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Maxwell's Demon Created by Scottish Scientists

Posted on Thursday, February 01, 2007 @ 23:01:34 PST by [vlad](#)



Rob Beschizza writes ([Wired Blog Network](#)): Scientists in Britain have created a nano-machine envisioned 150 years ago, perhaps solving the thermodynamic riddle posed by Scots physicist James Clark Maxwell in 1867.

Science

Maxwell's Demon is one of those Victorian thought experiments that could easily become the critical McGuffin in a steampunk novel, catalyzing the nascent science of the 19th century and a weltenschauung riddled with imperial ambition.

An atom-sized device we'd now recognize as nanotechnology, the demon was a hypothetical gatekeeper between two microscopic chambers, each full of fast-moving particles. By letting faster-than-average particles osmose through the gate, the demon can increase the apparent energy inventory of both chambers, in violation of the second law of thermodynamics. Free energy!

Ooookay. So since then, physicists have been trying to reconcile the experiment with the second law, which says that the entropy (state of decay) in isolated energy systems tends to increase. We can see the evidence of this in everyday life, simply by filling a bucket and sloshing it around: our movements fill the bucket with kinetic energy, which subsides with the waves over time, ultimately to leave calm waters. Traditionally, the demon's been explained away by claiming that by trapping and sorting molecules, it burns energy and, accordingly, the overall system does indeed decay, energy-wise, in line with the law.

The real-life demon, created by a team at the University of Edinburgh, appears to show that Maxwell's own solution is the correct one: the demon can trap molecules under their own natural motion. What does this mean for the second law? I don't know, because Reuter's story veers off at the critical point to instead talk about nanofluff: "Nanotechnology is already being used in cosmetics, computer chips, sunscreens, self-cleaning windows and stain-resistant clothing."

Original Article: [Scientists build nanomachine envisioned 150 yrs ago](#) [Reuters]

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