

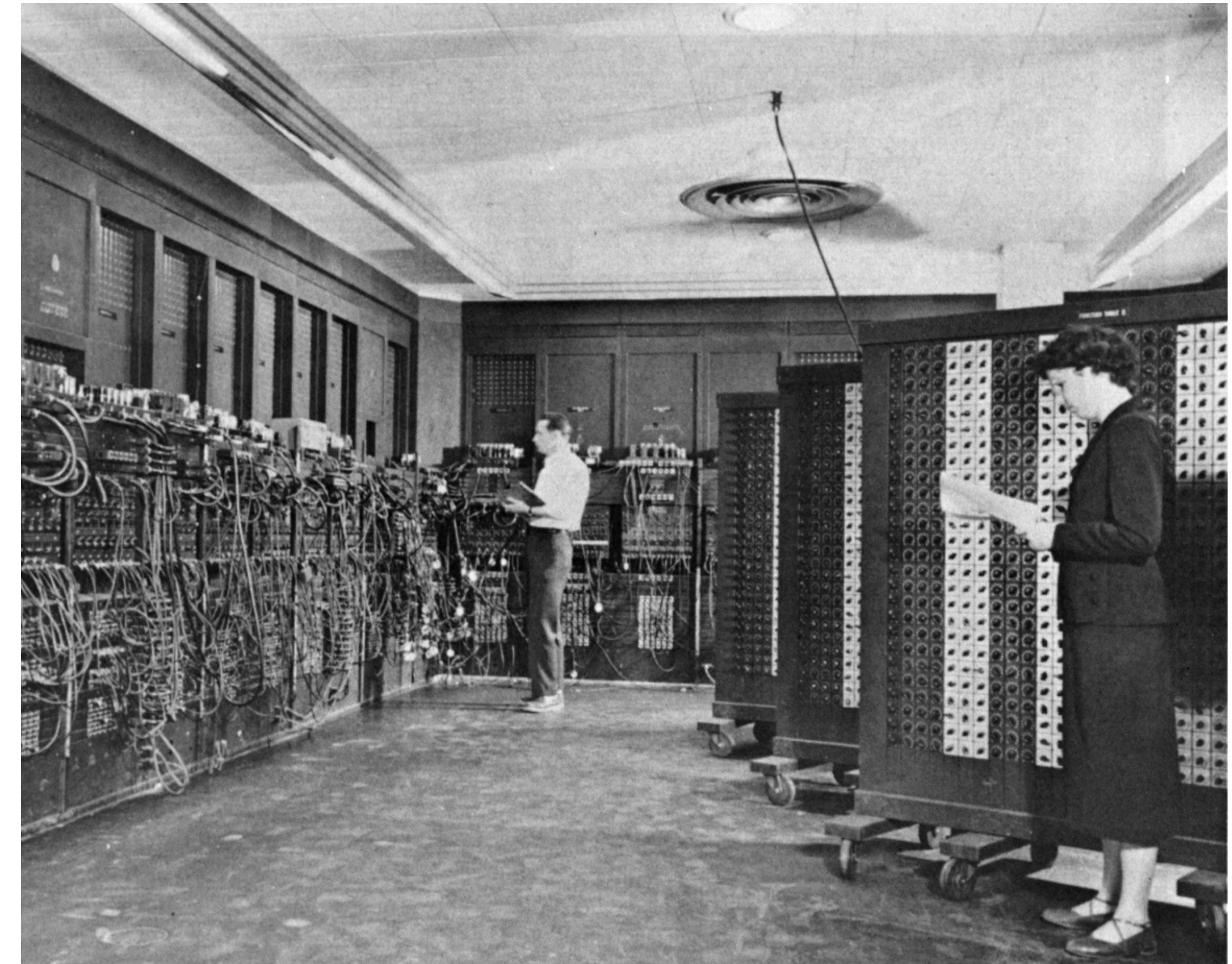
INCLUDING EQUITY IN TECH WORK

A Quick, Paper-Based Guide

September 26, 2018

Ari Schlesinger
Georgia Tech

**we've got
problems
with equity
and inclusion
in tech**



ENIAC (Electronic Numerical Integrator And Computer) in Philadelphia, Pennsylvania. Glen Beck and Betty Snyder are pictured here programming in 1955.

