Programming as a mathematical problem

"Program testing can be used to show the presence of bugs, but never to show their absence!" Rather than verifying programs through their testing, we should prove them correct.

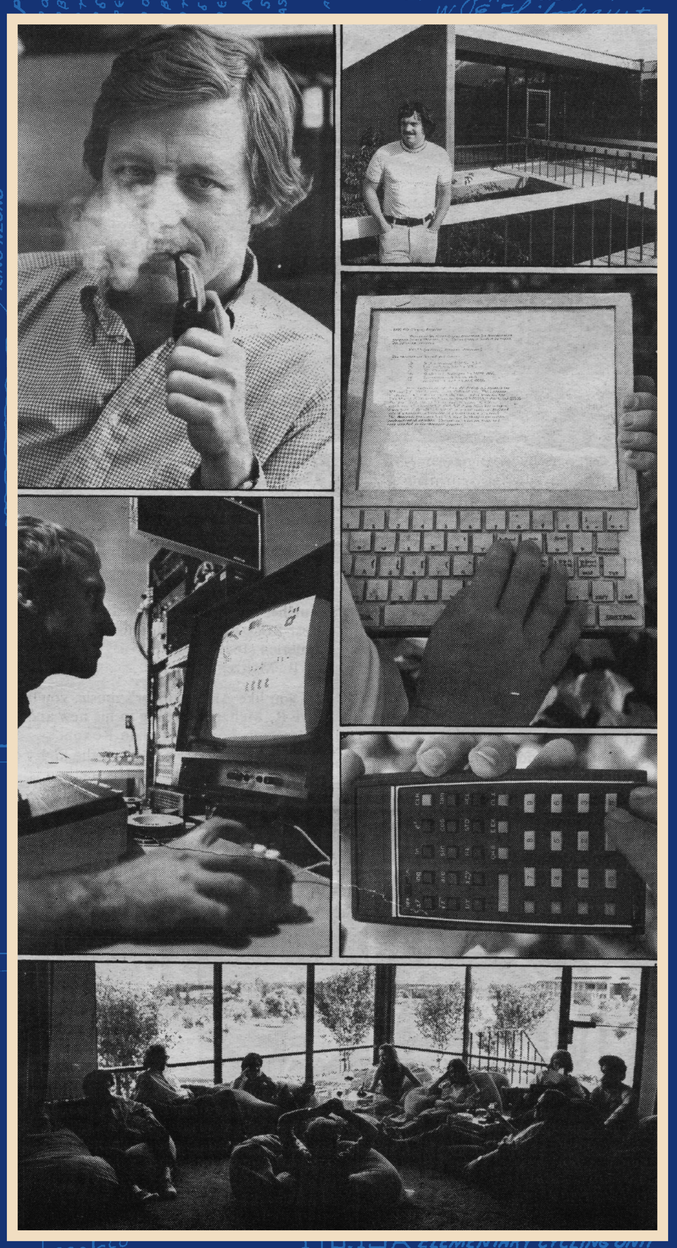
Edsger Dijkstra (1969)

The hacker era of computer programming

"Programming in the early 1950s was a black art, a private arcane matter involving only a programmer, a problem, a computer, and perhaps a small library of subroutines and a primitive assembly program."

John Backus (1976)

What is the problem of programming?



The birth of software engineering

"The phrase software engineering was deliberately chosen as provocative… We undoubtedly produce software by backward techniques." The black art of programming has to make way for the science of software engineering!

NATO Conference on Software Engineering (1968)

Humanistic visions of programming

"Alan Kay is more interested in us kids. He repudiates the manipulative arrogance of 'Computer-Aided Instruction' and serves the dictum of Seymour Papert, Should the computer program the kid or should the kid program the computer?"

Stewart Brand, Rolling Stone (1972)

Managing large software projects

"With SAGE, we were faced with programs that were too large for one person to grasp entirely and also with the need to hire and train large numbers of people to become programmers—after all, there were only a handful of trained programmers in the whole world. We were faced with organizing and managing a whole new art."

Herbert Benington (1956)