20 YEARS OF HITS & MISSES

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Looking at 20 Years of Hot Chips

Keep in mind: Product success or failure may or may not be correlated with technical success or failure.
9 TECHNICAL HITS (1ST HOT CHIP)

- CMOS trumps Bipolar, ECL, Gallium Arsenide
- Multimedia ISA: SIMD, Vector (i860, HP-PA)
- Graphics Coprocessors (TI TMS34020, NVIDIA)
- Superscalar instruction issue (IBM Power)
- Faster DRAM interfaces: DDR, Synch (RAMbus)
- Synthesizable Embedded cores: (ARM)
- Out-of-order execution (Intel Pentium Pro)
- Multicore, Multithreading for Servers (Power4?)
- Long Instruction Word for DSPs (TI TMS320xxx)
4 TECHNICAL “NEAR-SUCCESSES” (MISSES)

- Very Long Instruction Words for GP computing
  - If claims held, ILP for VLIW vs. Multicore for rest!
- Superpipelining
  - Shipped 31 stages; Projections of 50 stages
- Large Scale CC-NUMA Computers vs. Clusters
  - Numbers apps that scale needed CC-NUMA?
- Network Processors
  - Many attempts; hard to say what problem it solved
RESOLVING RISC-CISC DEBATE

Products shipped?

2008: 3.0B ARM, 0.3B x86

How USA resolves debates?

We ask celebrities!

Who is the biggest celebrity in the world?
Angelina Jolie as Kate Libby (aka as hacker Acid Burn) in movie “Hackers” (1995)
Angelina Jolie: “RISC architecture is gonna change everything.”

Blue Man Group “(silence)”

“Hackers” (1995)