LOUISE MATSAKIS BUSINESS 09.25.18 09:00 AM

TWITTER RELEASES NEW POLICY ON 'DEHUMANIZING SPEECH'

W I R E D

Microsoft's Chatbot 'Tay' Just Went on a Racist, Misogynistic, Anti-Semitic Tirade

AI-based hate speech shocks social observers

By Christopher Heine | March 24, 2016

ADWEEK
®

GOOGLE PHOTOS TAGS BLACK PEOPLE AS 'GORILLAS', PUTS PICTURES IN SPECIAL FOLDER

ANDREW GRIFFIN

@_andrew_griffin

Wednesday 1 July 2015 12:28



INDEPENDENT

GOOGLE \ TECH \ ARTIFICIAL INTELLIGENCE

Google ‘fixed’ its racist algorithm by removing gorillas from its image-labeling tech

Nearly three years after the company was called out, it hasn’t gone beyond a quick workaround

By James Vincent | @jjvincent | Jan 12, 2018, 10:35am EST

THE VERGE

ALGORITHMS OF OPPRESSION

by Safiya Umoja Noble





```
vivek@nixcraft:/tmp$ vi hello.sh
vivek@nixcraft:/tmp$ 
vivek@nixcraft:/tmp$ chmod +x hello.sh
vivek@nixcraft:/tmp$ 
vivek@nixcraft:/tmp$ ls -l hello.sh
-rwxr-xr-x 1 vivek vivek 31 Jan 21 15:08 hello.sh
vivek@nixcraft:/tmp$ 
vivek@nixcraft:/tmp$ ./hello.sh
Hello World
vivek@nixcraft:/tmp$ 
vivek@nixcraft:/tmp$ bash hello.sh
Hello World
vivek@nixcraft:/tmp$ 
vivek@nixcraft:/tmp$ sh hello.sh
Hello World
vivek@nixcraft:/tmp$ cat hello.sh
#!/bin/bash
echo "Hello World"
vivek@nixcraft:/tmp$ 
```

Source: from nixCraft: Linux and Unix tutorials for new and seasoned sysadmin by Vivek Gite

U.S. Operating Systems at Mid-Century

The Intertwining of Race and UNIX

TARA MCPHERSON

University of Southern California

I begin with two fragments cut from history, around about the 1960s. This essay will pursue the lines of connection between these two moments and argue that insisting on their entanglement is integral to any meaningful understanding of either of the terms this volume's title brings together: the internet and race. Additionally, I am interested in what we might learn from these historical examples about the very terrains of knowledge production in the post-World War II United States. The legacies of mid-century shifts in both our cultural understandings of race and in digital computation are still very much with us today, powerful operating systems that deeply influence how we know self, other and society.

Race After the Internet
(2012). Taylor and Francis

"The introduction of ... computer operating systems at mid-century installed an extreme logic of modularity and seriality that "black-boxed" knowledge in a manner quite similar to emerging logics of racial visibility and racism at that time."

Source: Henry Jenkins interview Tara McPherson in 2015:
"Bringing Critical Perspectives to the Digital Humanities: An Interview with Tara McPherson (Part Three)"

**So you
want
to talk
about
race**

Ijeoma Oluo

the mid 1960s

Computing

MULTICS is in use

(Multiplexed Information and Computing Service) — Introduced Early Ideas about MODULARITY in Hardware and Software

1965

**Bell Labs stops work
on MULTICS**

1968

**Early development of
UNIX**

1969

U.S. Social Change

1965

**Assassination of Malcolm X
Voting Rights Act
United Farm Workers Est.**

1968

**Assassination of MLK
Stonewall Riots
American Indian Movement Est.**

1969

Computing

MULTICS is in use

1965

Bell Labs stops work
on MULTICS

Early development of
UNIX

U.S. Social Change

Assassination of Malcolm X
Voting Rights Act
United Farm Workers Est.

1968

Assassination of MLK
Stonewall Riots
American Indian Movement Est.

1969

these two lineages are interconnected.

**together, they contribute
to the shaping of thought
knowledge in the U.S.
in the 1960s and beyond**

"both exist as operating systems of a sort"

modularity



UNIX

On the Criteria To Be Used in Decomposing Systems into Modules

D.L. Parnas
Carnegie-Mellon University

This paper discusses modularization as a mechanism for improving the flexibility and comprehensibility of a system while allowing the shortening of its development time. The effectiveness of a "modularization" is dependent upon the criteria used in dividing the system into modules. A system design problem is presented and both a conventional and unconventional decomposition are described. It is shown that the unconventional decompositions have distinct advantages for the goals outlined. The criteria used in arriving at the decompositions are discussed. The unconventional decomposition, if implemented with the conventional assumption that a module consists of one or more subroutines, will be less efficient in most cases. An alternative approach to implementation which does not have this effect is sketched.

Key Words and Phrases: software, modules, modularity, software engineering, KWIC index, software design

CR Categories: 4.0

Introduction

A lucid statement of the philosophy of modular programming can be found in a 1970 textbook on the design of system programs by Gouthier and Pont [1, ¶10.23], which we quote below:

A well-defined segmentation of the project effort ensures system modularity. Each task forms a separate, distinct program module. At implementation time each module and its inputs and outputs are well-defined, there is no confusion in the intended interface with other system modules. At checkout time the integrity of the module is tested independently; there are few scheduling problems in synchronizing the completion of several tasks before checkout can begin. Finally, the system is maintained in modular fashion; system errors and deficiencies can be traced to specific system modules, thus limiting the scope of detailed error searching.

