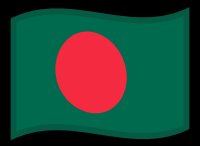
Quantitative simulator based learning of ecology and evolution

Saumitra Chakravarty

BANGLADESH, IBO 2023



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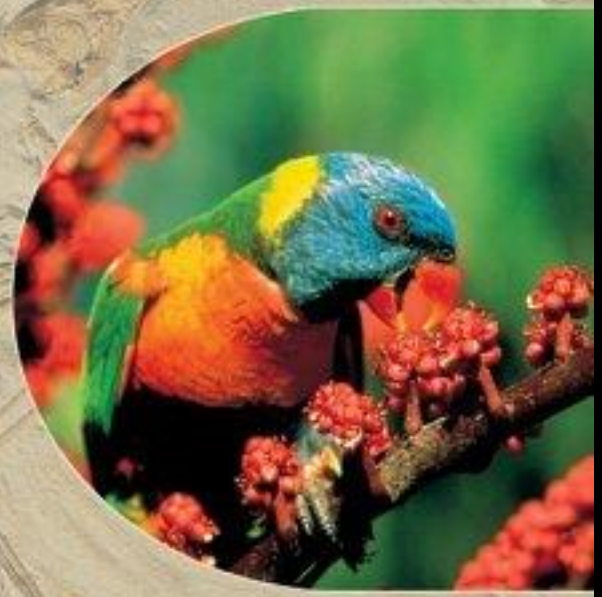
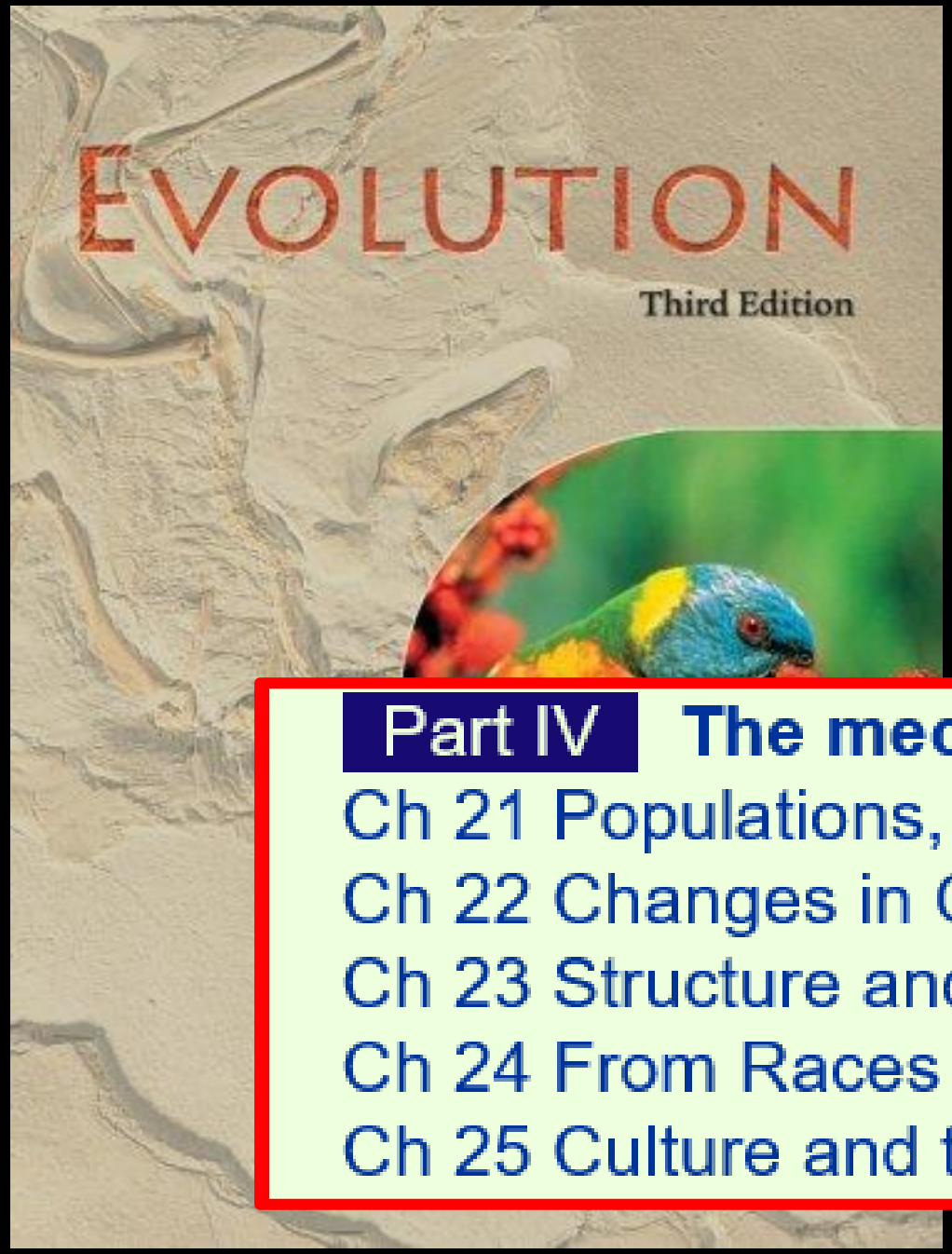


