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Sommario/riassunto	<p>Beyond its identification with the second law of thermodynamics, entropy is a formidable tool for describing systems in their relationship with their environment. This book proposes to go through some of these situations where the formulation of entropy, and more precisely, the production of entropy in out-of-equilibrium processes, makes it possible to forge an approach to the behavior of very different systems. Whether for dimensioning structures; influencing parameter variability; or optimizing power, efficiency, or waste heat reduction, simulations based on entropy production offer a tool that is both compact and reliable. In the case of systems marked by complexity, it appears to be the only way. In that sense, realistic optimization can be carried out, integrating within the same framework both the system and all the constraints and boundary conditions that define it. Simulations based on entropy give the researcher a powerful analytical framework that crosses the disciplines of physics and links them together.</p>