

Advanced Programming

Talk 1: The Computer

Saumitra Joshi

Timeline

- Binary Math
 - Mathematical Logic
 - Boolean Algebra
- Early Computer Concepts
 - Analytical Machine
 - Turing Machine
 - Von Neumann Architecture
- Moore's Law

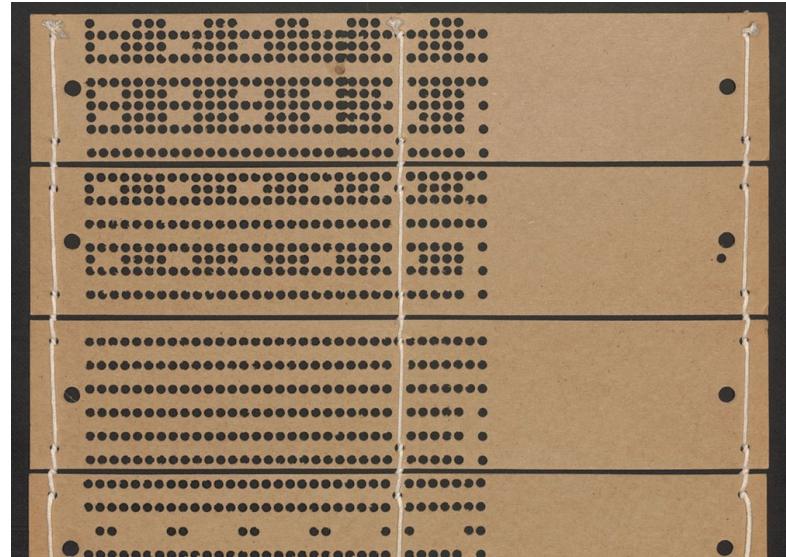
Binary Math

- Mathematical Logic
 - Leibnitz, 1702
 - “true and false”



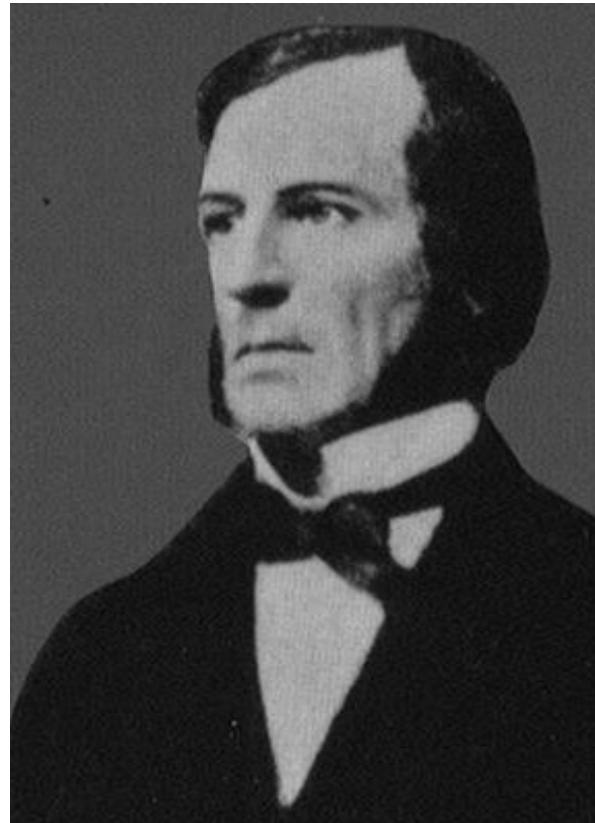
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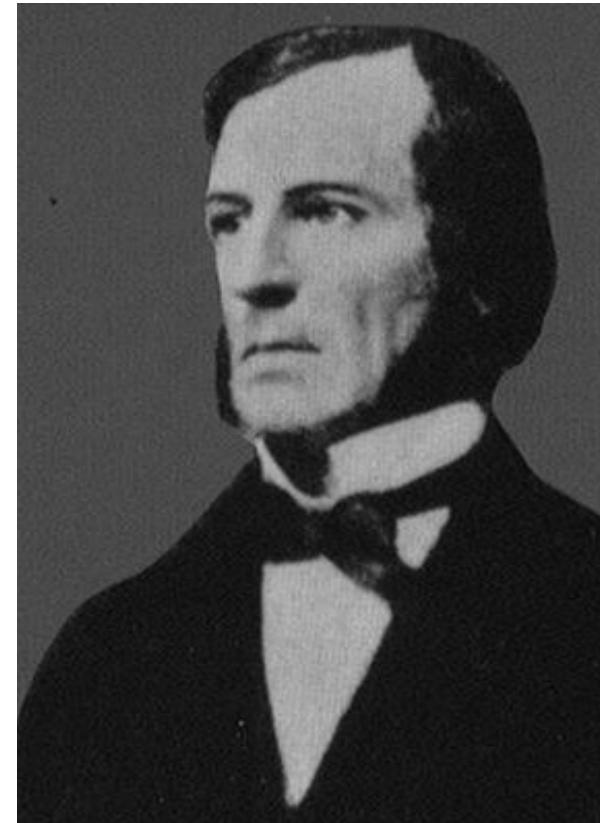
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Binary Math