Monroe W. Strickberger



"EVOLUTION". Third Edition.
by **Monroe Strickberger**.
2000
Jones and Barlett Publishers.
hardback, 722 pages.

Contents:

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Ch 4 The Darwinian Impact: Evolution and Religion
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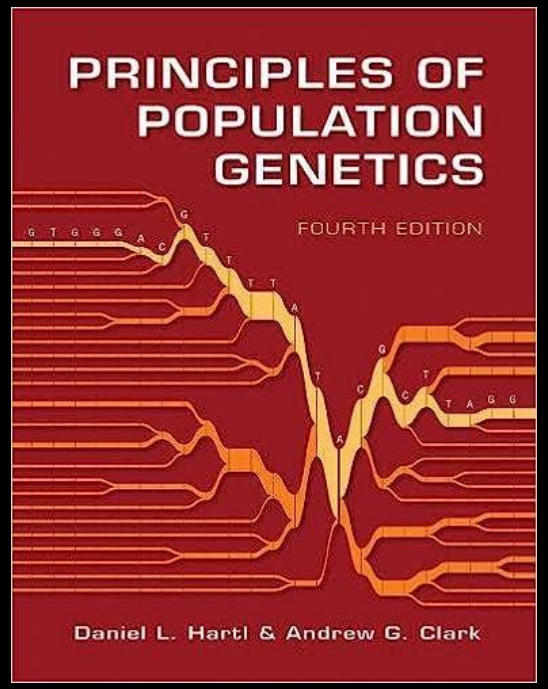
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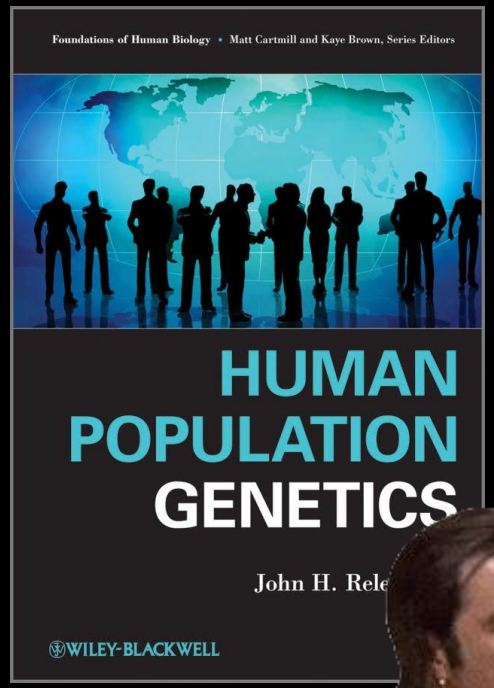
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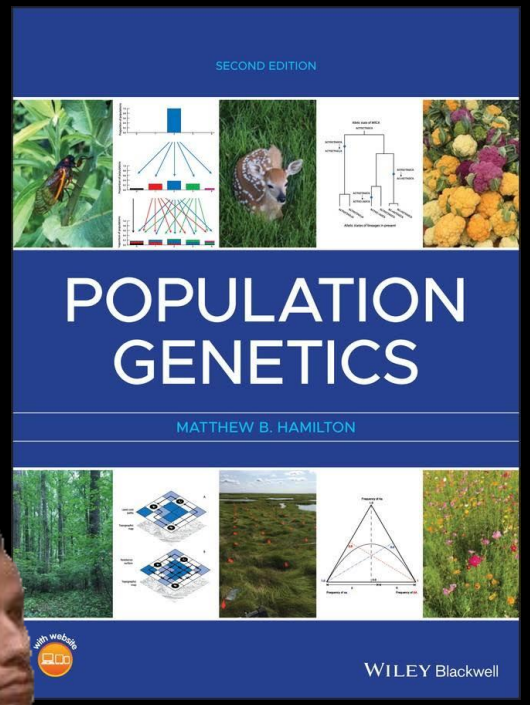