Usually nothing is said about the criteria to be used in dividing the system into modules. This paper will discuss that issue and, by means of examples, suggest some criteria which can be used in decomposing a system into modules.

Communications of the ACM
(1972). 15(12)

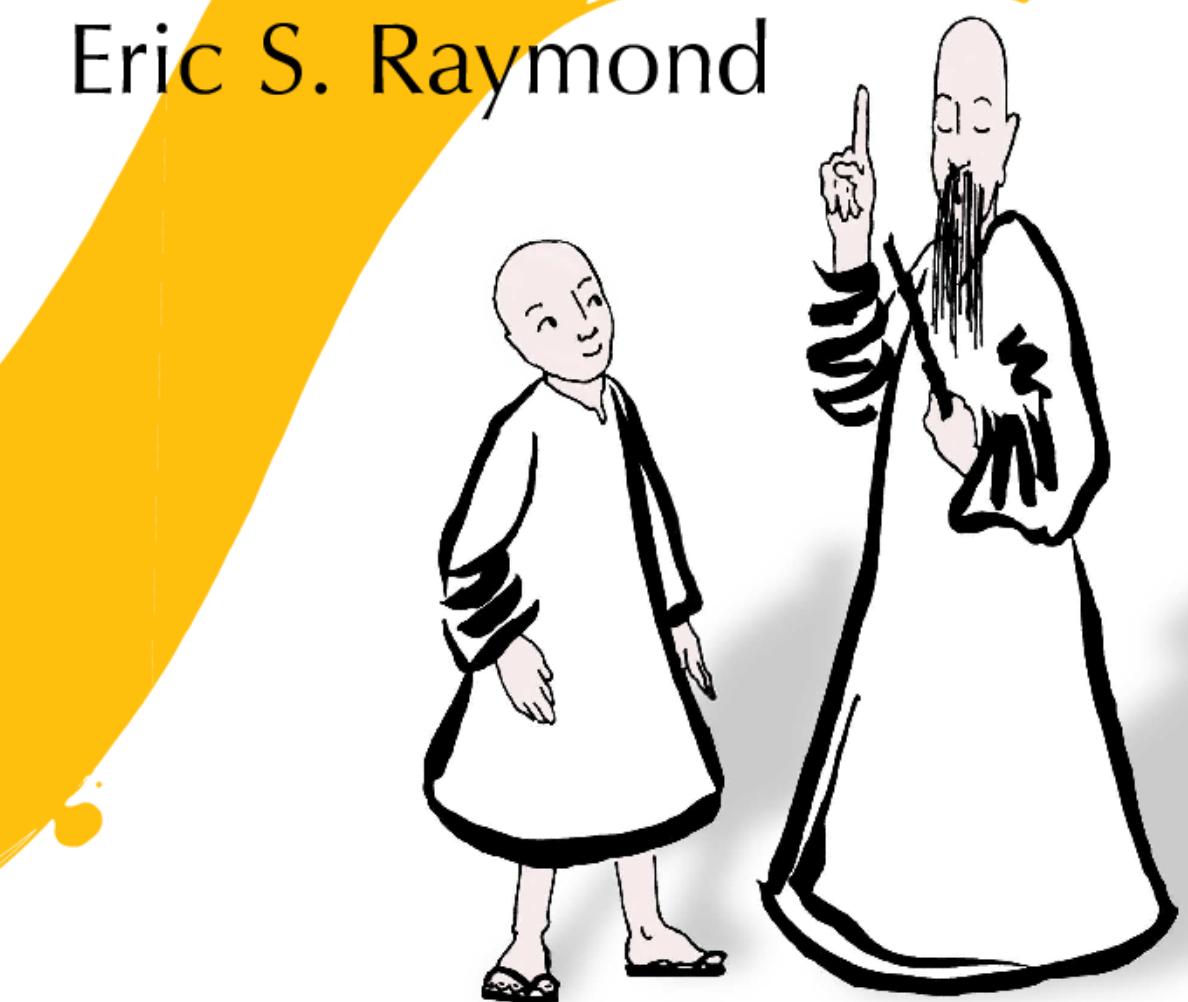


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With contributions
from thirteen
UNIX pioneers,
including its
inventor,
Ken Thompson

