Simulating Language
25: Summary and feedback

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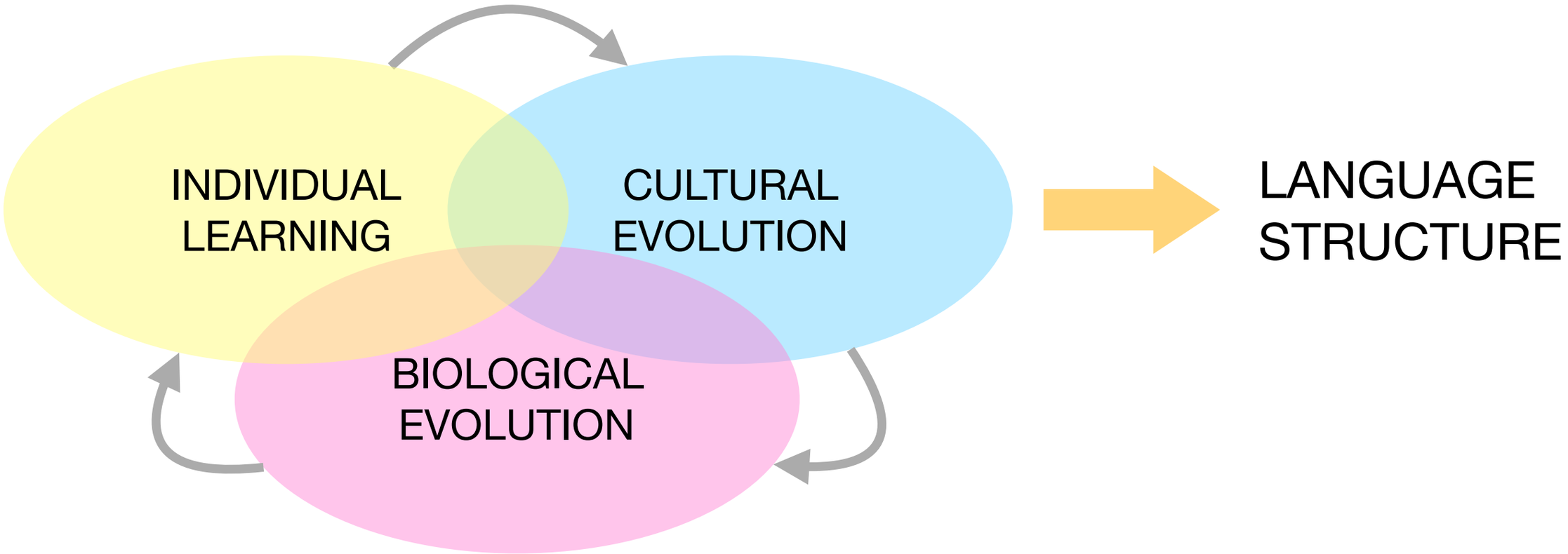
How can we explain language structure?



