

# A Brief History of Women in Computing and Ada Lovelace

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## A Brief History of Women in Computing

The article brings up the recent memo from the Google employee James Damore and his faux scientific argument on the differences between men and women.

[View Article](#)

[Read Memo](#)

A few excerpts:

- Openness directed towards feelings and aesthetics rather than ideas. Women generally also have a stronger interest in people rather than things , relative to men (also interpreted as empathizing vs. systemizing ).

- These two differences in part explain why women relatively prefer jobs in social or artistic areas. More men may like coding because it requires systemizing and even within SWEs, comparatively more women work on front end, which deals with both people and aesthetics.

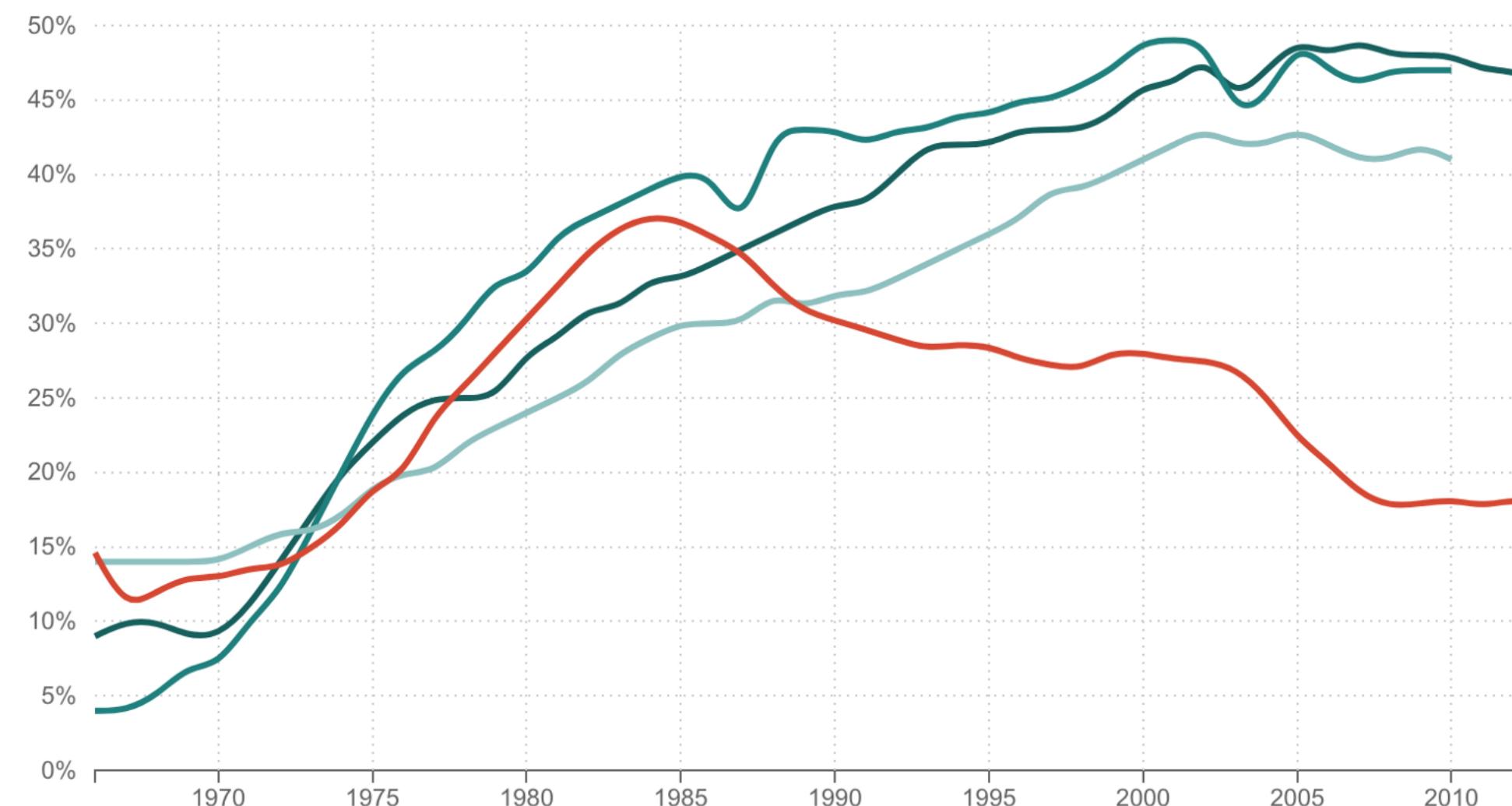
- This leads to women generally having a harder time negotiating salary, asking for raises, speaking up, and leading. Note that these are just average differences and there's overlap between men and women, but this is seen solely as a women's issue. This leads to exclusory programs like Stretch and swaths of men without support.

