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	Nota di contenuto	1. Introduction. 1.1. A brief history of temperature and entropy. 1.2. The association of entropy with disorder. 1.3. The association of entropy with missing information -- 2. Elements of probability theory. 2.1. Introduction. 2.2. The axiomatic approach. 2.3. The classical definition. 2.4. The relative frequency definition. 2.5. Independent events and conditional probability. 2.6. Bayes' Theorem. 2.7. Random variables, average, variance and correlation. 2.8. Some specific distributions. 2.9. Generating functions. 2.10. The law of large numbers -- 3. Elements of information theory. 3.1. A qualitative introduction to information theory. 3.2. Definition of Shannon's information and its properties. 3.3. The various interpretations of the Quantity H. 3.4. The assignment of probabilities by the maximum uncertainty principle. 3.5. The missing information and the average number of binary questions needed to acquire it. 3.6. The false positive problem, revisited. 3.7. The urn problem, revisited -- 4. Transition from the general MI to the thermodynamic MI. 4.1. MI in binding systems: one kind of information. 4.2. Some simple processes in binding systems. 4.3. MI in an ideal gas system: two kinds of

information. The Sackur-Tetrode equation. 4.4. Comments -- 5. The structure of the foundations of statistical thermodynamics. 5.1. The isolated system; the micro-canonical ensemble. 5.2. System in a constant temperature; the canonical ensemble. 5.3. The classical analog of the canonical partition function. 5.4. The re-interpretation of the Sackur-Tetrode expression from informational considerations. 5.5. Identifying the parameter for an ideal gas. 5.6. Systems at constant temperature and chemical potential; the grand canonical ensemble. 5.7. Systems at constant temperature and pressure; the isothermal isobaric ensemble. 5.8. The mutual information due to intermolecular interactions -- 6. Some simple applications. 6.1. Expansion of an ideal gas. 6.2. Pure, reversible mixing; the first illusion. 6.3. Pure assimilation process; the second illusion. 6.4. Irreversible process of mixing coupled with expansion. 6.5. Irreversible process of demixing coupled with expansion. 6.6. Reversible assimilation coupled with expansion. 6.7. Reflections on the processes of mixing and assimilation. 6.8. A pure spontaneous deassimilation process. 6.9. A process involving only change in the momentum distribution. 6.10. A process involving change in the intermolecular interaction energy. 6.11. Some baffling experiments. 6.12. The second law of thermodynamics.

| Sommario/riassunto | The principal message of this book is that thermodynamics and statistical mechanics will benefit from replacing the unfortunate, misleading and mysterious term "entropy" with a more familiar, meaningful and appropriate term such as information, missing information or uncertainty. This replacement would facilitate the interpretation of the "driving force" of many processes in terms of informational changes and dispel the mystery that has always enshrouded entropy.It has been 140 years since Clausius coined the term "entropy"; almost 50 years since Shannon developed the mathematical theory of "i |