Introduction

CS 210

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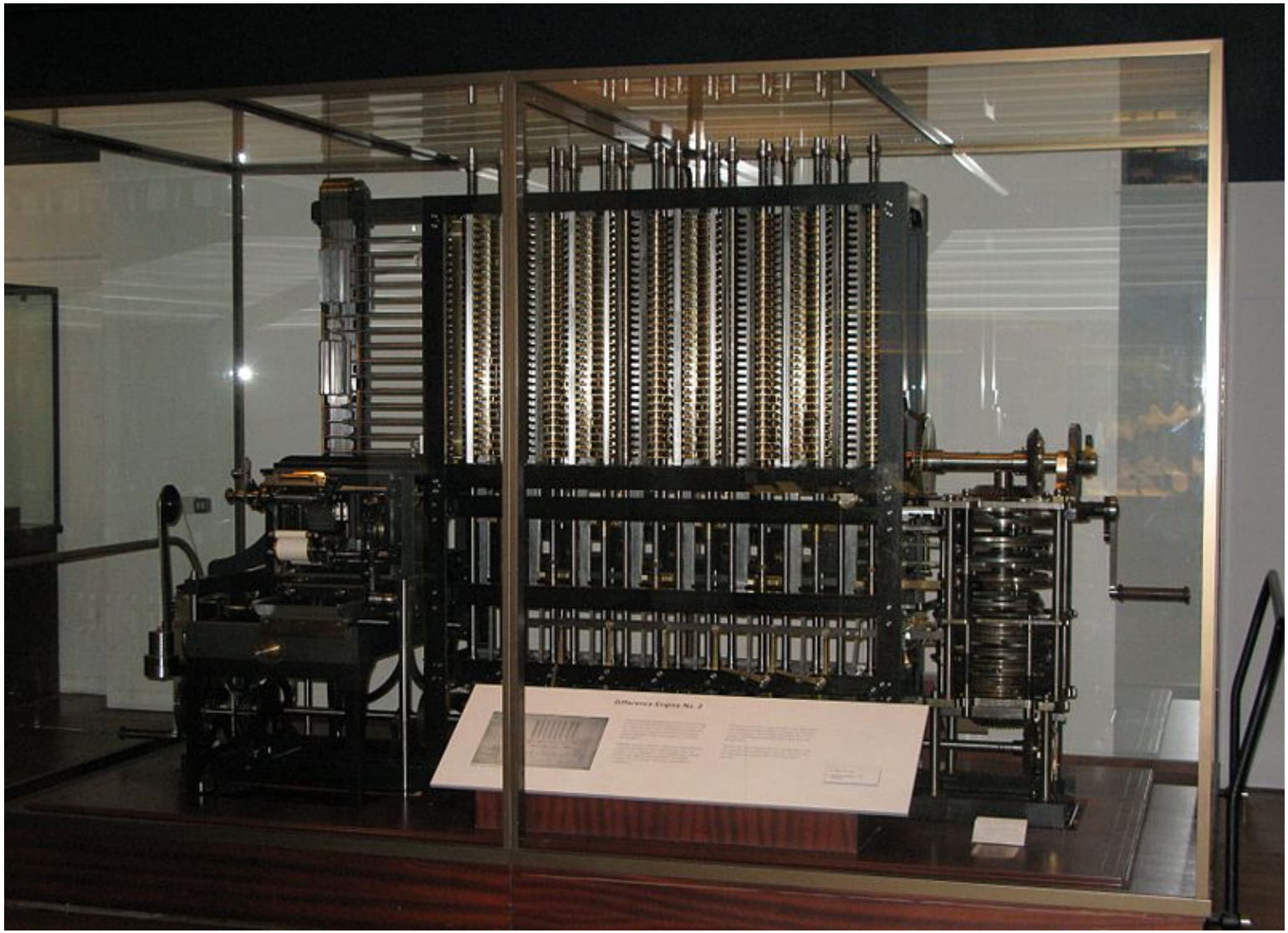
How Computers Work

Analog—Babbage Difference Engine (c. mid-1800s)