In order to combat this line of thinking, Faruk Ateş looked back to history and to the origins of computing, and why woman participation in the field has dropped significantly.

## What Happened To Women In Computer Science?

% Of Women Majors, By Field

■ Medical School ■ Law School ■ Physical Sciences ■ Computer science



Source: National Science Foundation, American Bar Association, American Association of Medical Colleges

Credit: Quoctrung Bui/NPR



- Ada Lovelace - 1843 - published the first program
- Hedy Lamarr - 1942 - Invents frequency hopping
- Jean Bartik - 1945-46 - helped codify the foundations of programming
- Rear Admiral Grace Hopper - 1952 - created one of the first compilers

## Quote:

"Moving into the post-war era and the 1960's, software engineering was considered "women's work" because it was thought of as clerical. Hardware was the difficult job, i.e. "for men". Cosmopolitan famously ran a 1967 issue about "The Computer Girls," with Admiral Hopper saying women are "naturals" at computer programming"



# The Computer Girls

BY LOIS MANDEL

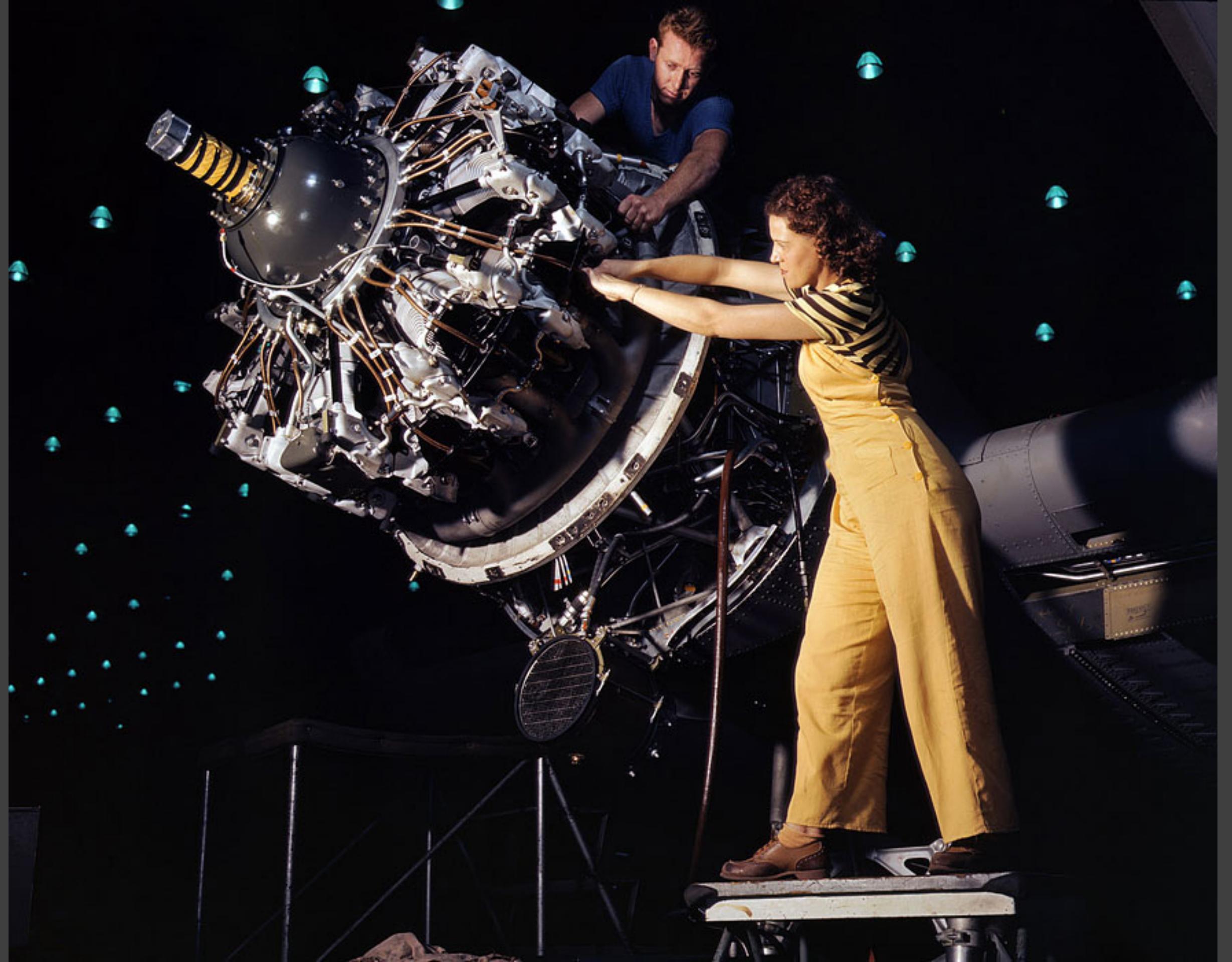
A trainee gets \$8,000 a year  
...a girl "senior systems analyst"  
gets \$20,000—and up!