Biological evolution

BIOLOGICAL EVOLUTION

Evolution of innate signalling by natural selection

Associative networks, genetic algorithms

Mutual benefit

Reciprocal altruism

Kin selection

Individual learning

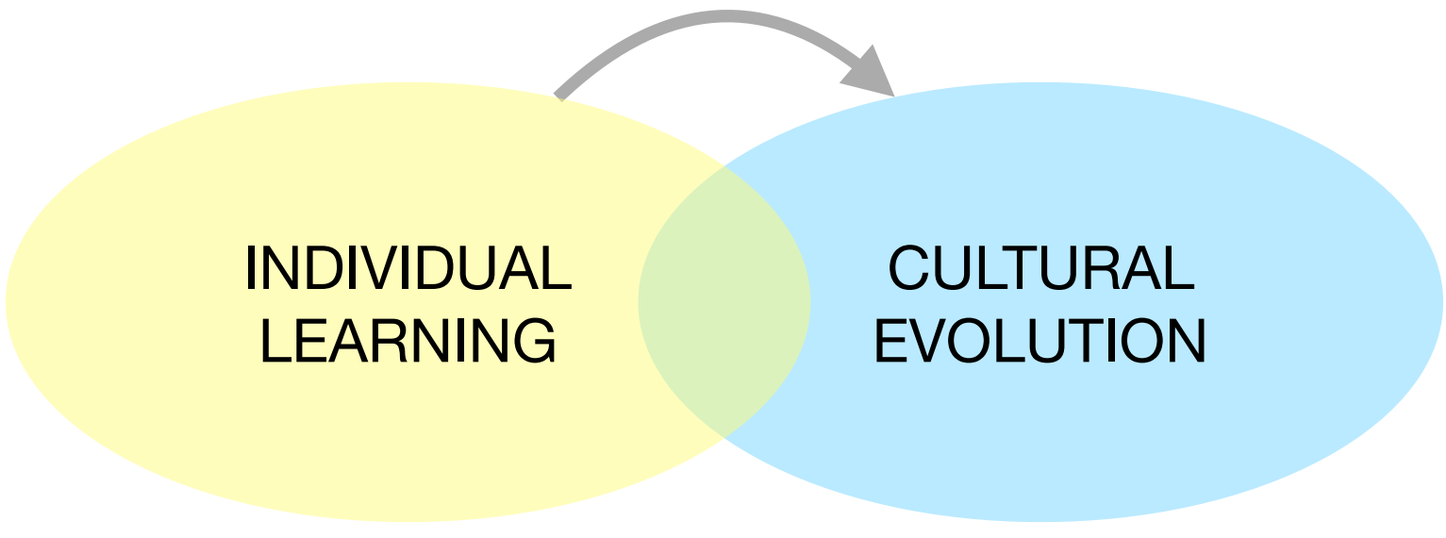
Learned signalling

Weight update rules

Learning bias

“Rational” speakers

Cultural evolution through iterated learning



The problem of linkage

Construction/maintenance/
acquisition

Bottlenecks

Compositional syntax

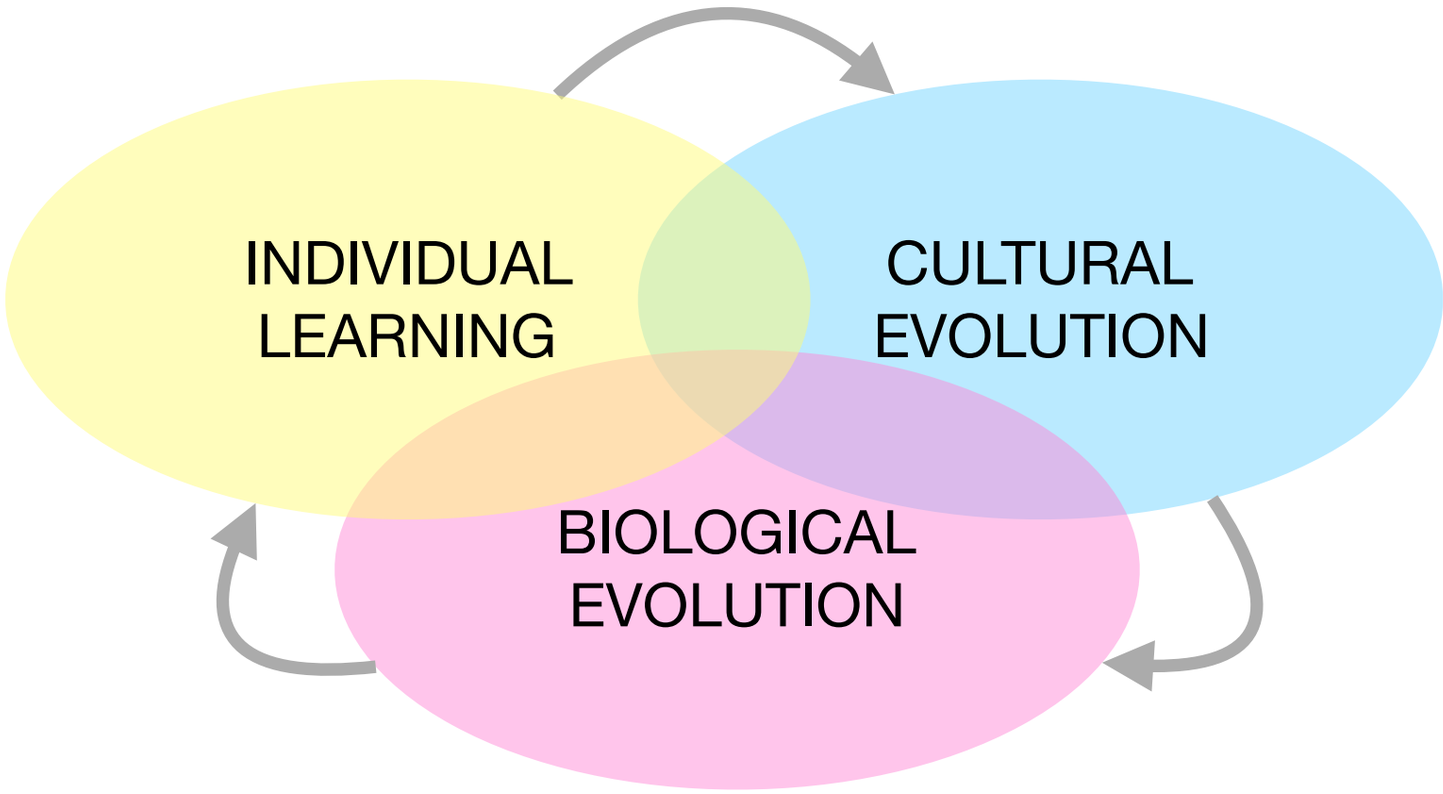
Bayesian learning

