

The Story of Science

—

Hidden Intersections Week 5

- Whose story gets told? Who tells it?
- What kind of science is “real science”?
Who does what kinds of work? What kind of work is recognized?
- How do the stories we tell about science affect these roles? What part do stereotypes, visible representation play?

Narrative

Hidden Figures

JPL computers



Harvard observatory



Katherine Johnson



Mary Jackson

Hidden Figures (2016)- “Bathroom scene”



“Great Man Theory”

History can be largely explained by the contributions of influential (“great”) figures, oftentimes men.

Discussion #1

Narrative in “Hidden Figures”

- What struck you about the sequence of the two scenes?
 - Who is the intended audience?
 - How are we supposed to feel?
 - If you have seen the movie, do you remember your reaction?
 - Does the movie fall into the “great man” paradigm?
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Women in compsci

- Women heavily involved in early development, men focused on hardware, women on software.
- Effort to market computers to boys to encourage them to study CS.

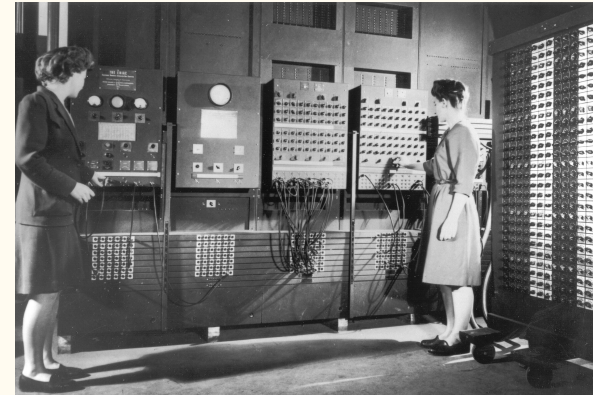
Ada
Lovelace



Grace Hopper



ENIAC programmers



"Men were interested in building, the hardware, doing the circuits, figuring out the machinery. And women were very good mathematicians back then."

"The Forgotten Female Programmers Who Created Tech," NPR

Secret History of the ENIAC Women by Kathy Kleiman



Discussion #2

The influence of stereotypes

- Did the article surprise you?
Had you known about the early composition of the field?
 - How did the external narrative of who “does compsci” affect who actually pursued it?
 - Can you draw parallels with your own field of study?
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Tom Servo 7 months ago (edited)

most people on a team are invisible ... I bet if they actually designed ENIAC, they would be remembered. Instead of blaming the past, why don't you start celebrating those picking your food and not the celebrity chefs ? Lets make celebrity field pickers!

  [REPLY](#)



Tim 1 year ago

They were invisible for the same reason 99% of people are "invisible" -- most people will never invent a new kind of computer, write a hit song, discover a vaccine, etc. Sorry, but plugging in cables according to a diagram is not historic. It's a job like most people have. It was the same thing with "hidden" figures. They weren't hidden, they were just doing the same kinds of things many others were doing.

 2  [REPLY](#)

Recognition

Chien-Shiung Wu

- Experimental nuclear physicist; earned her PhD at Berkeley!
- Worked on the Manhattan project, but most well-known for leading the experiment which disproved parity conservation
- Theoreticians earned Nobel; Wu was snubbed

The Nobel Prize in Physics 1957 was awarded jointly to Chen Ning Yang and Tsung-Dao (T.D.) Lee "for their penetrating investigation of the so-called parity laws which has led to important discoveries regarding the elementary particles."



Jocelyn Bell Burnell



- As a postdoc student at Cambridge, she discovered a persistent, periodic radio signal which she and her advisor eventually identified as a pulsar
- Advisor won the Nobel prize for the work