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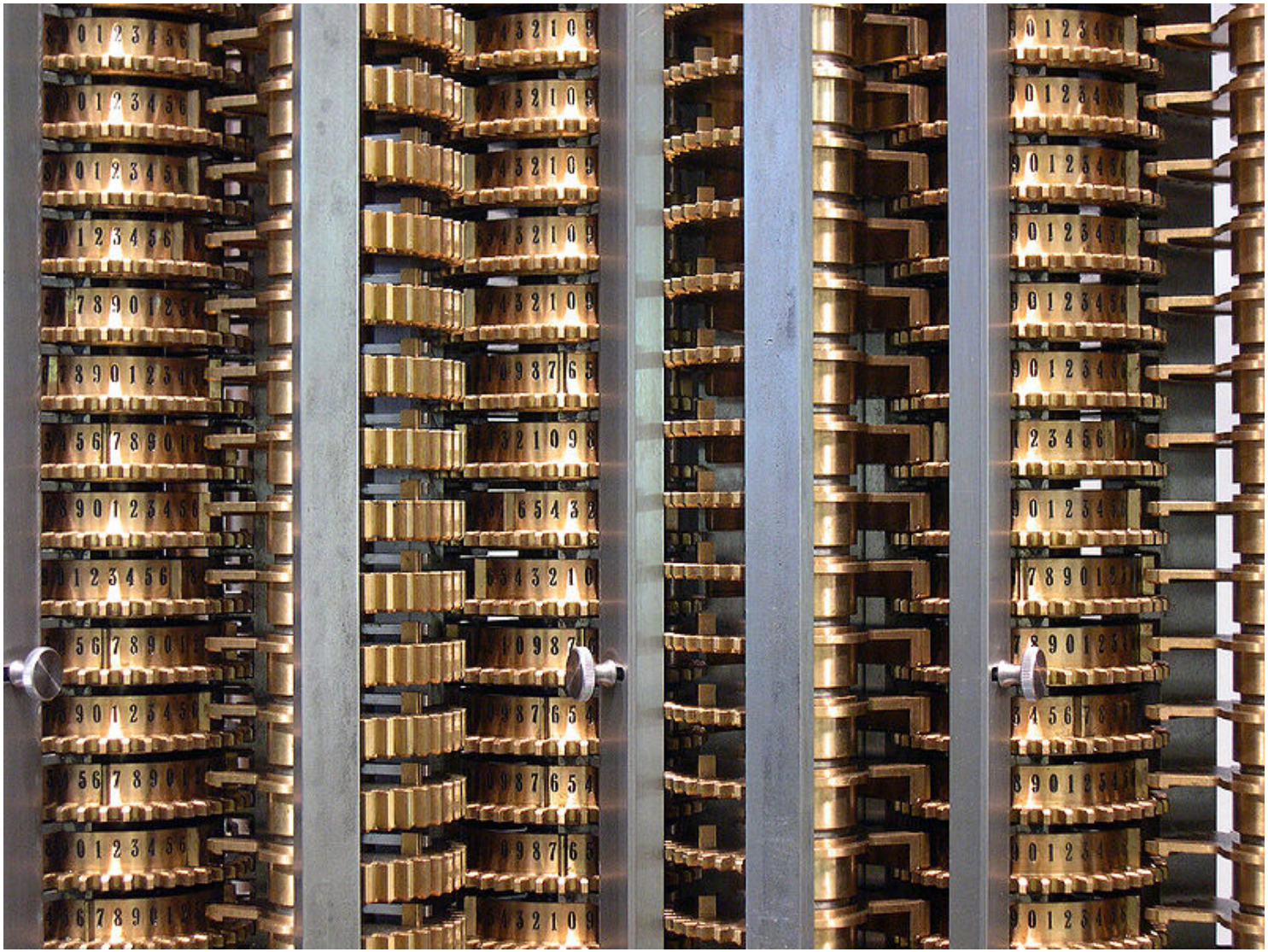
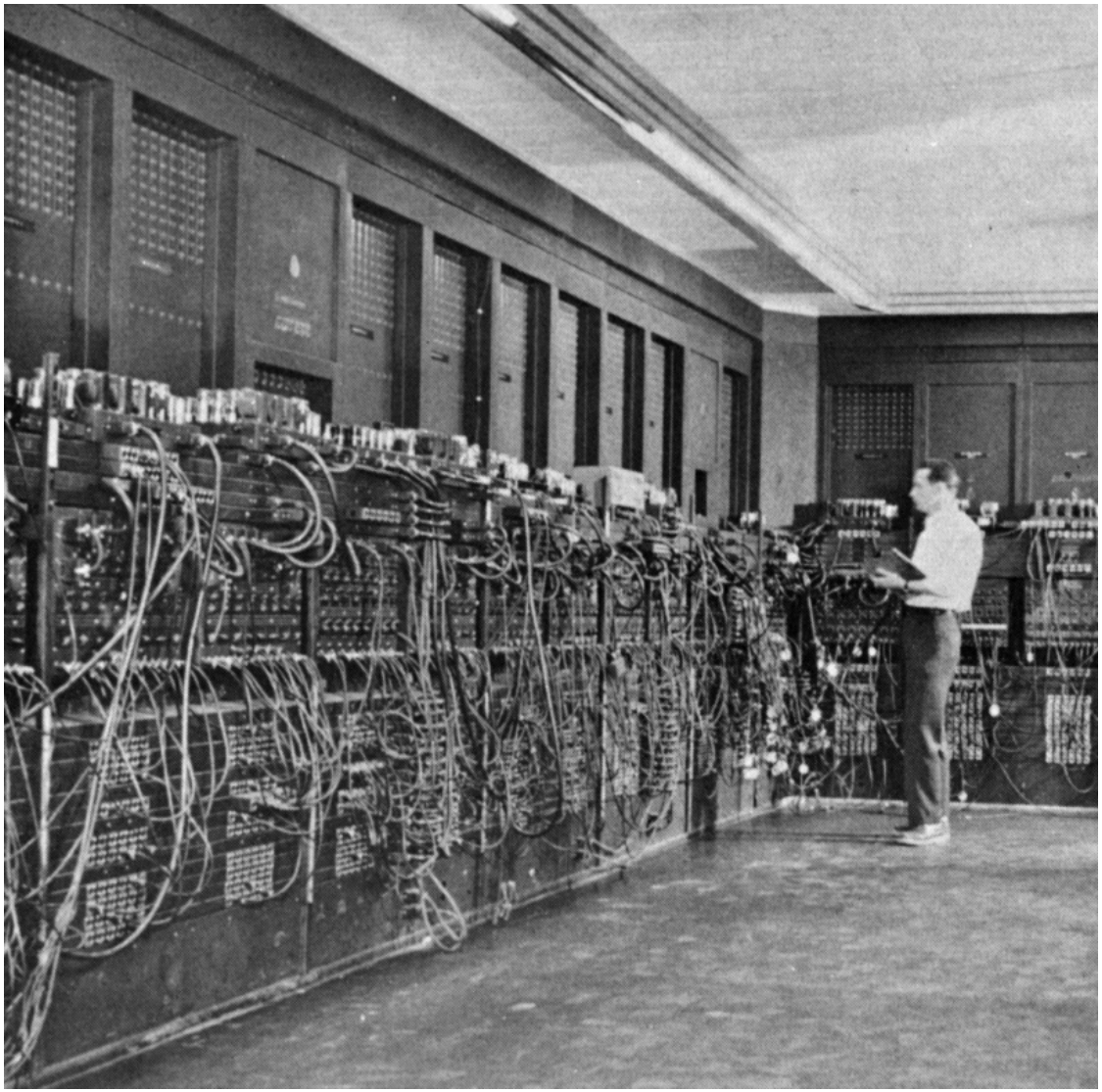