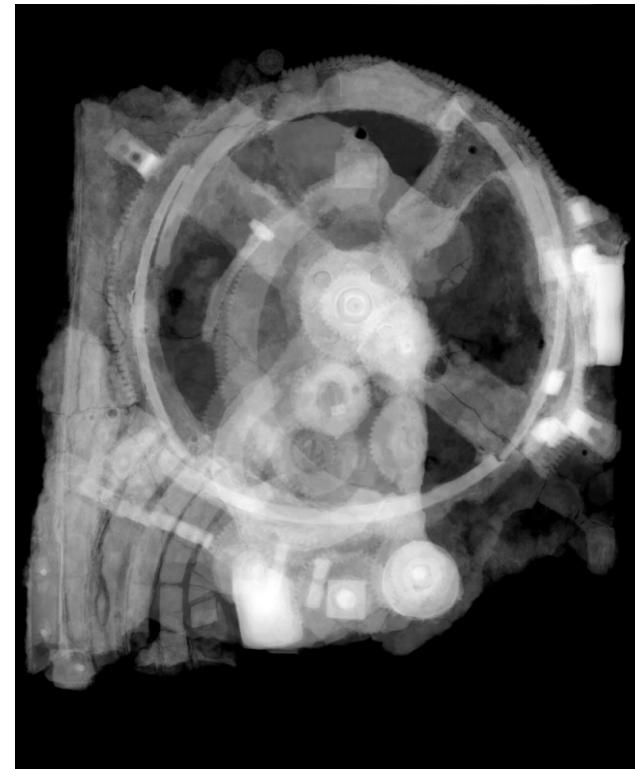
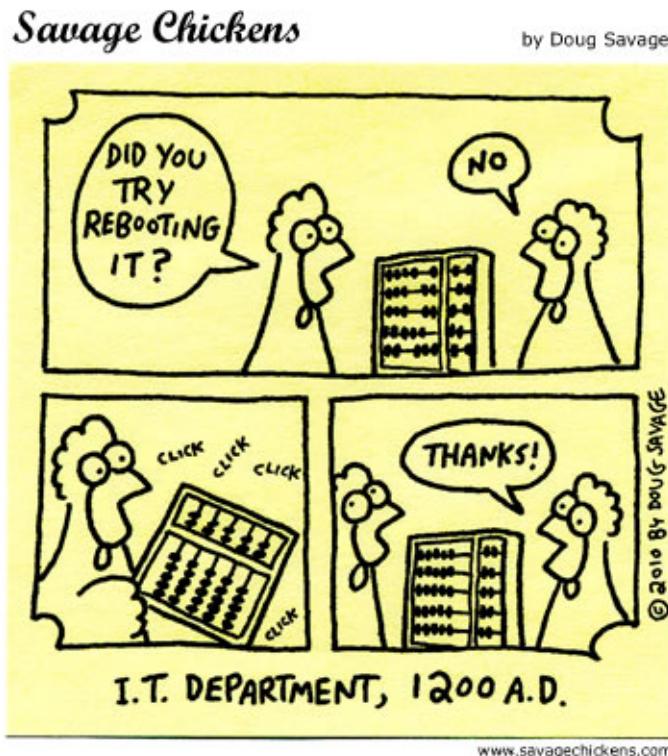
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“Machines can be driven
by binary systems!”