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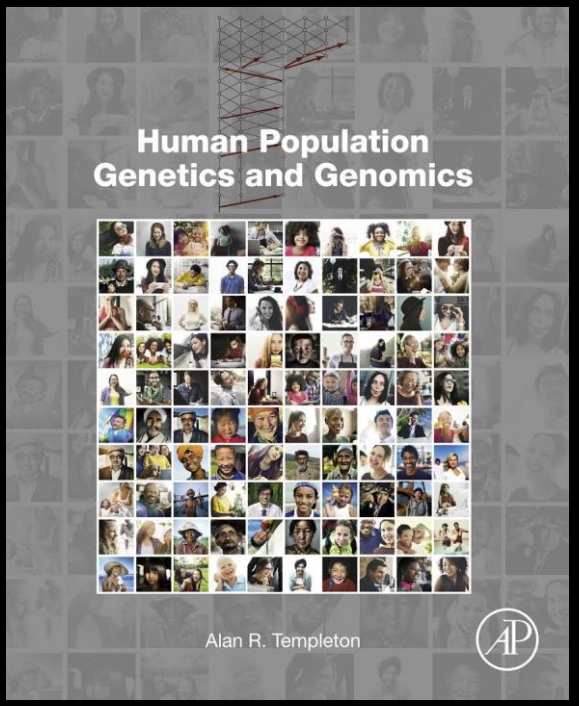
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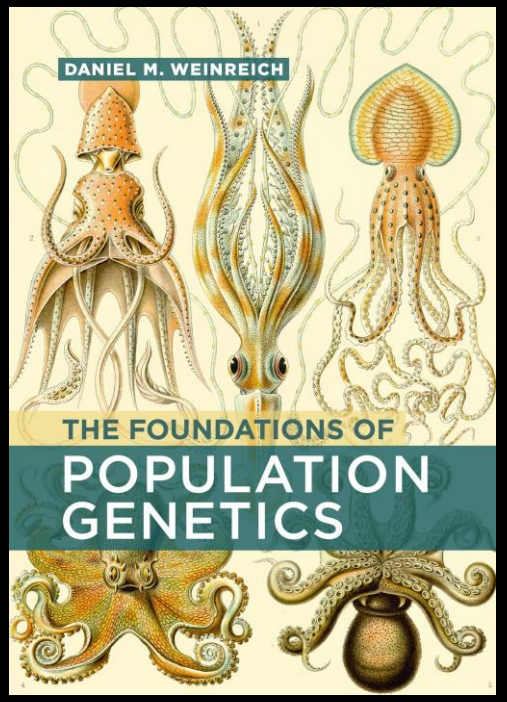
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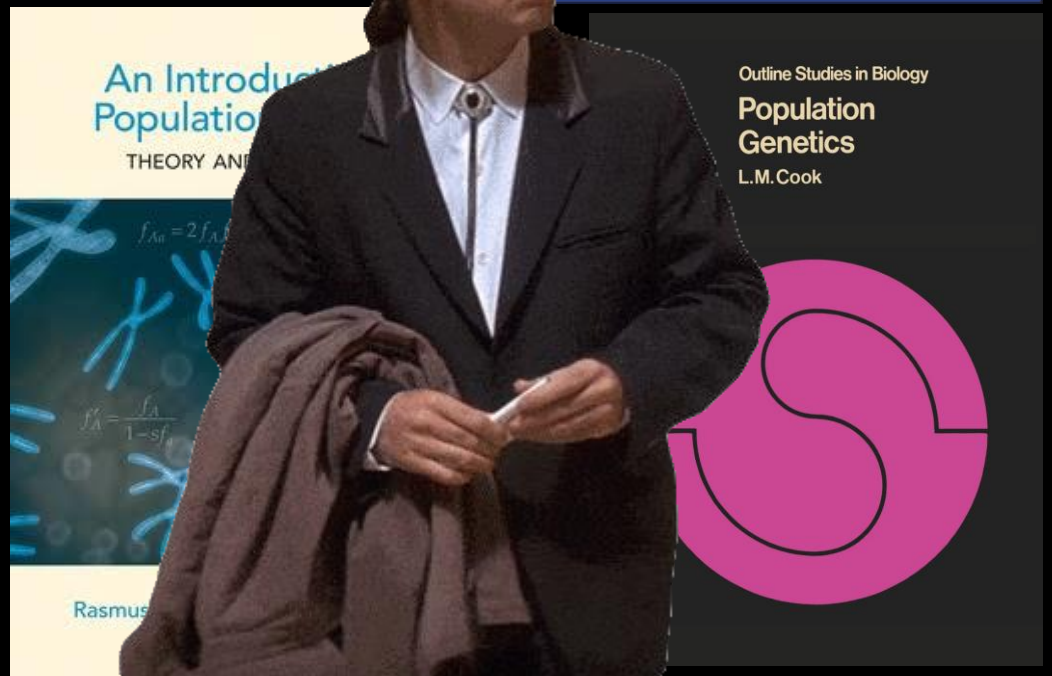
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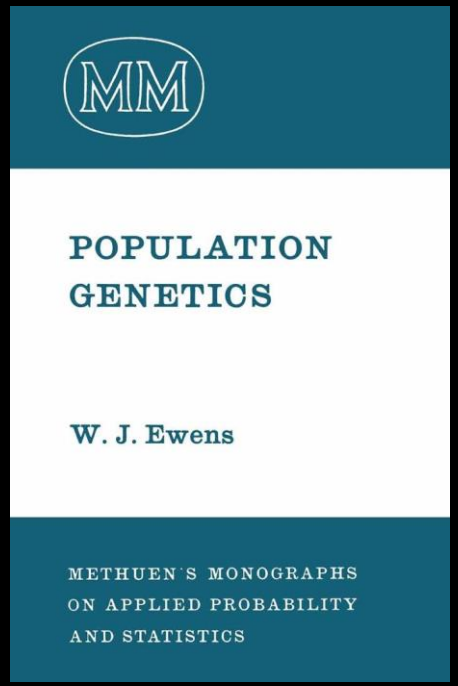
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The Euclidean Method