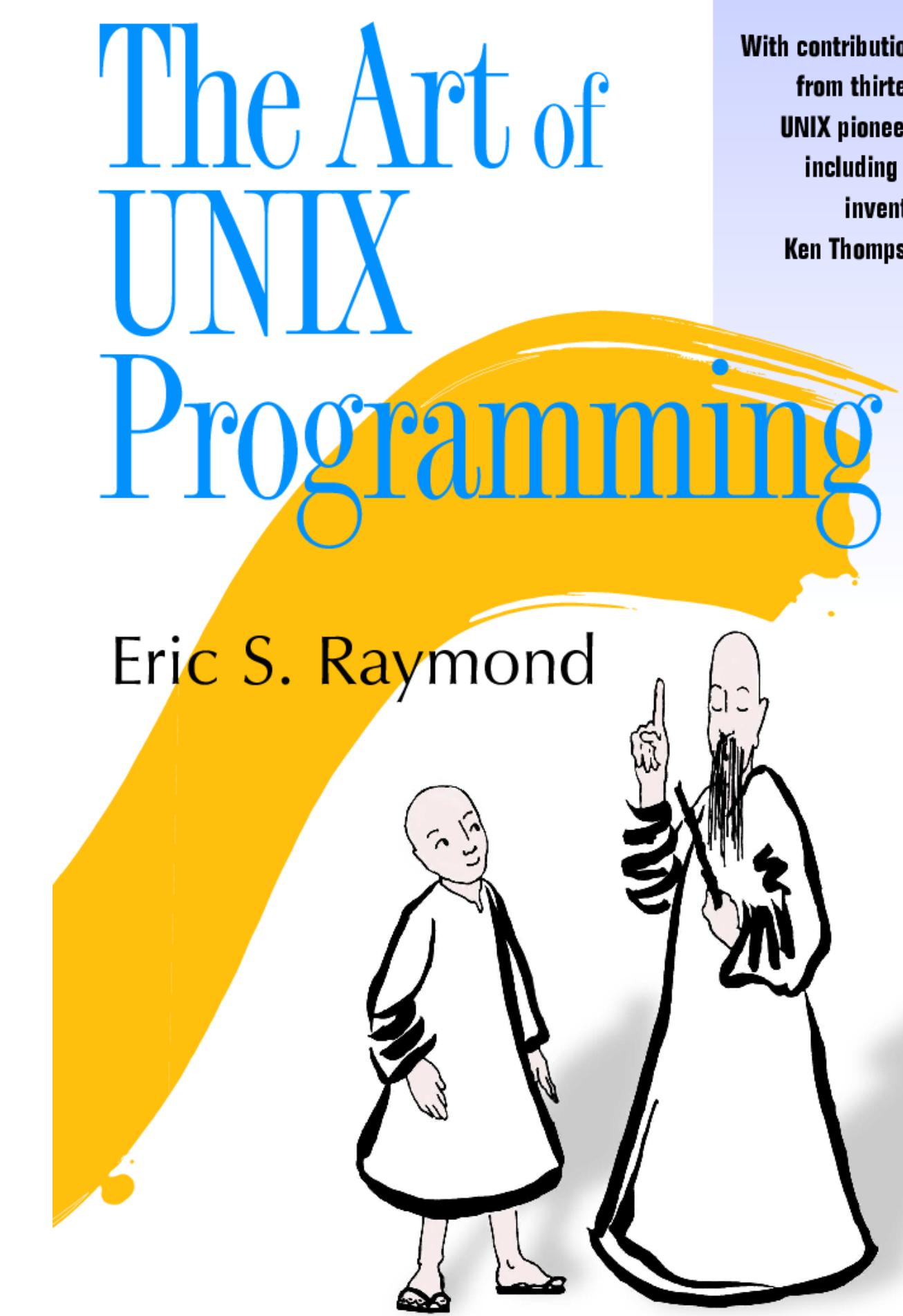
The Art of UNIX Programming

Eric S. Raymond



First 9 Rules of UNIX

- 1) Rule of Modularity**
- 2) Rule of Clarity**
- 3) Rule of Composition**
- 4) Rule of Separation**
- 5) Rule of Simplicity**
- 6) Rule of Parsimony**
- 7) Rule of Transparency**
- 8) Rule of Robustness**
- 9) Rule of Representation**



ADDISON-WESLEY PROFESSIONAL COMPUTING SERIES

"There are clearly practical advantages to such structures for coding, but they also underscore a world view in which a troublesome part might be discarded without disrupting the whole."

