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# MAX THE DEMON VS ENTROPY OF DOOM

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An Insider's Guide



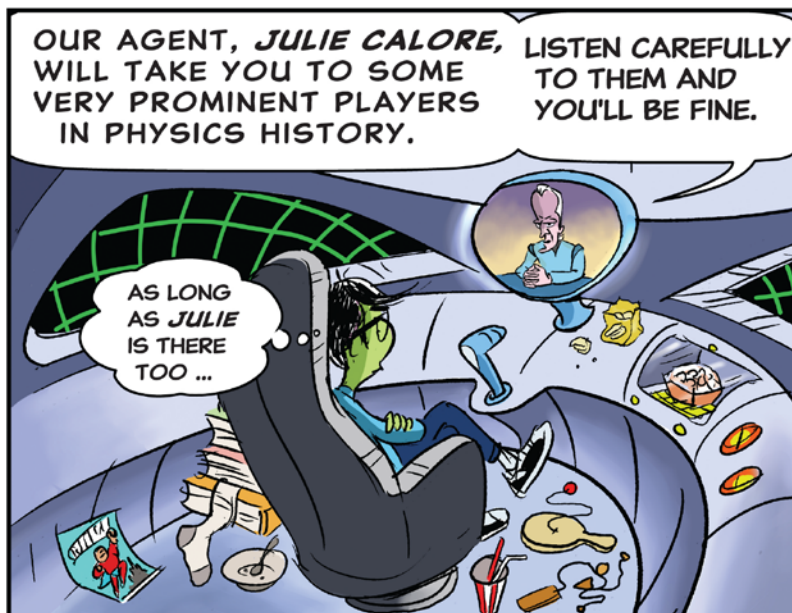
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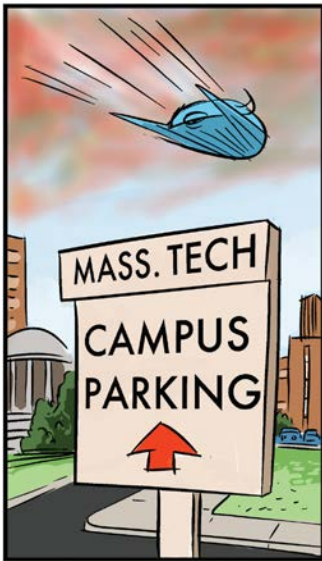


Subliminal advertising of “**Interacting Electrons and Quantum Magnetism**”, a graduate textbook by Assa Auerbach, with cartoons by Richard Codor, Springer-Verlag (New York, 1994).



**Julie Calore** is named after physicist James Prescott Joule. A Joule is the international system unit of energy. Calore means “heat” in Italian.

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Mass. Tech campus is inspired by Massachusetts Institute of Technology.

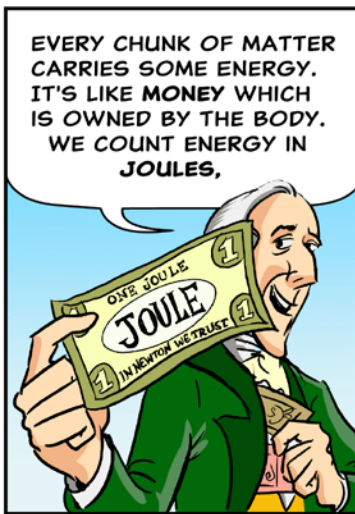
## PAGE 25



The rides in Rumford's amusement park are named after relevant scientific concepts: for example, angular momentum, forced pendulum, counter example, and Monte Carlo simulator.