Electronic Computers—ENIAC (c. 1946)



Actually, circa 1940s...

1941: Zuse Z3

1942: Atanasoff-Berry Computer (Honeywell v. Sperry Rand)

Feb 1944: Colossus Mark 1*

May 1944: Harvard Mark I

Jun 1944: Colossus Mark 2

1945: Zuse Z4

1946: ENIAC*

Jun 1948: Manchester Small-Scale Experimental Machine ("Baby")

Sep 1948: Modified ENIAC*

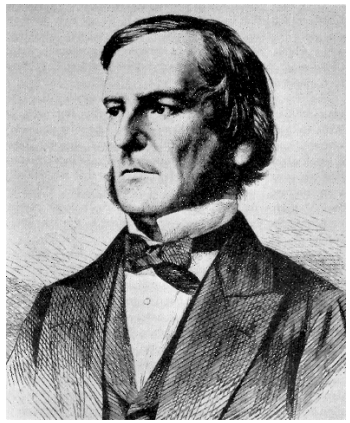
May 1949: Machester Mark 1

Nov 1949: CSIRAC

George Boole (1815–1864)

The design of the following treatise is to investigate the fundamental laws of those operations of the mind by which reasoning is performed; to give expression to them in the symbolical language of a Calculus, and upon this foundation to establish the science of Logic and construct its method

—The Laws of Thought (1854)



Claude Shannon (1916–2001)

- Dual-major in electrical engineering and math
- *A Symbolic Analysis of Relay and Switching Circuits* (1937)
- Realized George Boole's algebra in electromechanical relays used in telephone routing switches
- Possible to arrange relays to solve Boolean algebra problems