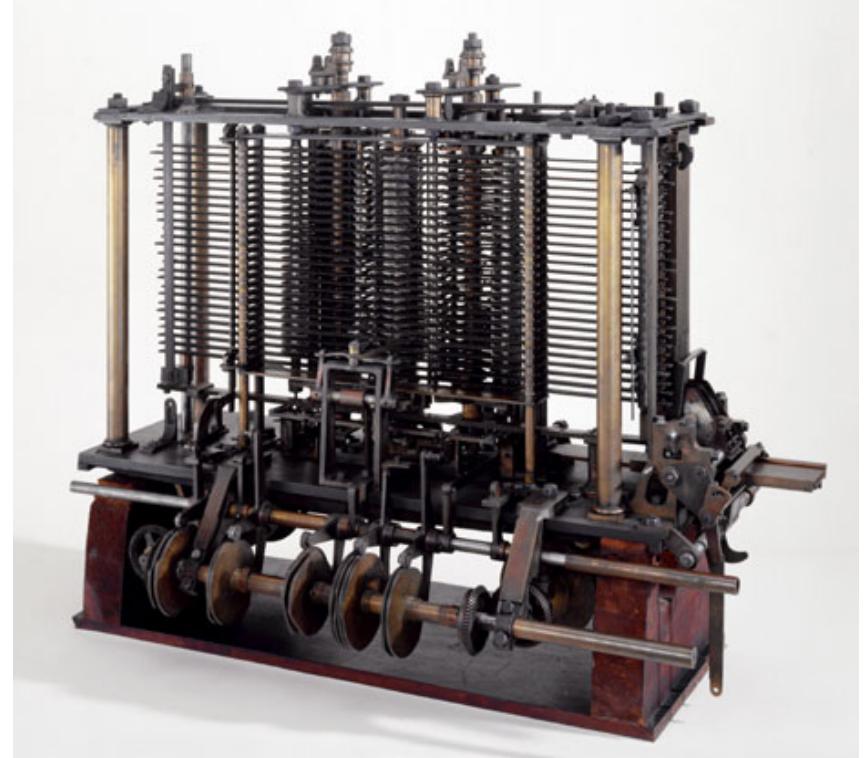
Early Computer Concepts

- “Manual” computers
 - Abacus
 - Antikythera
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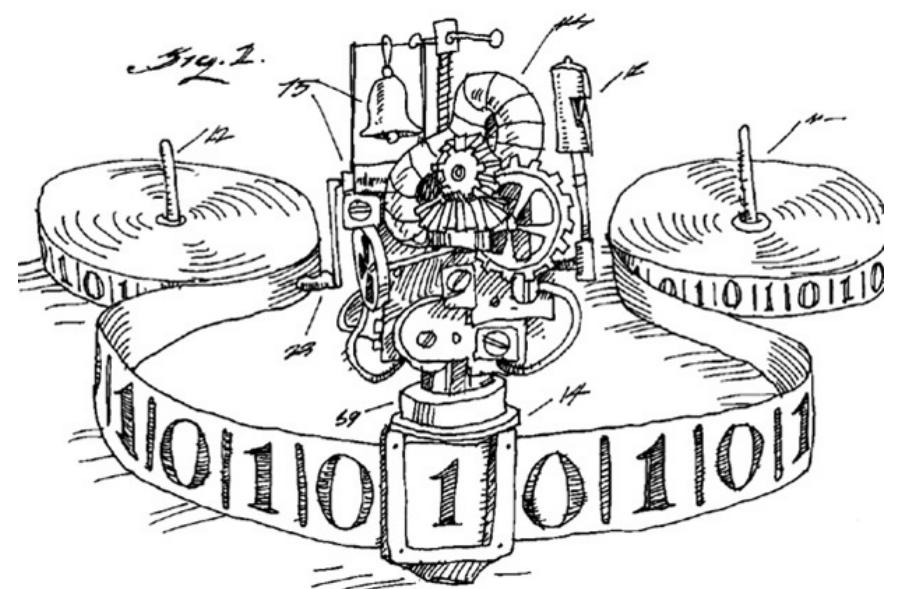
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 - Turing, 1936