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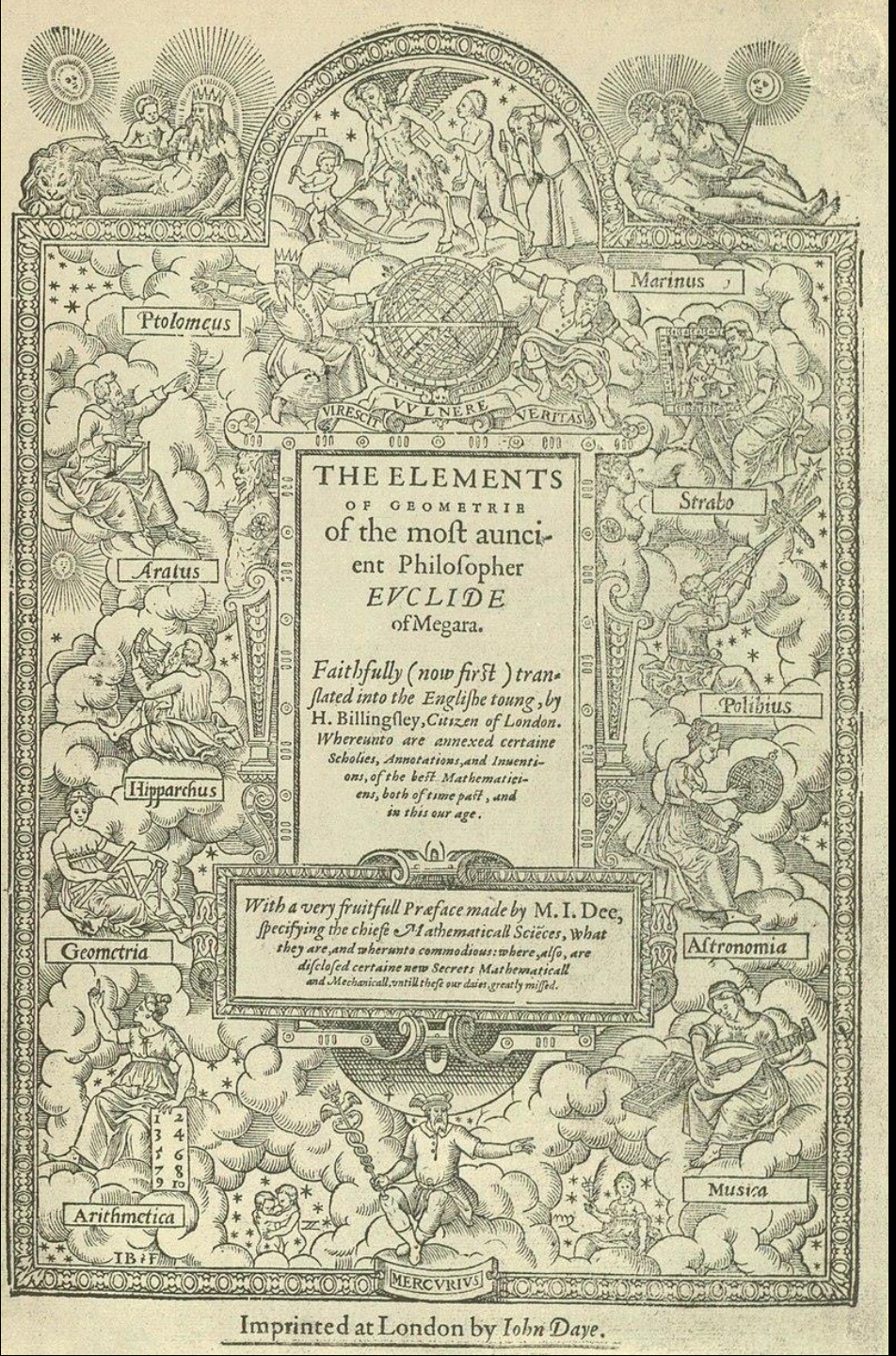