Twenty years ago, a girl could be a secretary, a school teacher . . . maybe a librarian, a social worker or a nurse. If she was really ambitious, she could go into the professions and compete with men . . . usually working harder and longer to earn less pay for the same job.

Now have come the big, dazzling computers—and a whole new kind of work for women: programming. Telling the miracle machines what to do and how to do it. Anything from predicting the weather to calculating billions of figures.

computer can solve a problem, and then instruct the machine to do it."

"It's just like planning a dinner," explains Dr. Grace Hopper, now a staff scientist in systems programming for Univac. (She helped develop the first electronic digital computer, the Eniac, in 1946.) "You have to plan ahead and schedule everything so it's ready when you need it. Programming requires patience and the ability to handle detail. Women are 'naturals' at computer programming."





U.S. GOVERNMENT PRINTING OFFICE 1943  
"The soldiers need our  
help! Gather 'round,  
American Women!"



**TURNS OUT YOU GALS ARE USEFUL AFTER ALL!**  
*Worth* 1000.com  
message from the Department of Repression, Oppression, and Chauvinism.

## Changes in the field

But when there was an increase in a "prestige of the field", there was another shift.

- Aptitude tests
- Advertising (Absence of images)

## Quote

"Eager to identify talented individuals to train as computer programmers, employers relied on aptitude tests to make hiring decisions. With their focus on mathematical puzzle-solving, the tests may have favored men, who were more likely to take math classes in school."

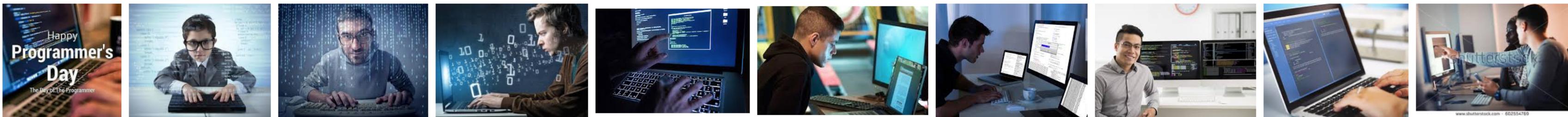
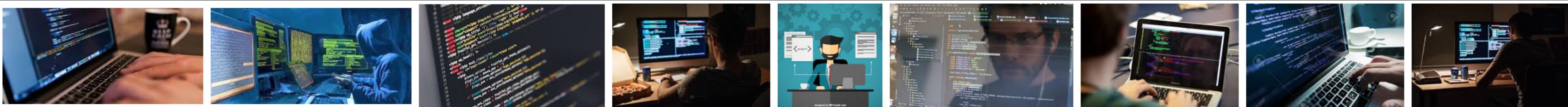
The Clayman Institute

## **Subconscious influence**

How images or the absence of can affect how we see ourselves, the expectations and beliefs we have?

## A Modern Example

What does a modern day example of this look like?



## Creating our identity through images

How important it is to see ourselves reflected via gender and race to provide a definition of what is possible in our world, and encourage us to work at the boundaries?

## Quote

"If you look down the career road and see no one like you, it's tempting to give up. The world is teaching you a lesson by sheer optics: this path is not for you."