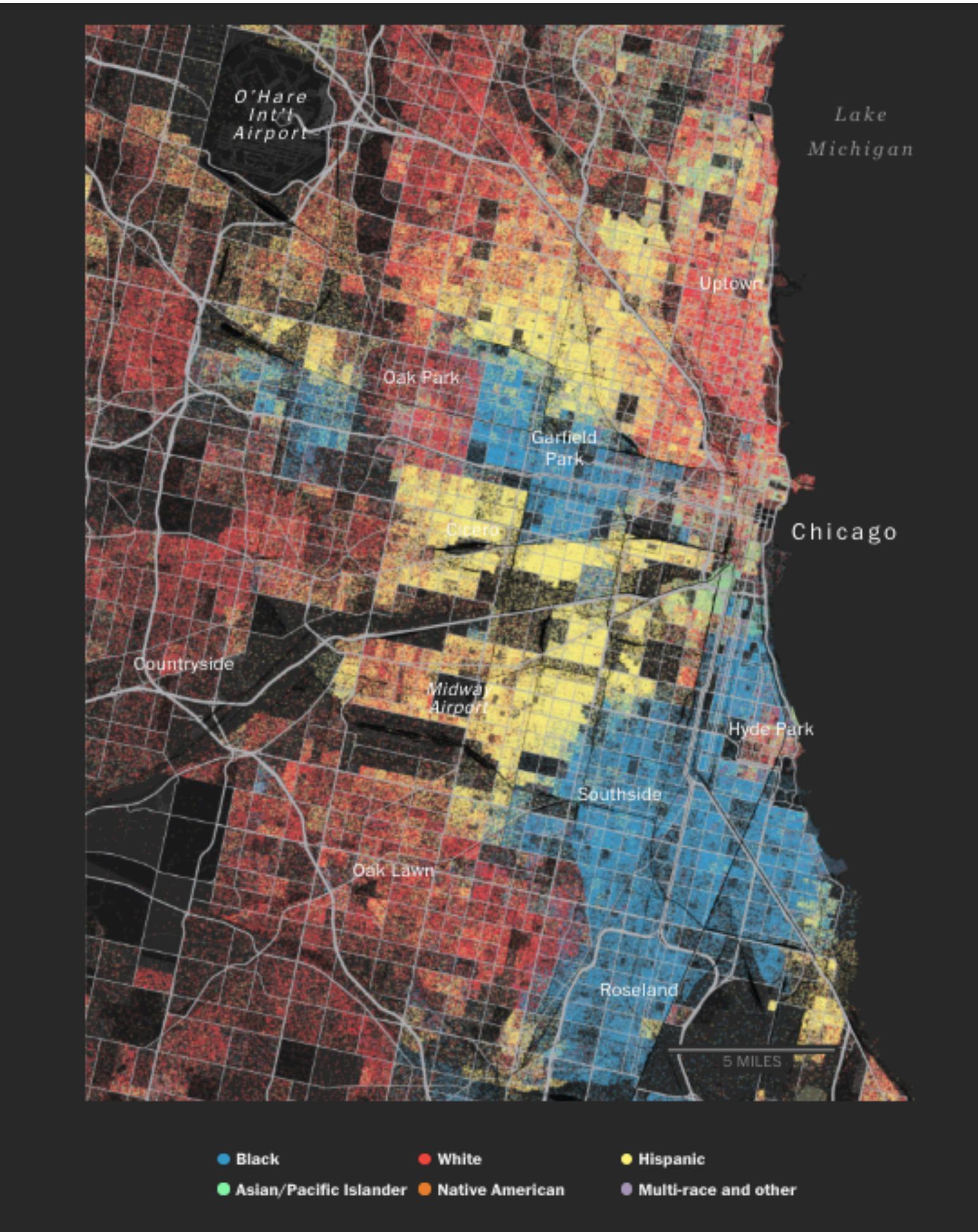
Modularity is **Foundational in UNIX**

RACE

**"racial formations serve as fundamental
organizing principles of social relations in
the United Sates"**

**"The push toward modularity and the covert
in digital computation also reflects changes
in organizing social life in the 1960s."**

**"if the first half of the twentieth century laid
bare its racial logics... the second half
increasingly hides it's racial 'kernal'"**



Source: Washington Post, "America is more diverse than ever — but still segregated"
By Aaron Williams and Armand Emamdjomeh
page updated May 2018

