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Learning, mutation, and long run equilibria in games. (English) Zbl 0776.90095
Econometrica 61, No. 1, 29-56 (1993).

Summary: We analyze an evolutionary model with a finite number of players and with noise or mutations. The expansion and contraction of strategies is linked — as usual — to their current relative success, but mutations — which perturb the system away from its deterministic evolution — are present as well. Mutations can occur in every period, so the focus is on the implications of ongoing mutations, not a one-shot mutation. The effect of these mutations is to drastically reduce the set of equilibria to what we term “long-run equilibria”. For 2×2 symmetric games with two symmetric strict Nash equilibria the equilibrium selected satisfies (for large populations) the criterion of risk-dominance of *J. C. Harsanyi* and *R. Selten* [“A general theory of equilibrium selection in games” (1988; [Zbl 0693.90098](#))]. In particular, if both strategies have equal security levels, the Pareto dominant Nash equilibrium is selected, even though there is another strict Nash equilibrium.

MSC:

[91A15](#) Stochastic games, stochastic differential games
[92D15](#) Problems related to evolution
[91E40](#) Memory and learning in psychology

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Keywords:

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