Regularisation, word order

MAP, sampling, multiple teachers

Bias amplification

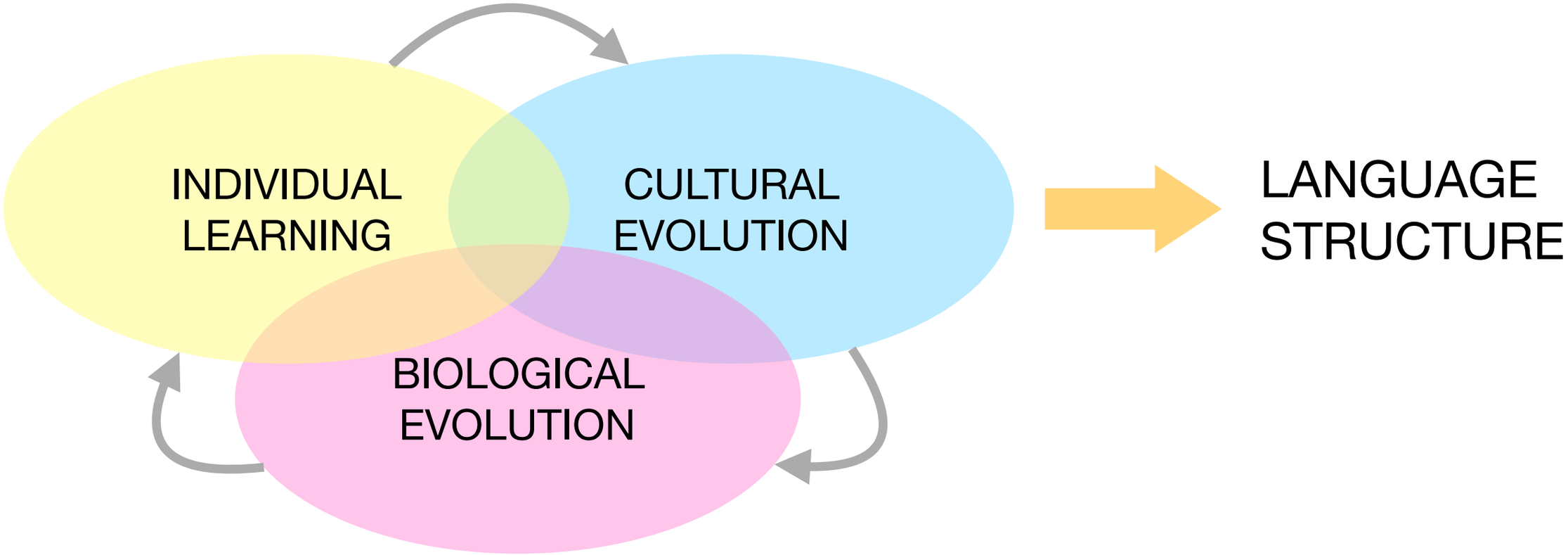
Gene-culture co-evolution



Masking, unmasking

Weak biases vs. strong constraints

Domain generality vs. specificity



My view:

The unique structural properties of language are the inevitable result of cultural evolution operating on weak, domain-general biases favouring compressible representations.

Biological evolution has given our species the capacity for culture.
The rest follows for free.