The Euclidean Method

Propositions (testable conclusion) — 465

Deductive Logic

Postulates & Common Notions (rules of manipulation) — 5+5

Definitions (objects of interest) — 131

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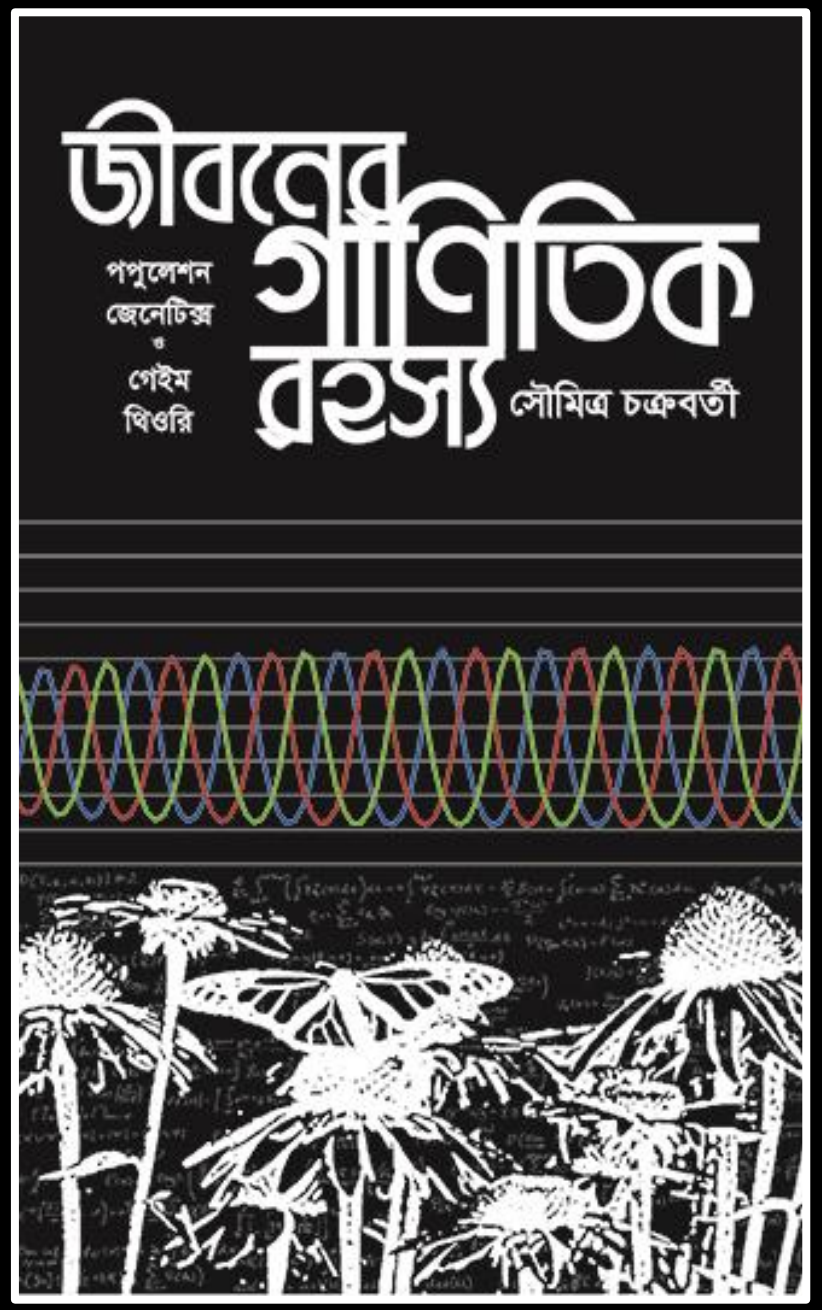