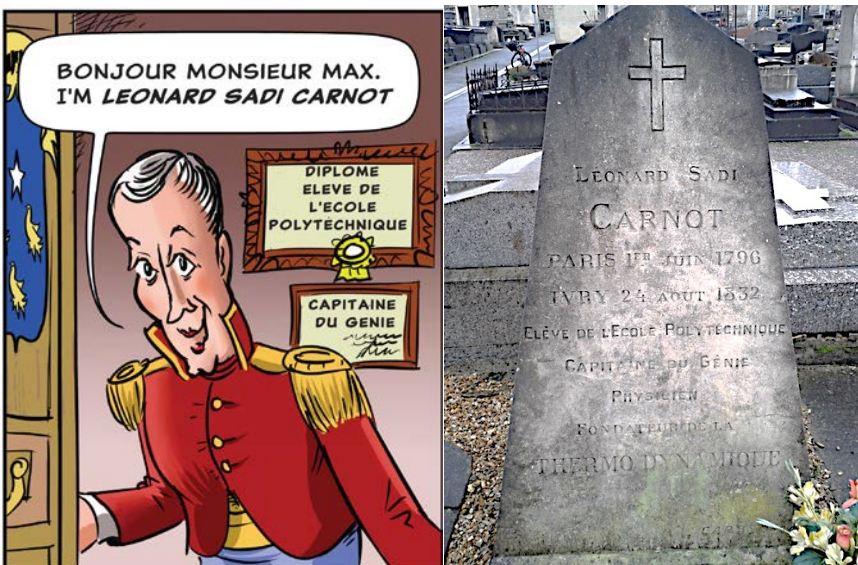


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Sir Isaac Newton laid the foundations for the laws of motion and gravitation in 1687.

## PAGE 40

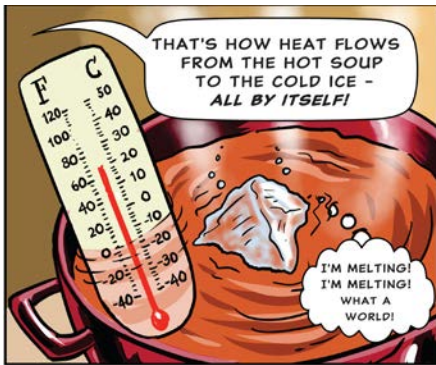


Sadi Carnot's accolades, according to his tombstone in Ivry-sur-Seine, France:

1. Student at the Polytechnique School
2. Captain of Engineering
3. Physicist
4. Founder of Thermodynamics

Note the interesting order of his listed achievements.

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The ice utters the last words of the **Wicked Witch of the West** in the film *"The Wizard of Oz"* (1939).

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A takeoff on a scene in the **James Bond** film *"Goldfinger"* (1964).

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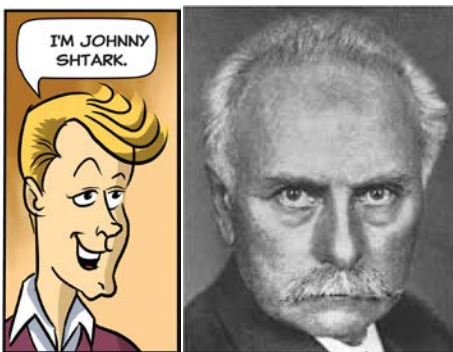
Julie's course registration error is credited to Dan Arovav.

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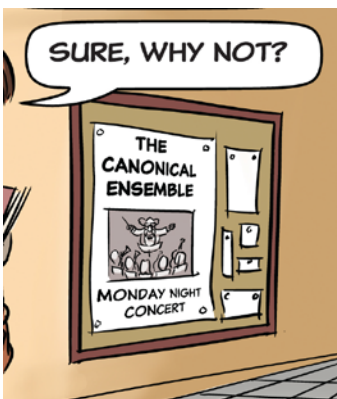
**Professor Canonical** is the doppelgänger (likeness) of Prof. Duncan Haldane of Princeton University, Physics Nobel Laureate 2016.

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Julie's ex-boyfriend is named after the famous physicist **Johannes Stark**. Stark gained notoriety for his role in the Nazi regime.

## PAGE 69



The "*Canonical Ensemble*" is a thermodynamic system that exchanges heat with a much larger system (a "heat bath"), at fixed temperature. (Credit to Gil Drachuck.)

## PAGE 76



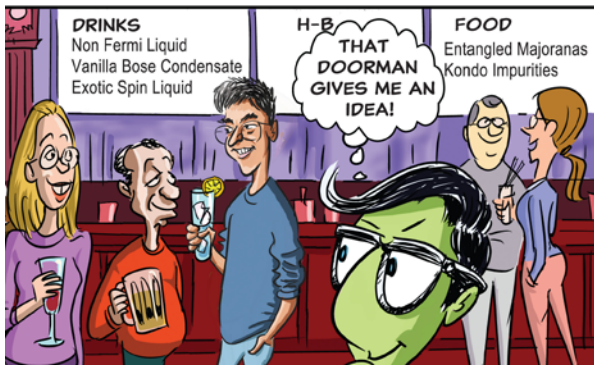
**Katie** and **XY** are named after *Michael Kosterlitz* and *David Thouless (KT)*, who solved the two dimensional **XY** model and shared the 2016 Nobel prize with *Haldane*.

