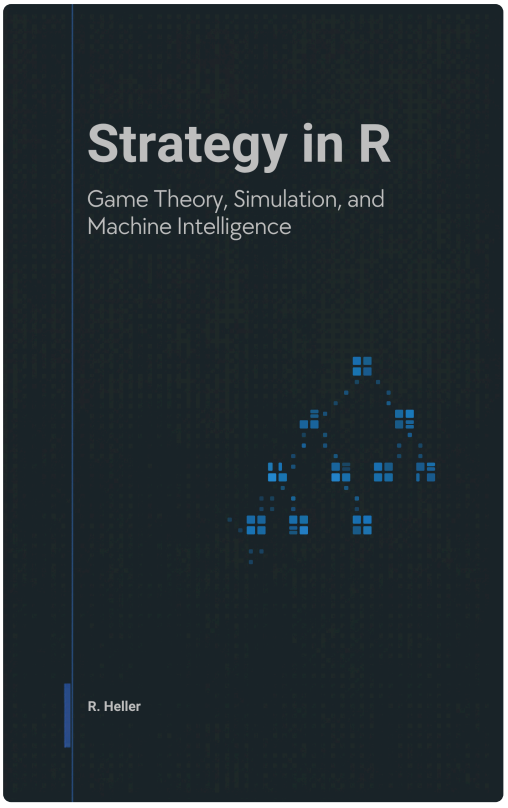
# Welcome!

*R. Heller · Date: 2026-05-11 · Last changed: 2026-11-10*




A free, open-source book on game theory, simulation, and machine intelligence — implemented end-to-end in R.

## About this book

*Strategy in R* brings two ideas together: the formal language of game theory and the practical computation that makes it tractable. Part I builds the foundations from scratch — normal- and extensive-form games, Nash equilibrium, mixed strategies, Bayesian games, repeated games, and cooperative game theory. Part II tours the R toolkit (`GameTheory`, `CoopGame`, `gtree`, `nashpy` via `reticulate`, custom solvers).

Parts III and IV move into simulation and AI: Monte Carlo methods, agent-based models, Axelrod's tournament, replicator dynamics, evolutionarily stable strategies, network games, performance with Rcpp, then reinforcement learning, multi-agent RL, self-play and AlphaZero, counterfactual regret minimisation, GANs as minimax games, and LLM agents.

Parts V and VI close with applications (auctions, mechanism design, matching markets, bargaining, empirical case studies) and a section on ethics and the future of strategic AI.

The book is for graduate students, researchers, and practitioners with working R fluency who want to apply it to strategic interaction. It assumes no prior game-theory background. It is not a pure-mathematics textbook, not a general machine-learning textbook, and not a

software-engineering manual.

## How to use this book

- **Reading paths.** Front-to-back works; theorists can skim Parts II–IV; R programmers can dip into Parts II–IV and refer back to Part I as needed.
- **Code lives** under `R/` (helpers, theme, solvers) and `python/` (CFR, deep RL via `reticulate`); example data under `data/`. Every chapter is rebuildable in isolation: `bookdown::preview_chapter("12-gtree-package.Rmd")`.
- **Per-chapter downloads.** Each chapter page offers the chapter as PDF and EPUB below its title.
- **Whole-book downloads.** The PDF and EPUB are linked from the navbar's Download menu.
- **Corrections and suggestions** go to the issue tracker.

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## Citing this Guide

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