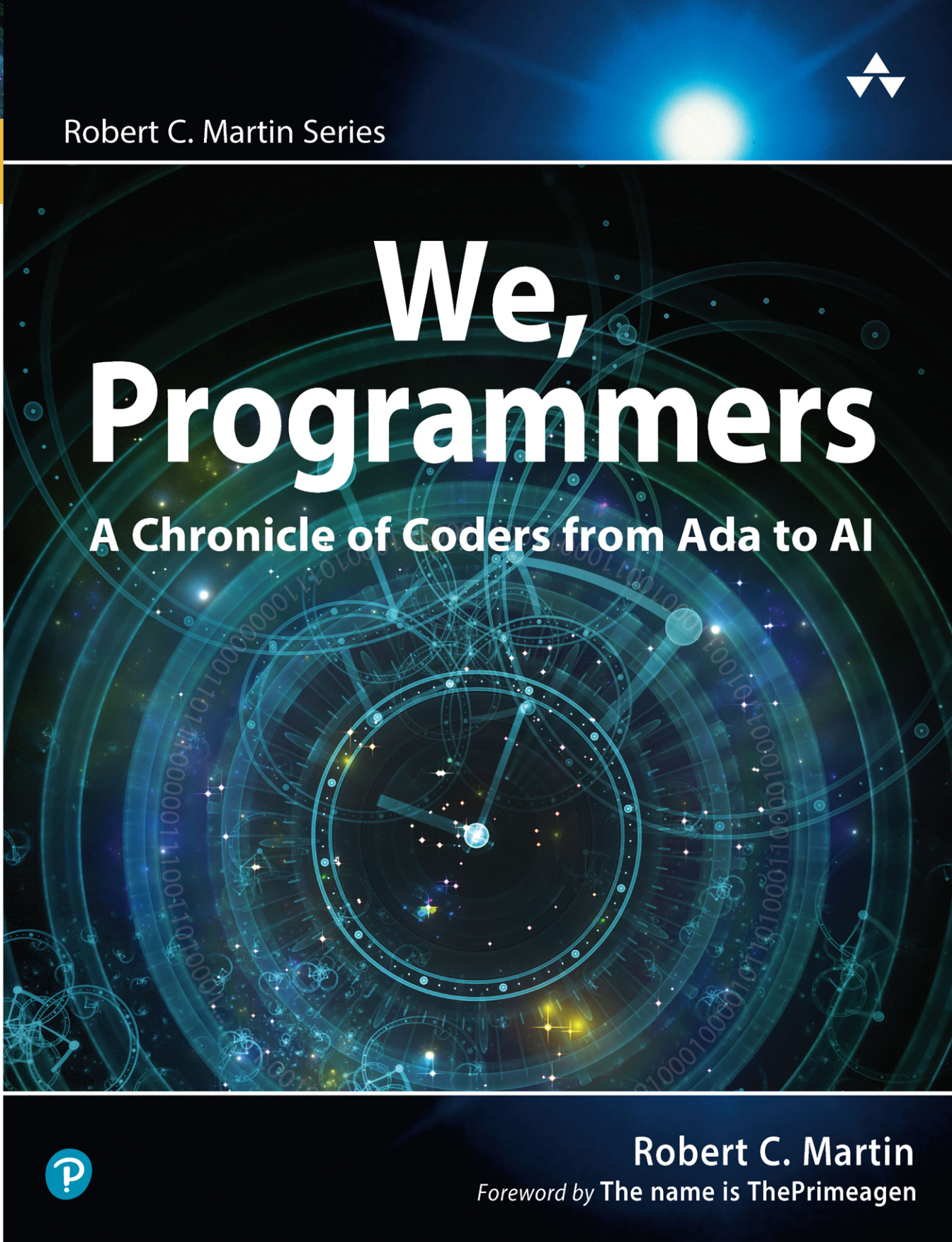
Robert C. Martin Series
We, Programmers
A Chronicle of Coders from Ada to AI
Robert C. Martin
Foreword by The name is ThePrimeagen

Praise for We, Programmers

"I, like Uncle Bob, spent much of my career consulting, teaching, and going to computer conferences. The importance of this is that I got to meet and dine with many of the characters in this book. So this book is about my professional friends, and I can tell you that it is a faithful story. In fact, it is incredibly well-written and researched. That is how it *really* was."

—From the Afterword by Tom Gilb

"I can't think of any other book that provides such a sweeping overview of the early history of programming."

—Mark Seeman

"*We, Programmers* is a fascinating romp through the history of computers and programming. Wonderful glimpses into the lives of some of the greats. And an enjoyable ride with Uncle Bob's career as a programmer."

—Jon Kern, co-author of the Agile Manifesto

"In *We, Programmers*, Bob successfully weaves together a highly entertaining history of programmers, giving us a wealth of historical context, humanizing stories, and eye-opening revelations about the foundational folks in our industry, all bolstered with just the right amount of low-level detail. Bob, being a small piece of this rich history, finds a way to pepper the history with his own relevant observations and critiques. We also get Bob's full story this time out, as well as his own thoughts about what's coming next. A fun, quick read."

—Jeff Langr

Hopper was usually someone who worked to find compromise and collegiality. This power play seems very out of character for her. It must have been something that she felt very strongly about. Looking back, it's not at all clear she should have.

Hopper won that battle—at least in the short term. And the language committee hammered out the Common Business Oriented Language (COBOL).

COBOL was a hybrid of many different languages and ideas. FLOW-MATIC played a big role, but much was drawn from IBM's COMTRAN, and the Air Force's AIMACO, which had been derived from FLOW-MATIC.