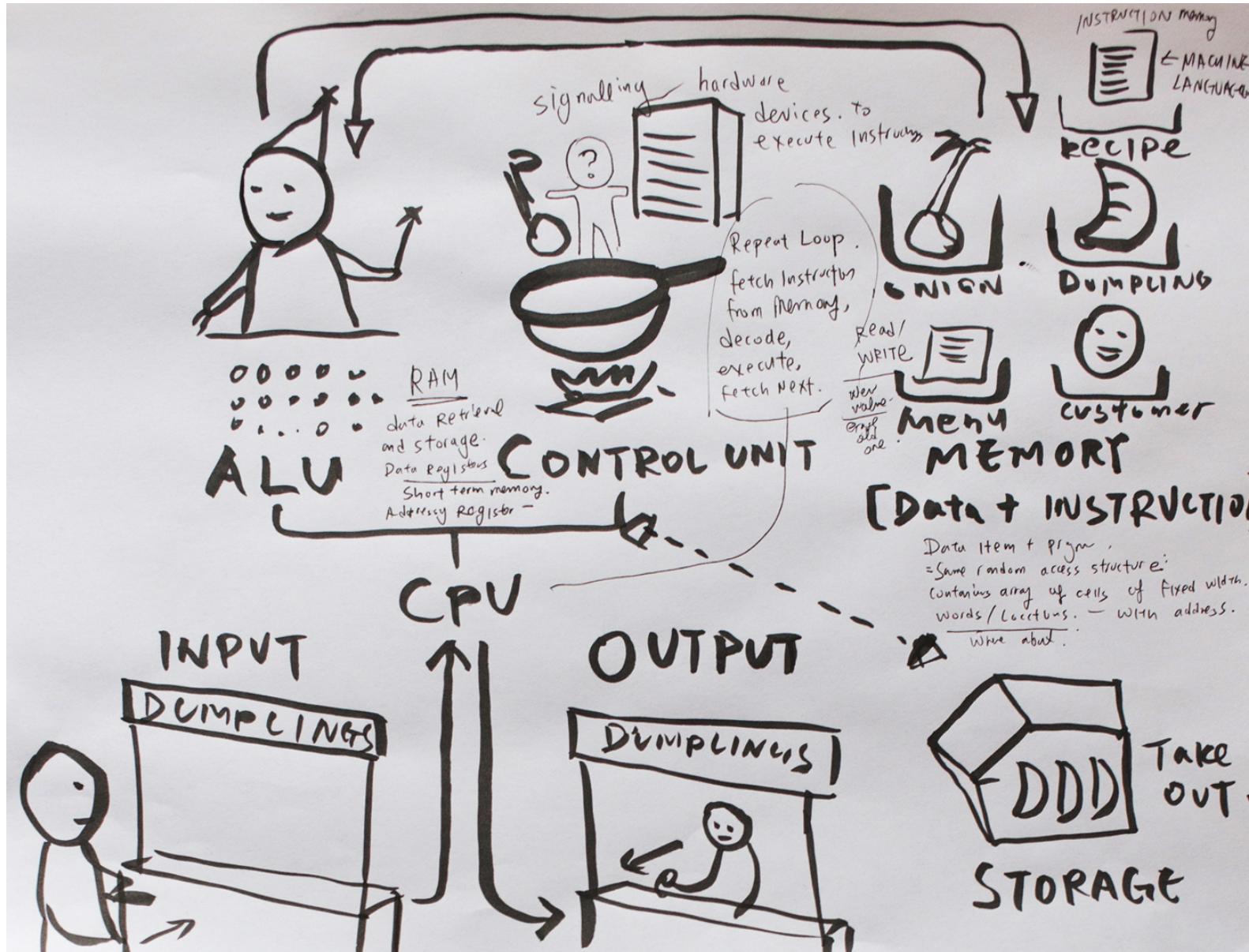


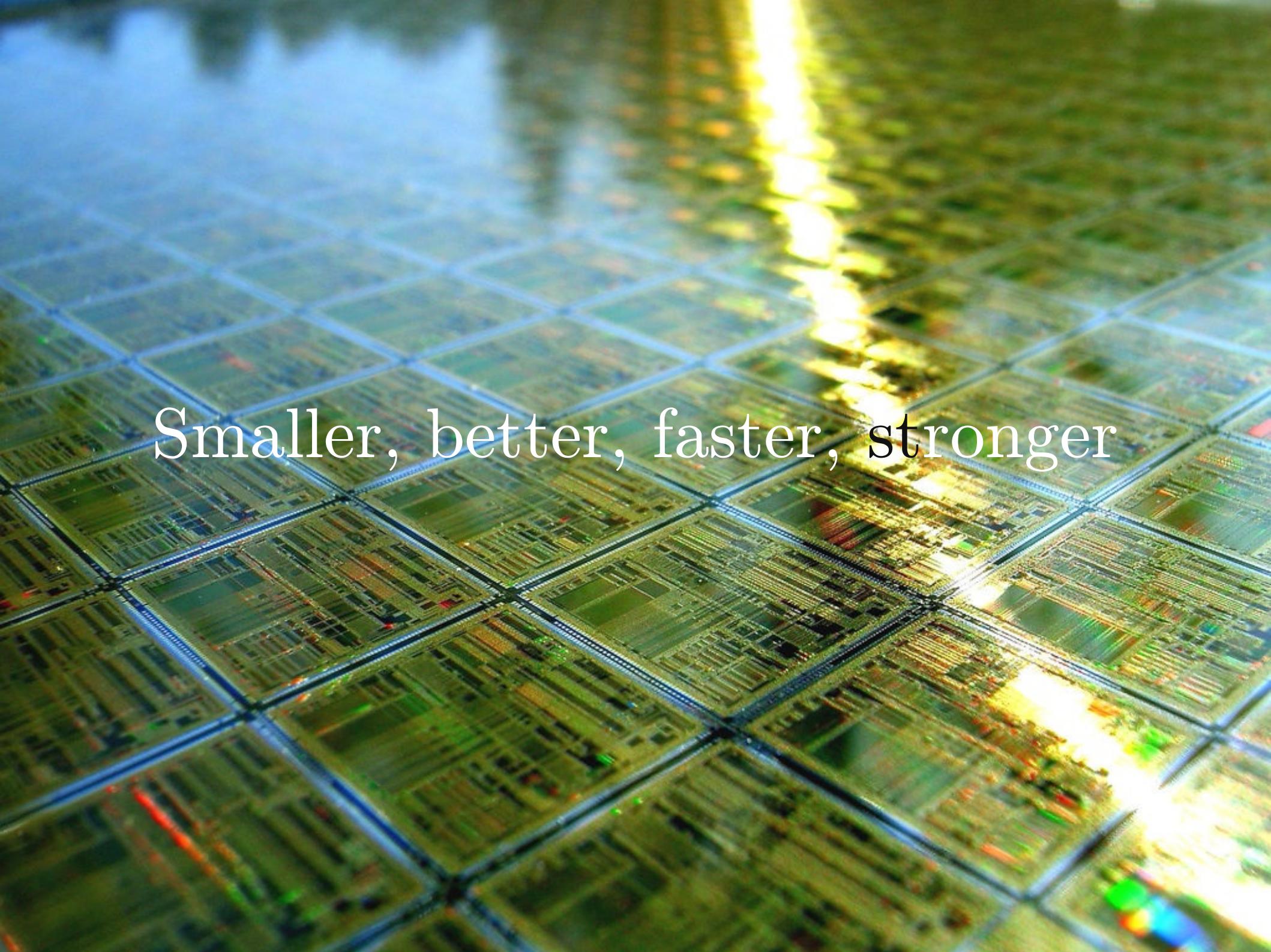
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- “Exactly which problems can we solve?”
 - Turing, 1936
- “What does every computer have in common?”
 - Von Neumann, 1964
 - Concept of a **processor**



