

De-randomizing Randomness with Rotor-Routers

Jim Propp, UMass Lowell

Probability theory is all about finding regularity in irregularity: for instance, the way the Law of Large Numbers governs a sequence of random events even though the events viewed individually are unpredictable. What if we take these regularities as our starting point and base a theory around them, throwing out the idea of unpredictability? We obtain a curious class of processes that mimic random processes in some respects but in other respects are very different. We'll take a peek into this theory, largely by way of a sequence of puzzles.