The Surprising Reasons Why Most Girls Don't Code

# Calculating Ada - The Countess of Computing

- Her father was the poet Lord Byron, but was kept from her father from a young age
- Her mother force her to learn mathematics
- Published the first computer program in 1843.
- Almost brought computer to the victorian period.
- Worked with Charles Babbage, mathematician and inventor

The Difference Engine

Mechanical Calculator

Video 9:50

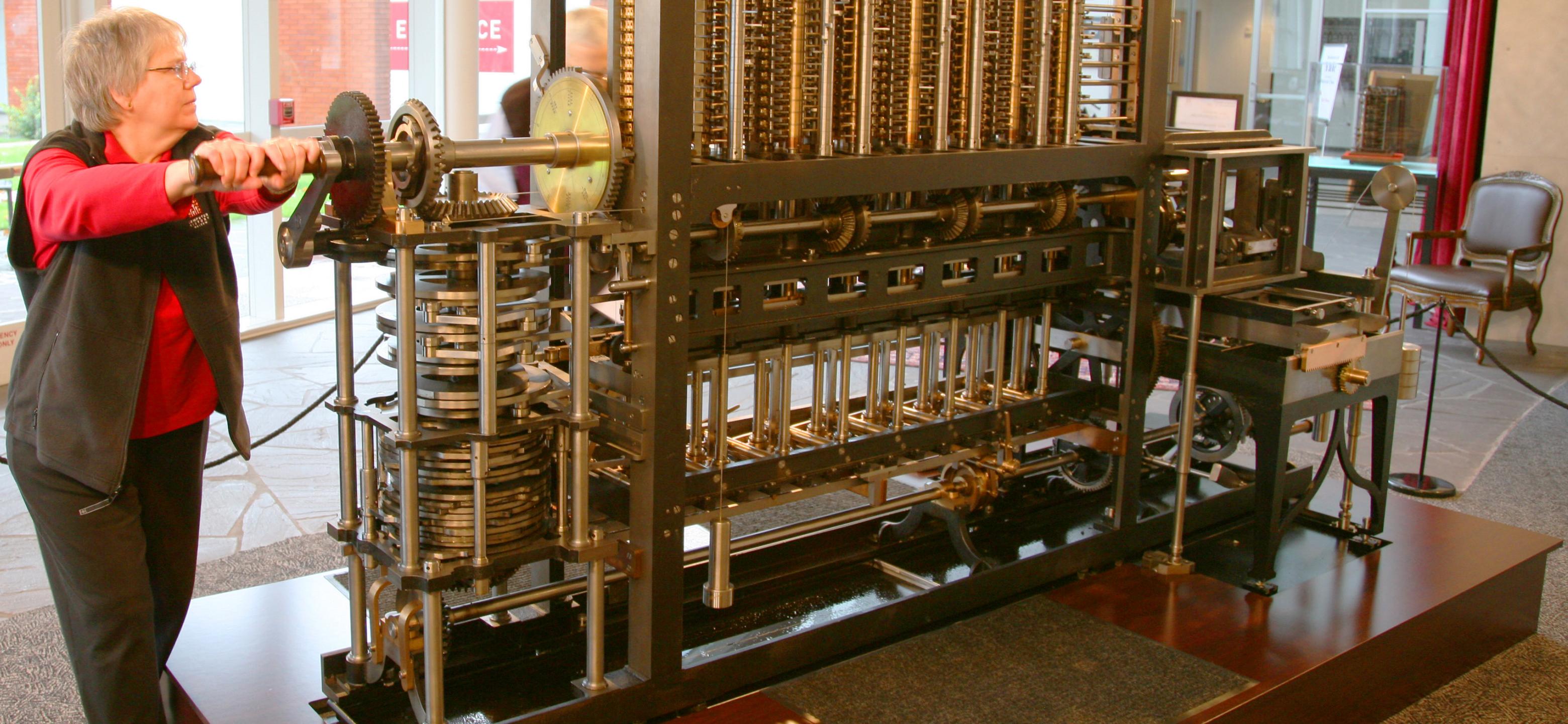
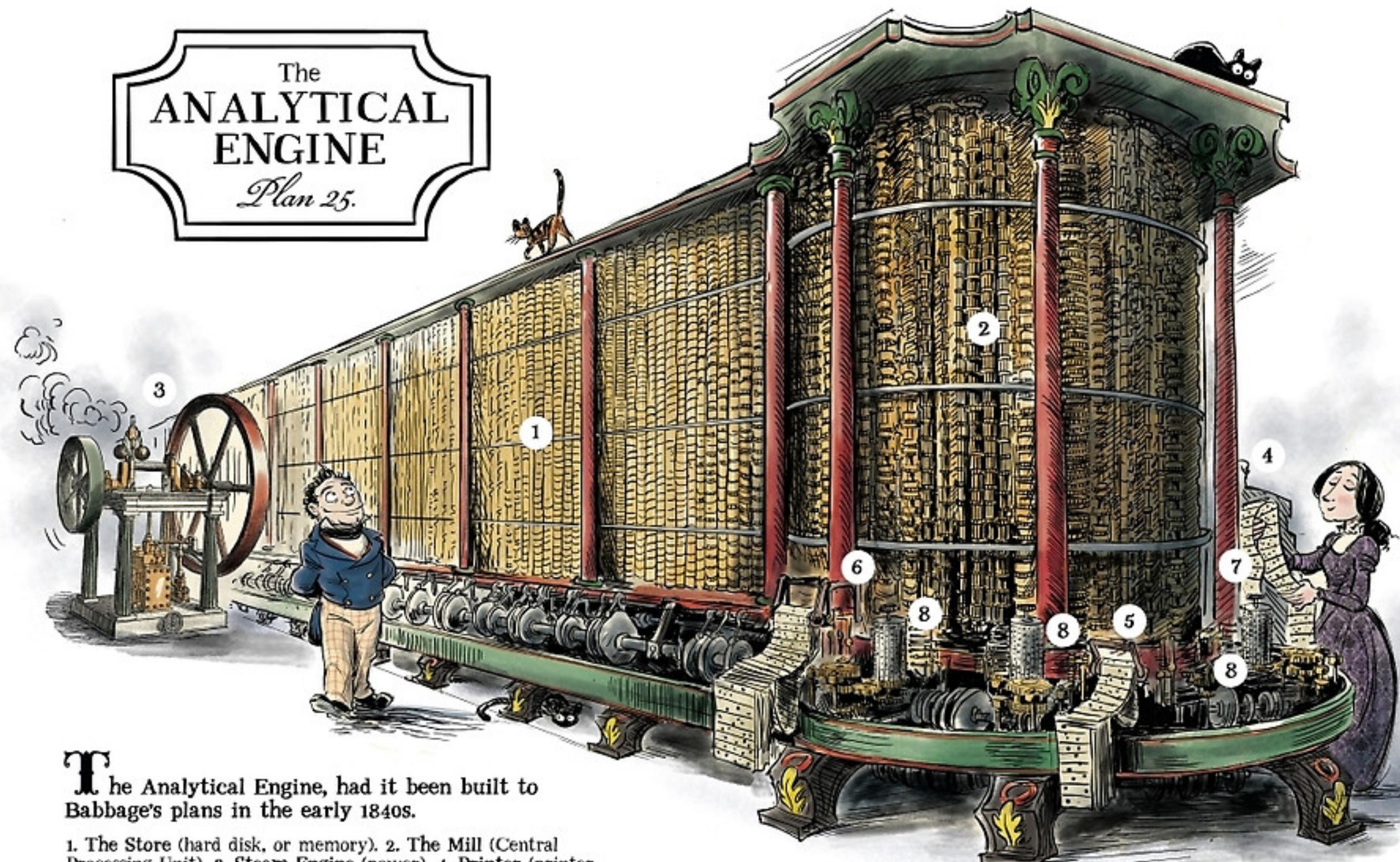