Von Neumann Architecture

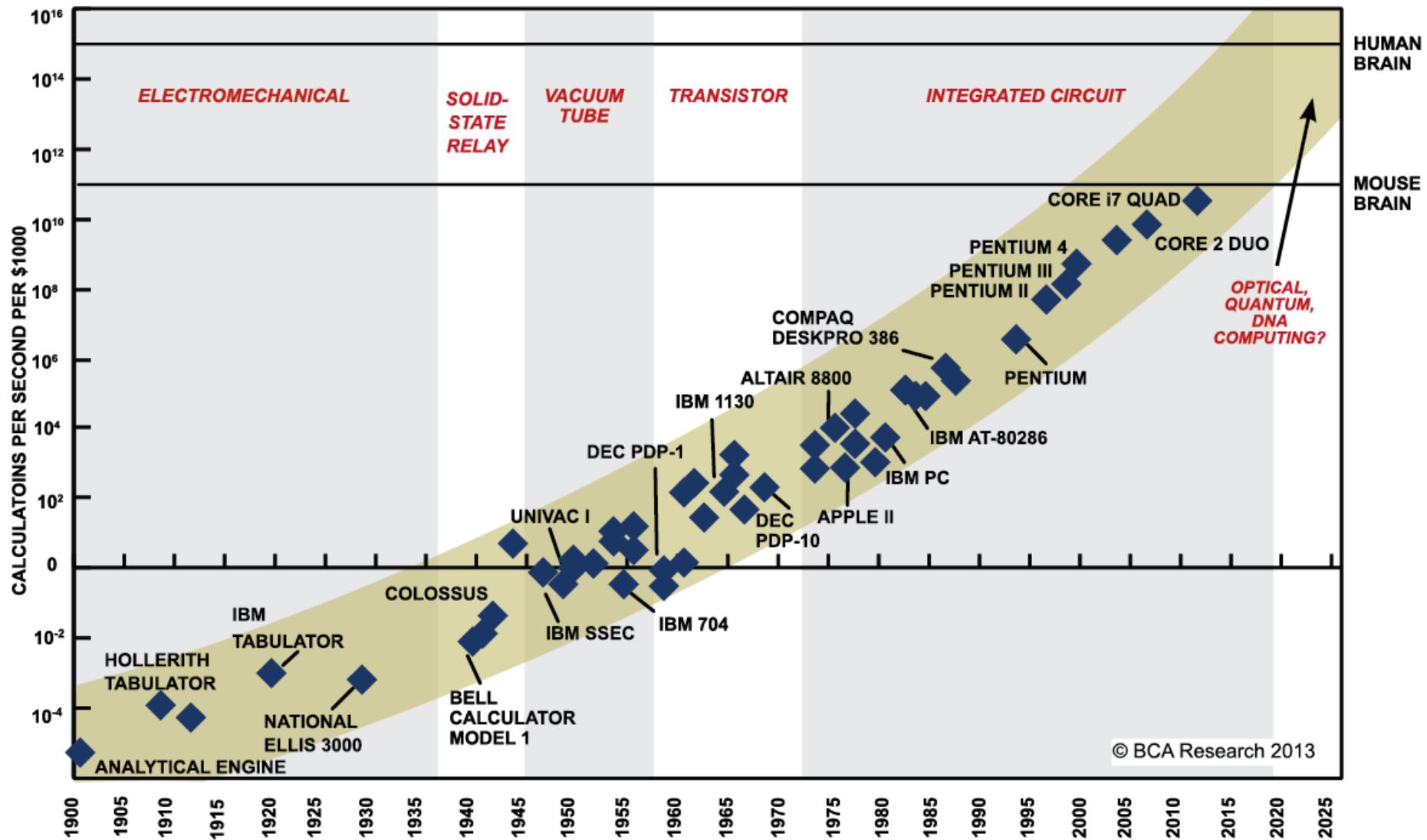




Smaller, better, faster, stronger

Moore's Law

- “The number of transistors on the chip doubles every year”



Moore's Law: Is it still valid?

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- Recommended for the curious: <http://goo.gl/smpWKI>

That's all :)

Questions?