UNIX & RACE

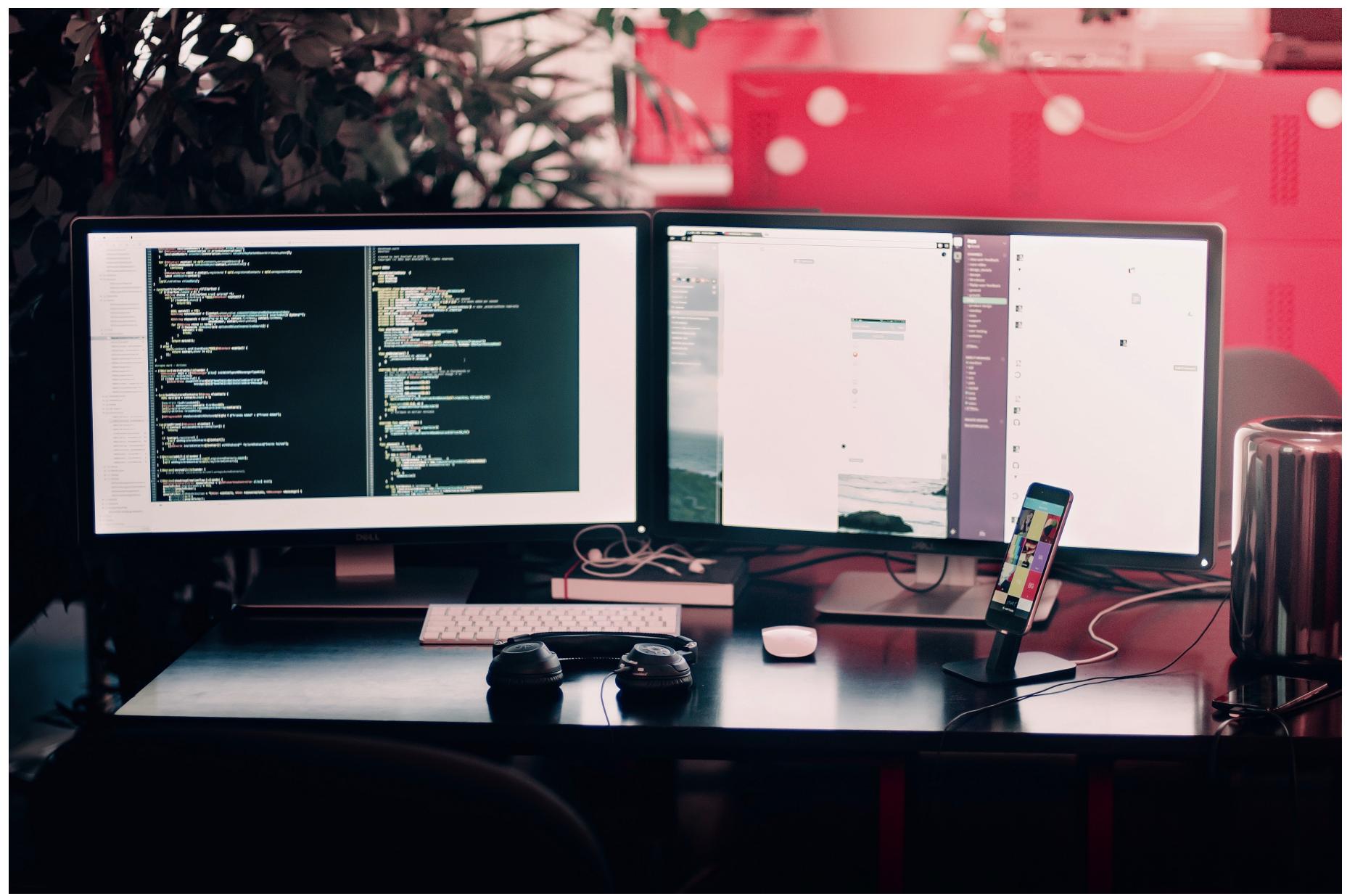
"Modularity in software design was meant to decrease 'global complexity' and cleanly separate one 'neighbor' from another (Raymond 2004:85)."

**"These strategies also played out in ongoing
reorganizations of the political field throughout the
1960s and 70s"**

computers convey and encode culture

so, how do we move forward?

"We need new hybrid practice"



Modularity in Law

Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics

Kimberle Crenshaw†

One of the very few Black women's studies books is entitled *All the Women Are White, All the Blacks Are Men, But Some of Us are Brave*.¹ I have chosen this title as a point of departure in my efforts to develop a Black feminist criticism² because it sets forth a problematic consequence of the tendency to treat race and gender as mutually exclusive categories of experience and analysis.³ In this talk, I want to examine how this tendency is perpetuated by a single-axis framework that is dominant in antidiscrimination law and that is also reflected in feminist theory and antiracist politics.

**University of Chicago Legal Forum
(1989).**







Design Justice: towards an intersectional feminist framework for design theory and practice

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doi: 10.21606/dma.2017.679

Design is key to our collective liberation, but most design processes today reproduce inequalities structured by what Black feminist scholars call the *matrix of domination*. Intersecting inequalities are manifest at all levels of the design process. This paper builds upon the Design Justice Principles, developed by an emerging network of designers and community organizers, to propose a working definition of design justice: *Design justice is a field of theory and practice that is concerned with how the design of objects and systems influences the distribution of risks, harms, and benefits among various groups of people. Design justice focuses on the ways that design reproduces, is reproduced by, and/or challenges the matrix of domination (white supremacy, heteropatriarchy, capitalism, and settler colonialism). Design justice is also a growing social movement that aims to ensure a more equitable distribution of design's benefits and burdens; fair and meaningful participation in design decisions; and recognition of community based design traditions, knowledge, and practices.*

Keywords: design justice, intersectional feminism, matrix of domination

**Proceedings of the
Design Research Society
(2018).**

Trans Competent Interaction Design: A Qualitative Study on Voice, Identity, and Technology