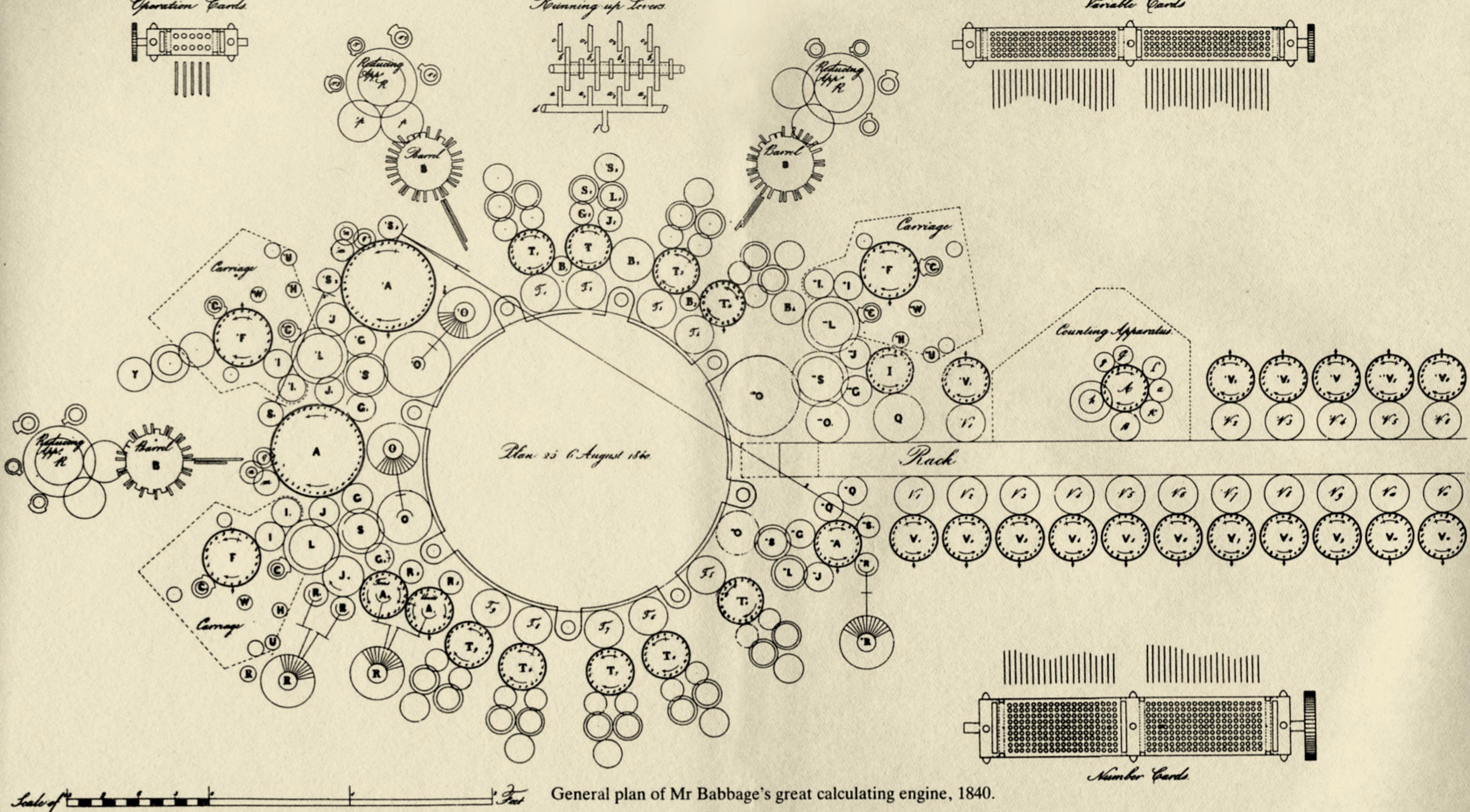
Diagram for the computation by the Engine of the Numbers of Bernoulli. See Note G. (page 722 *et seq.*)