The Euclidean Method

Theorems (testable conclusion) — 42

Deductive Logic

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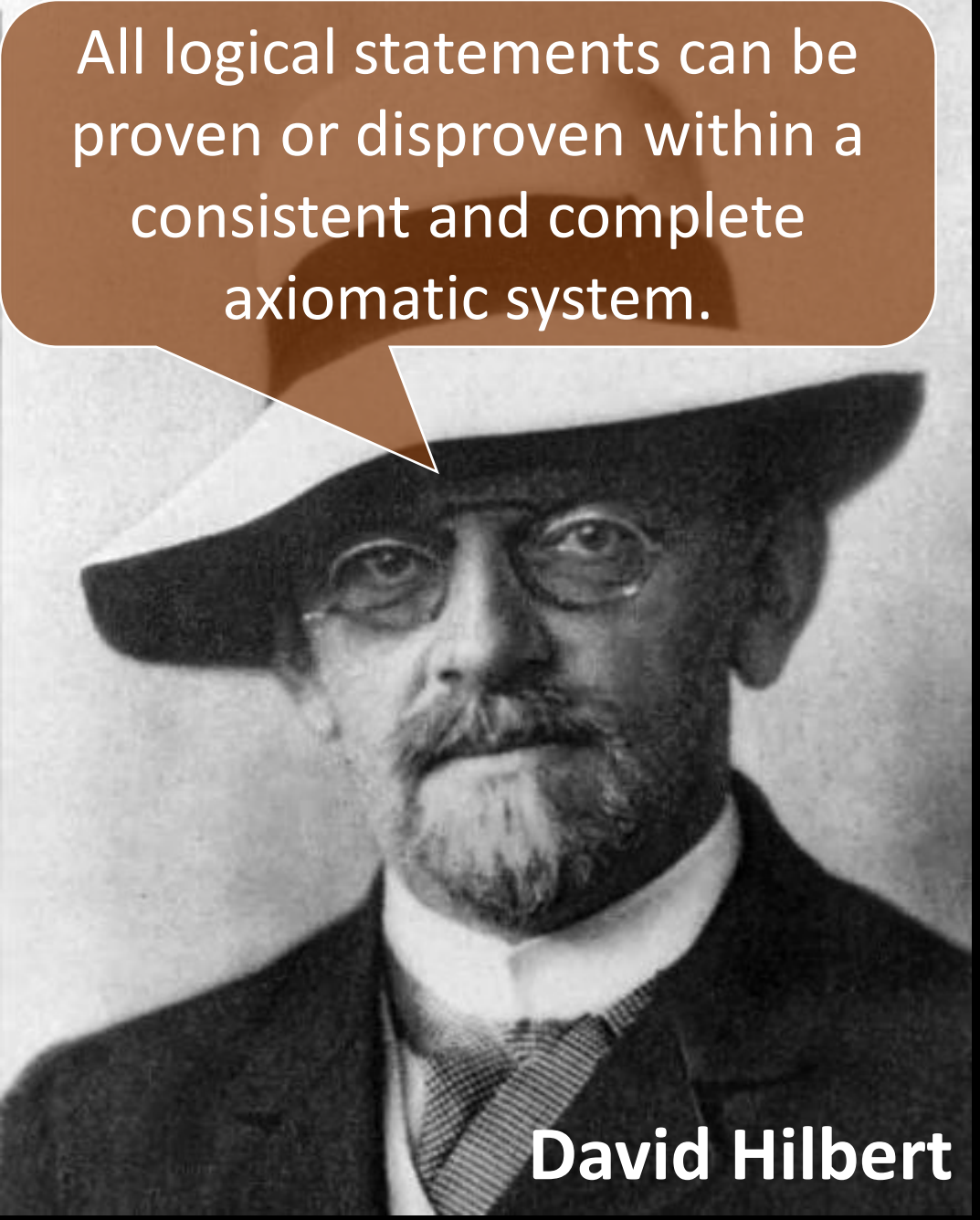
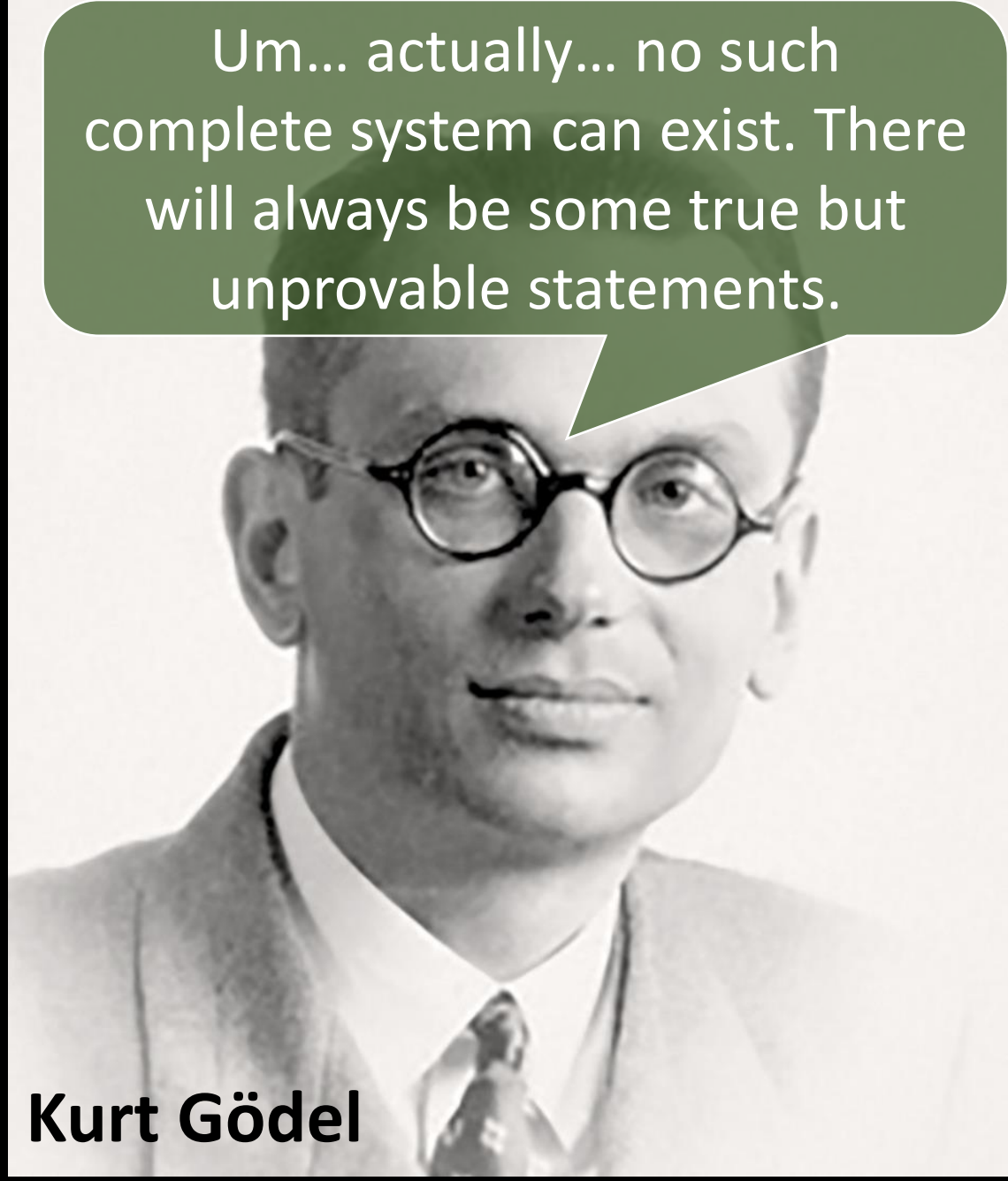
Mathematical Mysteries of Life: Population Genetics and Game Theory

All logical statements can be proven or disproven within a consistent and complete axiomatic system.



