

1. Record Nr.	UNINA9910782225503321
Autore	Ben-Naim Arieh <1934->
Titolo	Entropy demystified [[electronic resource] ] : the second law reduced to plain common sense // Arieh Ben-Naim
Pubbl/distr/stampa	Hackensack, N.J., : World Scientific, 2008
ISBN	1-281-96829-3 9786611968298 981-283-226-2
Edizione	[Expanded ed.]
Descrizione fisica	1 online resource (260 p.)
Disciplina	536/.73
Soggetti	Entropy Second law of thermodynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface; Programs for Simulating Some of the Games in the Book; Program 1: Binary dice; Program 2: Regular dice; Program 3: Card deck; Program 4: Simulation of expansion of ideal gas; Program 5: Simulation of mixing two ideal gases; Program 6: Find the hidden coin; Program 7: Generating the normal distribution; 1 Introduction, and a Short History of the Second Law of Thermodynamics; 1.1. The Non-Atomistic Formulation of the Second Law; 1.2. The Atomistic Formulation of the Second Law; 2 A Brief Introduction to Probability Theory, Information Theory, and all the Rest 2.1. The Classical Definition 2.2. The Relative Frequency Definition; 2.3. Independent Events and Conditional Probability; 2.4. Three Caveats; 2.4.1. Conditional probability and subjective probability; 2.4.2. Conditional probability and cause and effect; 2.4.3. Conditional probability and joint probability; 2.5. A Teaspoon of Information Theory; 2.6. A Tip of a Teaspoon of Mathematics, Physics and Chemistry; 2.7. A Matter of Lottery; 2.8. A Matter of Order-Disorder; 2.9. A Challenging Problem; 2.10. Answers to the Problems; 2.10.1. Answers to the roulette problems 2.10.2. Answer to "a matter of lottery" 2.10.3. Answer to "a matter of order-disorder"; 2.10.4. Answer to "a challenging problem"; 3 First Let Us Play with Real Dice; 3.1. One Die; 3.2. Two Dice; 3.3. Three Dice;

3.4. Four Dice and More; 4 Let's Play with Simplified Dice and have a Preliminary Grasp of the Second Law; 4.1. Two Dice;  $N = 2$ ; 4.2. Four Dice;  $N = 4$ ; 4.3. Ten Dice;  $N = 10$ ; 4.4. Hundred Dice;  $N = 100$ ; 4.5. Thousand Dice;  $N = 1000$ ; 4.6. Ten Thousand Dice;  $N = 104$  and Beyond; 5 Experience the Second Law with all Your Five Senses; 5.1. See it with your Visual Sense  
5.2. Smell it with your Olfactory Sense  
5.3. Taste it with your Gustatory Sense; 5.4. Hear it with your Auditory Sense; 5.5. Feel it with your Touch (Tactile) Sense; 6 Finally, Grasp it with Your Common Sense; 7 Translating from the Dice-World to the Real World; 7.1. The Correspondence with the Expansion Process; 7.2. The Correspondence with the Deassimilation Process; 7.3. Summary of the Evolution of the System towards the Equilibrium State; 7.4. Mixing of Three Components; 7.5. Heat Transfer from a Hot to a Cold Gas; 7.6. Test Your Understanding of the Second Law  
8 Reactions on the Status of the Second Law of Thermodynamics as a Law of Physics  
8.1. What is the Source of the Mystery?; 8.2. The Association of Entropy with "Disorder"; 8.3. The Association of Entropy with Missing Information; 8.4. Is the Second Law Intimately Associated with the Arrow of Time?; 8.5. Is the Second Law of Thermodynamics a Law of Physics?; 8.6. Can We Do Away with the Second Law?; References and Suggested Reading; Index

---

### Sommario/riassunto

In this unique book, the reader is invited to experience the joy of appreciating something which has eluded understanding for many years - entropy and the Second Law of Thermodynamics. The book has a two-pronged message: first, that the second law is not infinitely incomprehensible as commonly stated in most textbooks on thermodynamics, but can, in fact, be comprehended through sheer common sense; and second, that entropy is not a mysterious quantity that has resisted understanding but a simple, familiar and easily comprehensible concept. Written in an accessible style, the book guides the reader

---