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Increasing attention is being paid to applications of HCI that center on identity and social justice. Much of this work is influenced by Feminist HCI, a set of design orientations that critique dominant research paradigms and support the development of systems informed by feminist theory. However, the field has largely ignored the lived experiences of transgender people. I review the sociopolitical context of this issue, focusing on feminism's exclusion of trans people and critical health disparities in our population. I then present formative qualitative work in the domain of voice training for trans individuals. Interview participants expressed frustration with prescriptive gender norms and revealed opportunities for a personalized health technology that counteracts these norms. Specifically, it could adapt to their goals and provide actionable feedback without judgment or reference to gender stereotypes. From these insights, I propose 'trans competent interaction design' as a starting point for trans-inclusive design practices.

RESEARCH HIGHLIGHTS

- This is the first study to explore trans individuals' experiences of voice and technology using qualitative methods, and the first to investigate inroads to developing a health informatics tool for trans people.
- Participants described how rigid gender norms influence their experiences with voice, as well as their gender transitions more broadly.
- Gender norms were often embedded within current voice training resources and technologies, to which many participants reacted negatively.

Interacting with Computers
(2017). 30(1)

Let's Talk About Race: Identity, Chatbots, and AI

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ABSTRACT

Why is it so hard for chatbots to talk about race? This work explores how the biased contents of databases, the syntactic focus of natural language processing, and the opaque nature of deep learning algorithms cause chatbots difficulty in handling race-talk. In each of these areas, the tensions between race and chatbots create new opportunities for people and machines. By making the abstract and disparate qualities of this problem space tangible, we can develop chatbots that are more capable of handling race-talk in its many forms. Our goal is to provide the HCI community with ways to begin addressing the question, *how can chatbots handle race-talk in new and improved ways?*

Author Keywords

chatbots; race; artificial intelligence

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g., HCI):
Miscellaneous

THE BLACKLIST: HOW DO CHATBOTS CURRENTLY HANDLE RACE-TALK?

In 2017, the blacklist reigns supreme as a technical solution for handling undesirable speech like racist language in online chat. In the aftermath of the Tay fiasco—a Microsoft AI chatbot who became racist, sexist, and anti-Semitic in less than 24 hours on Twitter—Twitter chatbot developers expressed profound disbelief that Microsoft had apparently

words. Essentially, a blacklist uses words and word-stems to recognize and eliminate certain types of speech. In a publicly available Twitterbot blacklist called *wordfilter*, a potential tweet is thrown out if any sub-string is matched to a string in the blacklist's dictionary [54]. Generally, blacklists can operate at various levels of complexity. For instance, if there is a sub-string match in a chatbot user's text, a chatbot could generate an automated response to warn the user not to continue with the current direction of talk. Likewise, detailed regular expressions provide another avenue for customization. Regardless of implementation, the dictionary—a list of strings—is one of the most impactful and devastating features of a blacklist.

It all comes down to one essential question: *What words get included in a blacklist's dictionary?* While the inclusion of the n-word doesn't surprise most people, undesirable consequences arise when certain strings are included in a blacklist dictionary. When you have a blacklist that casts a wide, hyper-cautious net—prioritizing accuracy over precision—you can end up filtering words that shouldn't be blacklisted at all. In addition to the n-word, a blacklist may include strings like *jap*, *paki*, and *homo*; using these word-stems to catch hate-speech variants. Kazemi, the creator of the previously mentioned open-source blacklist, *wordfilter*, stated that “[he is] willing to lose a few words like ‘homogenous’ and ‘Pakistan’ in order to avoid false negatives” [54]. But, Pakistan isn’t just a word, it’s an

Proceedings of the
CHI Conference
(2018).

where are we now?

JESSI HEMPEL BUSINESS 09.12.18 09:00 AM

MELINDA GATES' NEW RESEARCH REVEALS ALARMING DIVERSITY NUMBERS

W I R E D

When Computers Were Women

JENNIFER S. LIGHT

J. Presper Eckert and John W. Mauchly, household names in the history of computing, developed America's first electronic computer, ENIAC, to automate ballistics computations during World War II. These two talented engineers dominate the story as it is usually told, but they hardly worked alone. Nearly two hundred young women, both civilian and military, worked on the project as human "computers," performing ballistics computations during the war. Six of them were selected to program a machine that, ironically, would take their name and replace them, a machine whose technical expertise would become vastly more celebrated than their own.¹

Technology and Culture
(1999). 40(3)