David Hilbert

Um… actually… no such complete system can exist. There will always be some true but unprovable statements.



Kurt Gödel

Possibly Reid, Constance (1970) *Hilbert*, Berlin, Heidelberg: Springer Berlin Heidelberg Imprint Springer, p. 230

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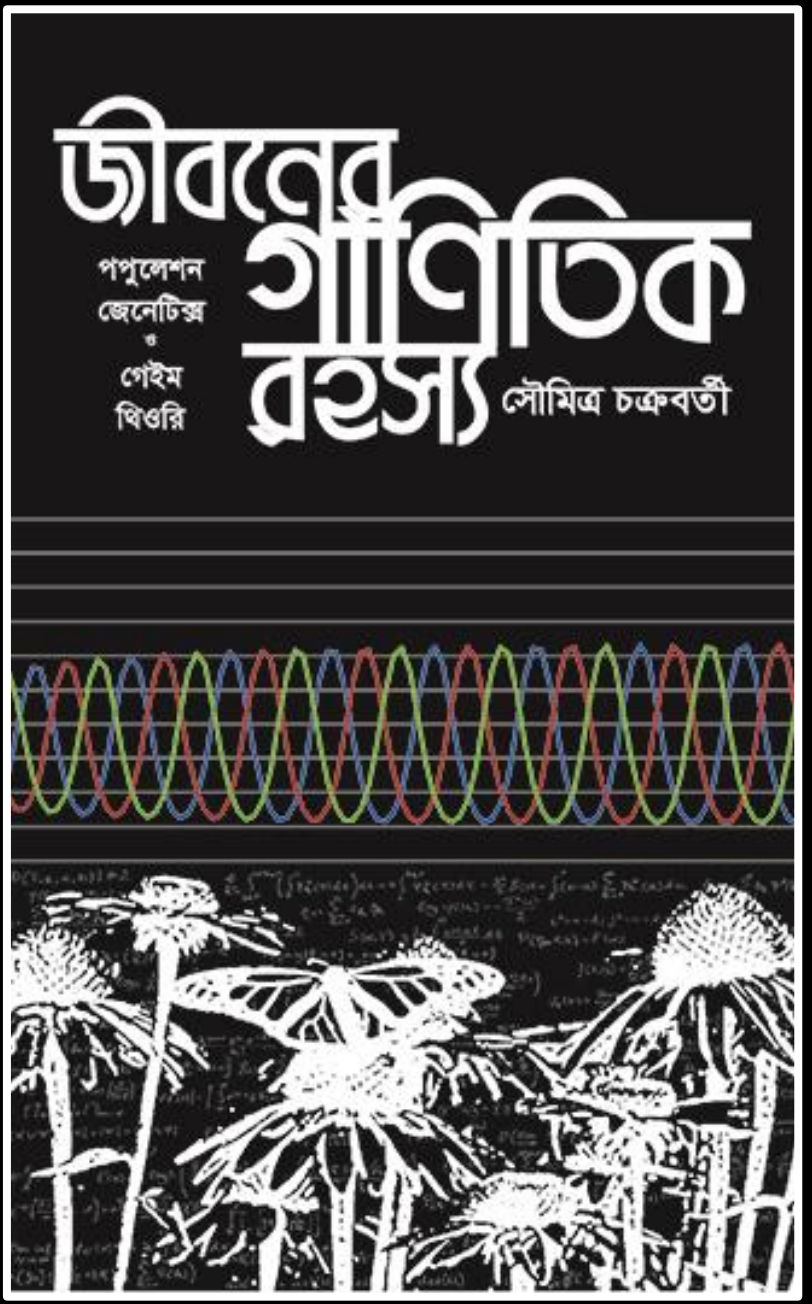

Hardy-Weinberg Simulator

Composition of F0 population:

AA 16

Aa 32

aa 16

Simulate

Violation of equilibrium:

- Selection
- Mutation
- Migration
- Emigration
- Non-random mating

Reset all

Assumption:

Population is at Hardy-Weinberg equilibrium

Population size may fluctuate

Show: Graph ~ (p, q) vs F

Developed by Saumitra Chakravarty [www.saumitra-chakravarty.com]

saumitra-chakravarty.com/hardy-weinberg-simulator