The  
**ANALYTICAL  
ENGINE**  
*Plan 25.*



**T**he Analytical Engine, had it been built to Babbage's plans in the early 1840s.

1. The Store (hard disk, or memory).
2. The Mill (Central Processing Unit).
3. Steam Engine (power).
4. Printer (printer, round the other side).
5. Operation Cards (the program).
6. Variable Cards (Addressing system).
7. Number Cards (for entering numbers).
8. The Barrel Controllers (microprograms).



# The Analytical Engine

- The object that Lovelace saw the potential to extend into the areas outside of mathematics
- 45 feet long, able to store 5000 variables, Driven by steam
- Employees a mechanical "conditional arm"
- Video Link
- Mechanical Loom

# The World is Made of Numbers

She was the first to recognize that the machine had applications beyond pure calculation, and created the first algorithm intended to be carried out by such a machine. As a result, she is often regarded as the first to recognize the full potential of a "computing machine" and the first computer programmer.

# What happened?

- There was a concern for how government money was being used.
- Politicians were looking for way to kill the project.
- It started to seem unlikely that their ideas would be realized.

# Tragedy

- She thought because of her math knowhow that she would be skillful in gambling
- She lost \$3200 pounds (Equal to \$1m dollars today)
- She never recovered the money and died at the age of 36
- Her last wish was to be buried next to her father

# A Century Later

- Alan Turing develops the "Thinking Machine"
- Wrote about Ada's work and as one of the pioneer of computers
- Computer language named ADA. Adopted by Air Traffic Control.

## Questions

- What steps can we take to help define the image of the next generation of programmers?
- Nurture vs. nature? What influences us to become who we are?
- Our thoughts on how images affect us?

## Further Reading

- The Thrilling Adventures of Lovelace and Babbage
- CODE: Debugging the Gender Gap