THE ARMY AND THE MICROWORLD: COMPUTERS AND THE POLITICS OF GENDER IDENTITY

PAUL N. EDWARDS

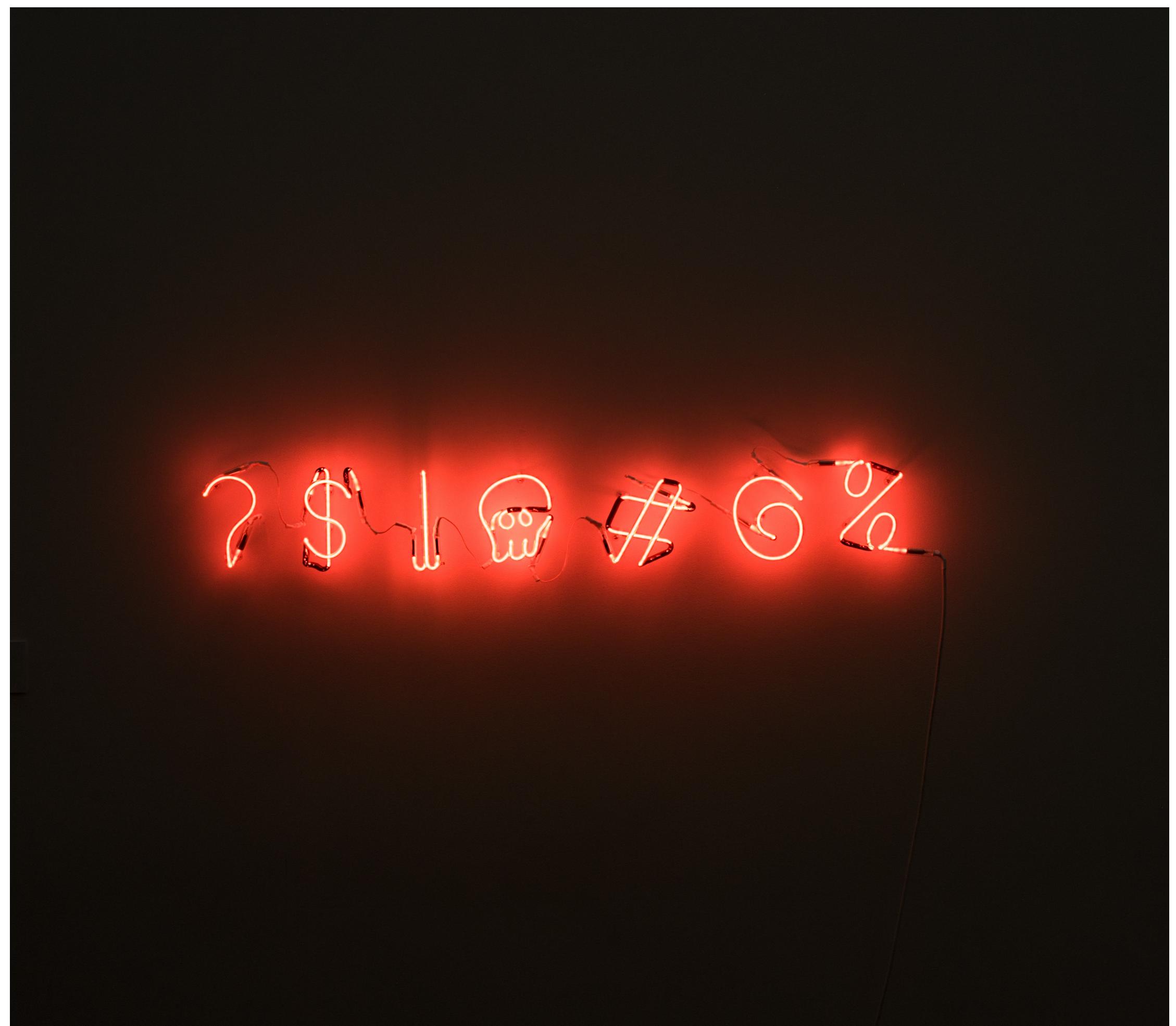
In contemporary America, computer work—programming, computer engineering, systems analysis—is more than a job. It is a major cultural practice, a large-scale social form that has created and reinforced modes of thinking, systems of interaction, and ideologies of social control. In the 1970s, American women entered the higher levels of computer work in ever-increasing numbers. By 1984, 35 percent of U.S. computer programmers and 30 percent of American systems analysts were women.¹ Across the board, in

**Signs: Journal of Women
in Culture and Society
(1990). 16(1)**

JESSI HEMPEL BUSINESS 09.12.18 09:00 AM

MELINDA GATES' NEW RESEARCH REVEALS ALARMING DIVERSITY NUMBERS

W I R E D



**in moving forward
we need to be open
to change through self reflection**

**How does the tech we build benefit
some while further harming others?**

**in moving forward
we need to be centering
the people in intersections in our process**

it's about meaningful inclusion

**what is the story
we want our work to tell?**

Interested in this topic?

Let's chat.

**I'd love to hear about your
experiences & perspectives.**

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