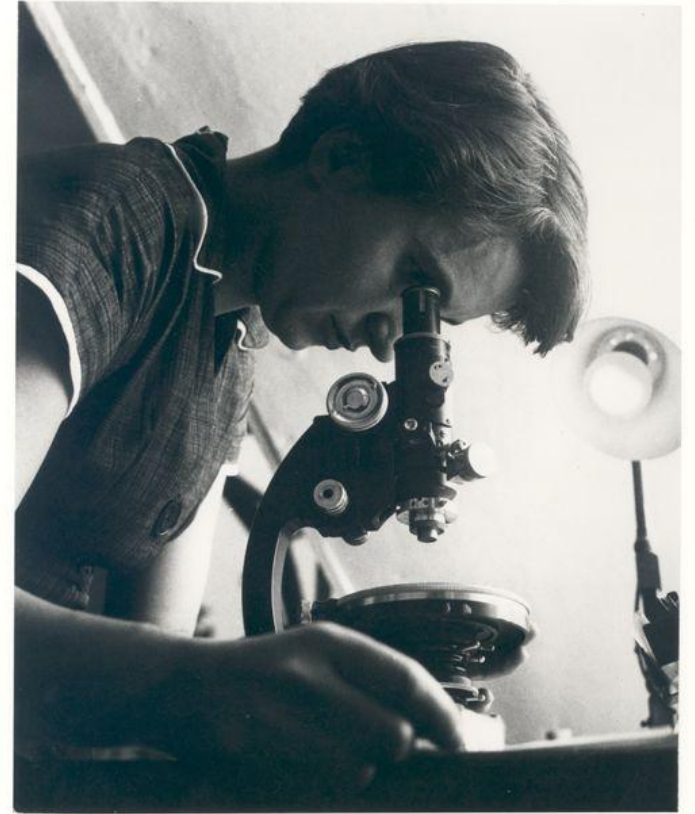
Elmer Imes

- Second Black man to earn a PhD in physics in the US; graduated from University of Michigan in 1918
- Provided one of the first experimental confirmations of quantum mechanics, proved it could be applied across the entire EM spectrum
- Difficulty getting an academic job post-graduating; white colleges would not hire



Rosalind Franklin

- English chemist and x-ray crystallographer
- Crick's advisor showed her work on the structure of DNA to Crick and Watson without her knowledge, which they then used to publish their proposed model
- She was briefly credited in a single footnote, and Watson continued to paint her in an unflattering light for the rest of his career to undermine her contributions



“Franklin couldn’t deal with people”- James Watson



Discussion #3

- Thinking about your own field of study, what kind of work is most prestigious? What kind of work is less prestigious? Who gets assigned to do what kind of tasks? Who wins awards?

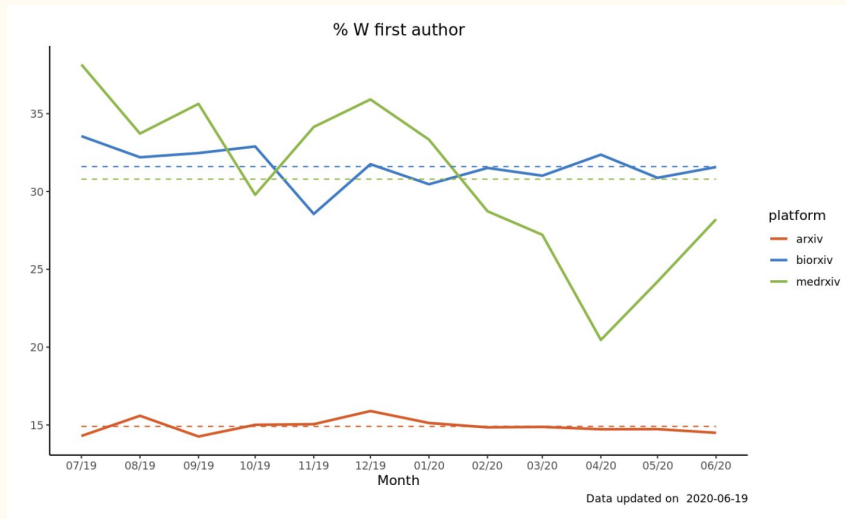
Invisible Labor

Work outside the
economy; work
not valued,
recognized, or
regulated

Arlene Daniels, "Invisible work," *Social Problems*, 1987.

Invisible labor impacts visible productivity

- Often women take on most of the household, childcare duties among opposite-gender couples
- Richer people can afford to offload invisible work onto others
- Some cultures require more of this kind of invisible labor



- COVID-19 has had a large impact on research output; some indication of men increasing in productivity while women have declined

<https://www.the-scientist.com/news-opinion/gender-gap-in-research-output-widens-during-pandemic-67665>

“A related explanation may be found in the way men and women professors divide their time at work—and how colleagues value the division of labor. A variety of studies show that men focus more on research than do women. While men are not necessarily more productive than women, they are more protective of their research time.

Tenured women, on the other hand, devote more time to teaching, mentoring, and service, and particularly to activities that may be seen as building bridges around the university.”

“The Ivory Ceiling of Service Work” by Noya Misra et al.

What kinds of
invisible work do
you do? What
don't you do?

Midterm project

(DUE 11/12)

- Contribute to/create a Wikipedia article on a scientist, area of science, or part of science history that has been traditionally underrepresented
- Give a short (5 minute) overview of the topic you chose and your contributions
- Information on getting started will be uploaded today to bcourses

CLASS NEXT WEEK: come prepared with an idea for your topic + we will have a short Wikipedia tutorial

Sources

- <https://www.the-scientist.com/news-opinion/gender-gap-in-research-output-widens-during-pandemic-67665>
- https://www.aaup.org/article/ivory-ceiling-service-work#.XvJf_SVq2Ed
- <https://www.npr.org/sections/alltechconsidered/2014/10/06/345799830/the-forgotten-female-programmers-who-created-modern-tech>
- <https://sojo.net/articles/hidden-racism>
- “Invisible Work” by Arlene Kaplan Daniels