

# Limits of finite problems

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Very often we model large discrete systems by an infinite system. But in some cases it is unclear which is the right infinite model, or in what sense the infinite model is a good approximation for the finite one. A recent mathematical research gives us a new tool for this question. We will demonstrate the power of the technique on three problems, primarily on Alpern's Caching Game, where we will disprove a conjecture and prove a very surprising and counter-intuitive property of the solution.