The first successful compilation of a COBOL program took place on August 17, 1960.

MY COBOL RANT

I have used many computer languages. I've written in a dozen different assemblers. I've used FORTRAN, PL/1, SNOBOL, BASIC, FOCAL, ALCOM, C, C++, Java, C#, F#, Smalltalk, Lua, Forth, Prolog, Clojure, and many dozens of others. I have never hated[40] a language more than COBOL. It is a *horrible* language. It is wordy to the point of being mind-numbing. It is ponderous to write and even worse to read. It makes a program look like a military report. It separates things that should be together and puts together things that should be separated. In every way, the language is an abomination.

I believe the rampant success of the language was driven by corporate politics rather than technical excellence. Indeed, Hopper consciously and specifically kept programmers from significantly influencing the language and gave preference to users and managers. And it shows.

40. . . . unless it was XSLT.

I find this astounding, since Hopper was a programmer par excellence. I can only assume that she thought that the industry would never be able to find, or create, enough programmers who approached her level of intelligence. So she had to dumb down the language to a nearly moronic common denominator.

An Unmitigated Success

Despite my hatred for the language, it succeeded. And it succeeded beyond all expectations. By the year 2000, it was estimated that 80% of all code written to that date was COBOL.

Hopper went on to have a successful and colorful career. She remained the director of Automatic Programming Development of the UNIVAC division of Sperry Rand until 1965. She continued on as a senior staff scientist, and she became a visiting associate professor at the University of Pennsylvania. She spent another 20 years working as director of the Navy Programming Languages Group.

In 1973 she was promoted to captain. From 1977 to 1983, she was assigned to the Naval Data Automation Headquarters in Washington, D.C., to monitor the state of the art in computing. At the urging of the House of Representatives, President Ronald Reagan promoted her to the rank of commodore—a rank that was later renamed to rear admiral.

In 1986 Rear Admiral Grace Hopper retired from the Navy as the oldest active officer in that service. Digital Equipment Corporation then hired her as a senior consultant. She held that position until her death, at age 85, in 1992.

Over her life, she received many awards, including the Defense Distinguished Service Medal, Legion of Merit, Meritorious Service Medal, and Presidential Medal of Freedom (posthumously).

In 1969 the Data Processing Management Association named her the first ever Computer Sciences "Man of the Year."

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5 John Backus: The First High-Level Language

Most of us have known someone who is very smart but is devoid of ambition and direction. They live, day to day, gliding through life by breaking the rules through guile and feigned innocence. They aren't bad people; they just don't seem to care where they are going or how they will get there. The future is just not their concern.

And then one day a switch gets thrown and they suddenly become directed, productive, and motivated. They start to shine like a crazy diamond.

That was John Backus.

John Backus, the Man

John Warner Backus was born December 3, 1924. He grew up well-off as the son of Cecil F. Backus: a self-taught, self-made chemist who managed a group of nitroglycerine factories for Atlas Powder Company and eventually determined that the reason the factories kept blowing up was the faulty thermometers the company had been buying from Germany.

John's family life was less than satisfactory.[1] His father was unpleasant and aloof. His mother, who died before he turned 9, may have sexually

1. Lorenzo, p. 23.

abused[2] him. His stepmother was a neurotic alcoholic who sometimes yelled at passersby from her window.

As an adolescent, John was a bully who enjoyed mistreating his peers. He was eventually sent to a boarding school,[3] where he proceeded to goof around and break as many rules as he could. He repeatedly flunked out and was therefore kept in summer school, where he spent his time sailing and having a nice time. He seldom returned home.

Despite his low grades, he managed to graduate, and he enrolled at the University of Virginia. He took chemistry at his father's urging, but he didn't complete the lab work and seldom went to his classes, preferring to go to parties instead. He was eventually expelled.

It was 1943, and so he was drafted into the Army and stationed at Fort Stewart in Georgia. It was an Army aptitude test that began to change everything. He aced it. So the Army sent him to learn engineering at the University of Pittsburgh.

2. An LSD-induced suspicion that grew when he was in his 60s.

3. The Hill School in Pottstown, PA.

He breezed through the pre-engineering courses, spending much of his time at bars—but not to the exclusion of his studies, which he had begun to enjoy.

Yet another aptitude test convinced the Army that he was doctor material, and he was sent to study medicine at Haverford College, where he did very well indeed.

As part of the medical training, he interned for 12 hours a day at a hospital in Atlantic City. But after some months, a bump on his head was diagnosed as a slow-growing tumor—the removal of which left a hole in his skull covered by badly fitting metal plates. This relieved him of his internship duties and led to an honorable medical discharge from the Army in 1946.

After his discharge, in order to put some distance between himself and his family, he enrolled in a medical school in New York City. While there, he helped design a better-fitting replacement for the plate in his head. But he found medical school disappointing. He detested all the rote, brute-force memorization, and eventually he bailed out.

And so he was once again directionless—or nearly so. His one remaining interest was in building a hi-fi.[4] So he used the GI Bill to wrangle a slot in a radio technology school. And there he met "the first good teacher" he had ever had.[5]

With that teacher's help, Backus realized that he really liked math—and was pretty good at it too. So he enrolled in the graduate program for mathematics at Columbia University.

Colored Lights That Hypnotize

In the spring of 1949, while studying for his master's at Columbia, he chanced upon "an interesting thing." A friend of his had told him to

4. A high-fidelity, often stereo, music system. Typically based on a record player and perhaps a radio.

5. Lorenzo, p. 24.