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*h-Bar Café* is the popular Physics Department cafeteria at Technion, Haifa.  $h$ -bar ( $\hbar$ ) is Planck's constant, which appears in Quantum Mechanics (not explained in this book).





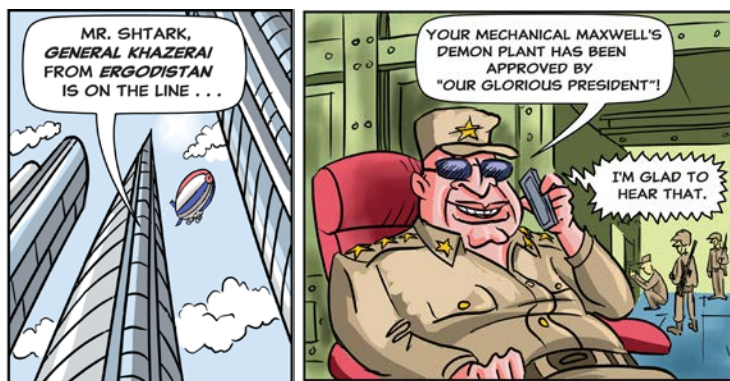
Characters were inspired by images of real **physicists** (who shall remain unnamed). The **menu items** on the board are topics of current condensed-matter research.

## PAGE 89



In thermodynamics, an **Ergodic** system rapidly approaches equilibrium and maximizes its Entropy, due to the chaotic motion of its particles.

## PAGE 90



“Khazerei” (Yiddish) is gluttony. “Khazir” (Hebrew) is a pig.





*Tuva or Bust!* by Ralph Leighton describes his and Richard Feynman's attempt to travel to Tannu Tuva, a remote country in the Soviet Union. Feynman received the Physics Nobel Prize in 1965.



**QUBIT** is an acronym for a Quantum Bit, the basic memory element of quantum information, which is used in quantum computation.

## PAGE 104



A **Gaussian** is commonly used as a probability distribution. **Gaussian tails** are associated with highly unlikely events.

## PAGE 112



“**Armatum Unum Latro**” (Latin) is “One Armed Bandit”, a nickname for unfair slot machines.

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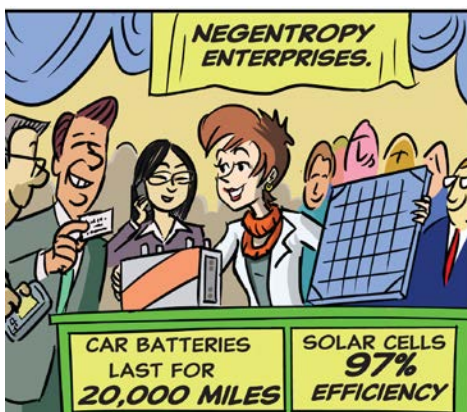
A famous quote from the late Israeli prime minister, Ariel Sharon (right), explaining a sudden change in his political viewpoint.

## PAGE 117



A takeoff on the final scene of *"Casablanca"*, a 1942 film, with Bergman and Bogart.

## PAGE 121



Negentropy (negative entropy), the opposite of randomness and chaos, was introduced in Schrödinger's 1944 book **"What is Life"**.

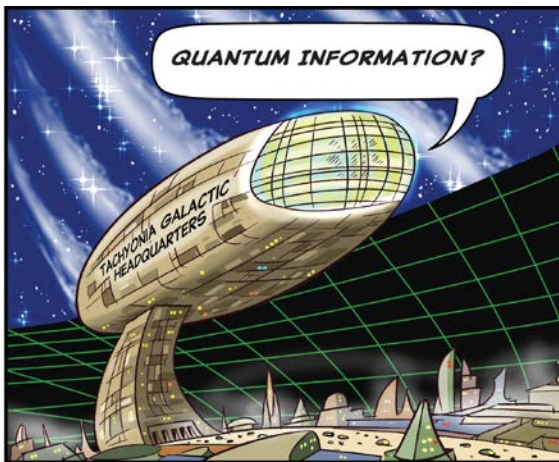


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Ancient Hebrew alphabet.

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Quantum Information buffs will have to wait for a sequel...