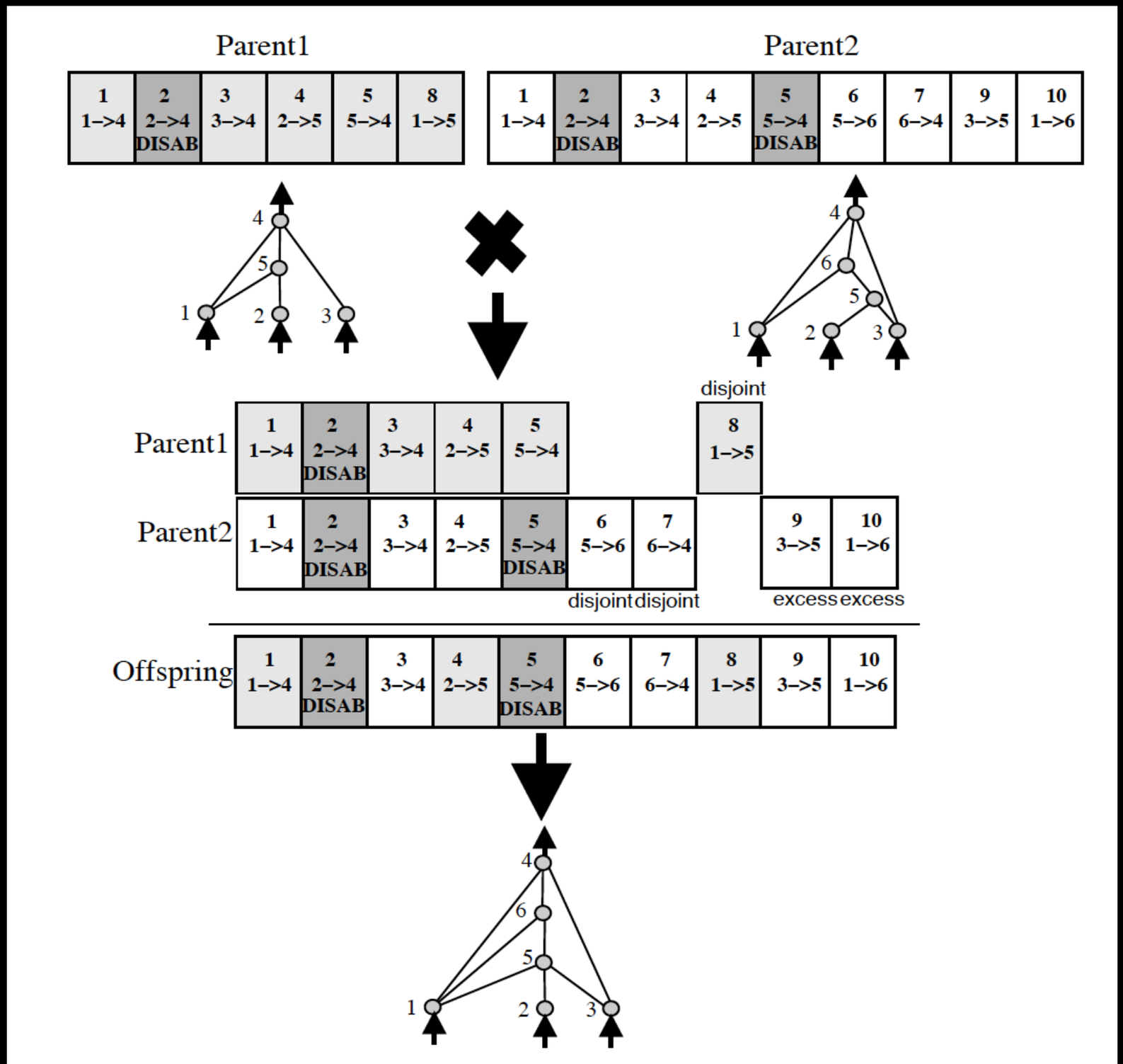

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- Explicit Fitness Sharing: Individuals share how well they are doing across species

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  - And popular games as well!

# THANKS!

(REFERENCES: HTTPS://TOWARDSDATASCIENCE.COM/NEAT-AN-AWESOME-APPROACH-TO-NEUROEVOLUTION-3ECA5CC7930F)
(THE SEMINAL PAPER: HTTP://NN.CS.UTEXAS.EDU/DOWNLOADS/PAPERS/STANLEY.EC02.PDF)