@MyWebUniversity

C++



Bjarne Stroustrup: Speed Meets Big Ideas

from “C with Classes” to C++23

BELL LABS · 1979



Bjarne Stroustrup

Photo: via Wikimedia Commons

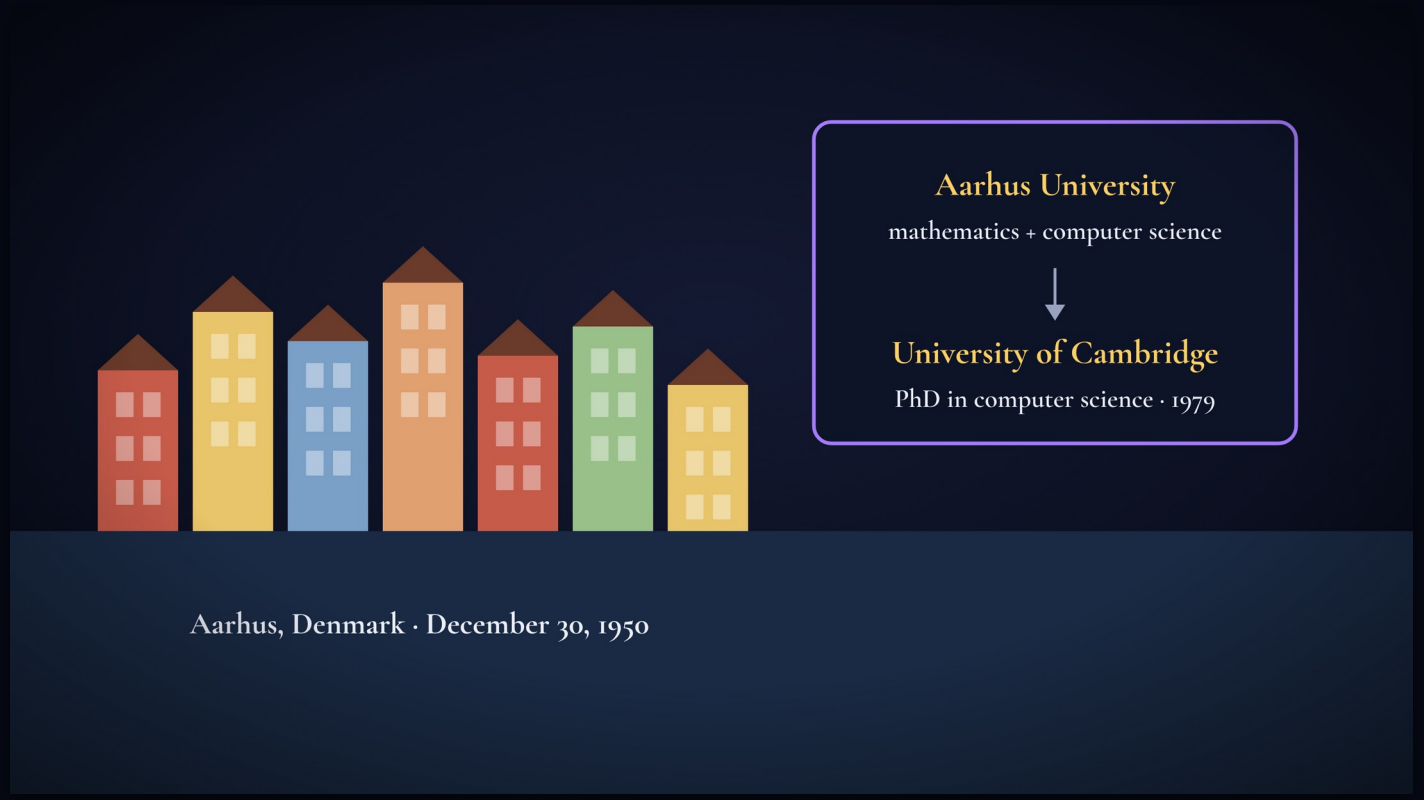
A MYWEBUNIVERSITY STORY

C++

Speed Meets Big Ideas

`class · template · vector · C++23`

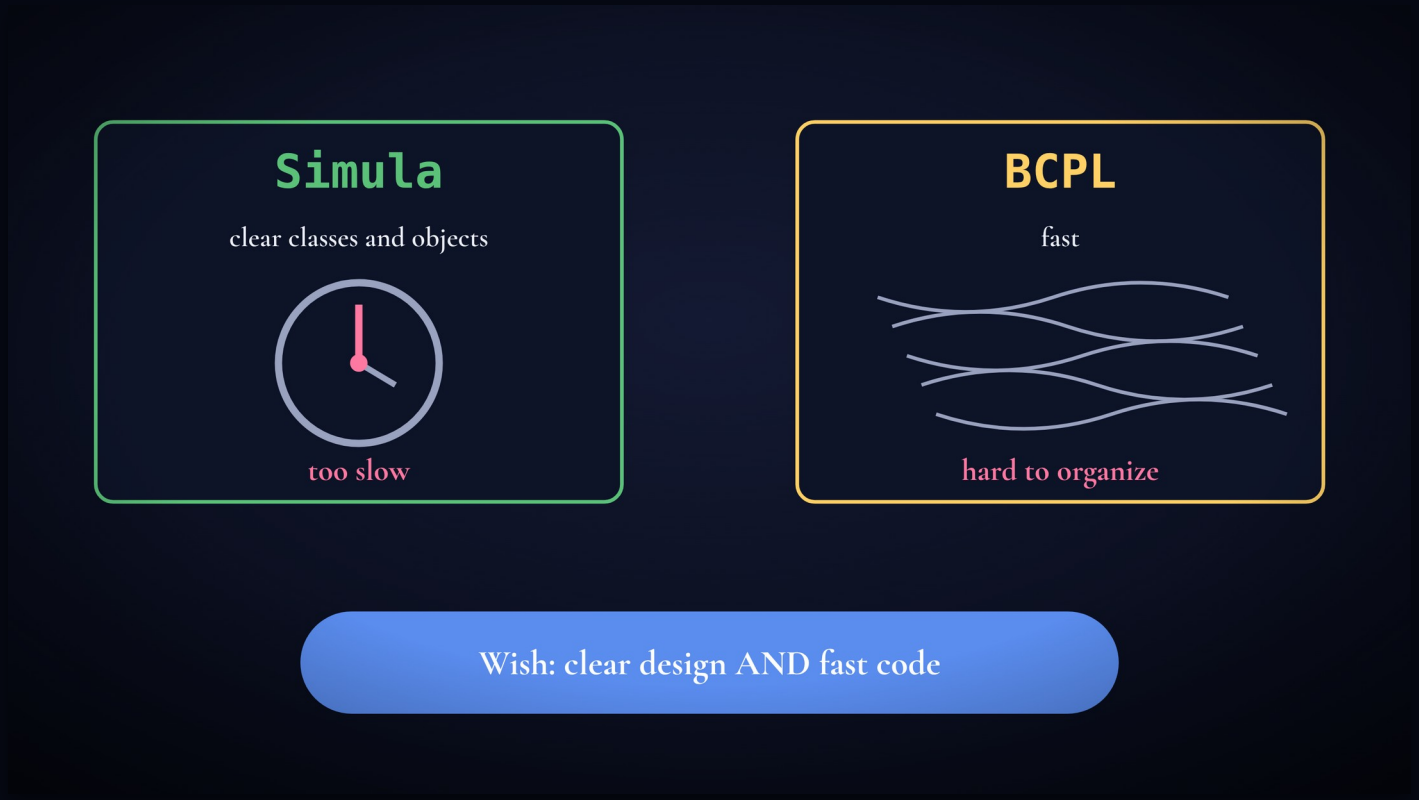
A Boy from Aarhus



- Born December 30, 1950, Aarhus, Denmark
- Aarhus University: mathematics + computer science
- 1979: PhD, University of Cambridge

01

Two Languages, One Wish



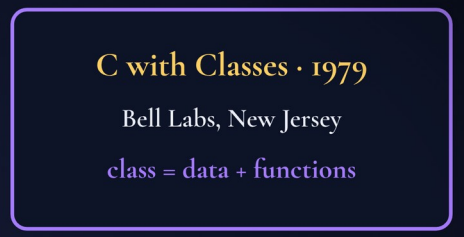
- Simula: clear classes, but too slow
- BCPL: fast, but hard to organize
- Goal: clear design AND fast code

02

C with Classes, 1979

```
class BankAccount {
    double balance = 0;
public:
    void deposit(double a)  { balance += a; }
    void withdraw(double a) { balance -= a; }
};

BankAccount acct;
acct.deposit(100);
```





Cfront translated C++ into C

- 1979: “C with Classes” at Bell Labs
- Class = data + functions (e.g. BankAccount)
- Cfront translated C++ into C

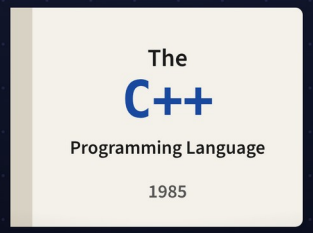
03

Plus Plus: Add One

```
int c = 1;
c++;
// c is now 2
```

C++

1983: “one step beyond C”



- 1983: renamed C++
- ++ means “add one” in C
- 1985: The C++ Programming Language + first release

04

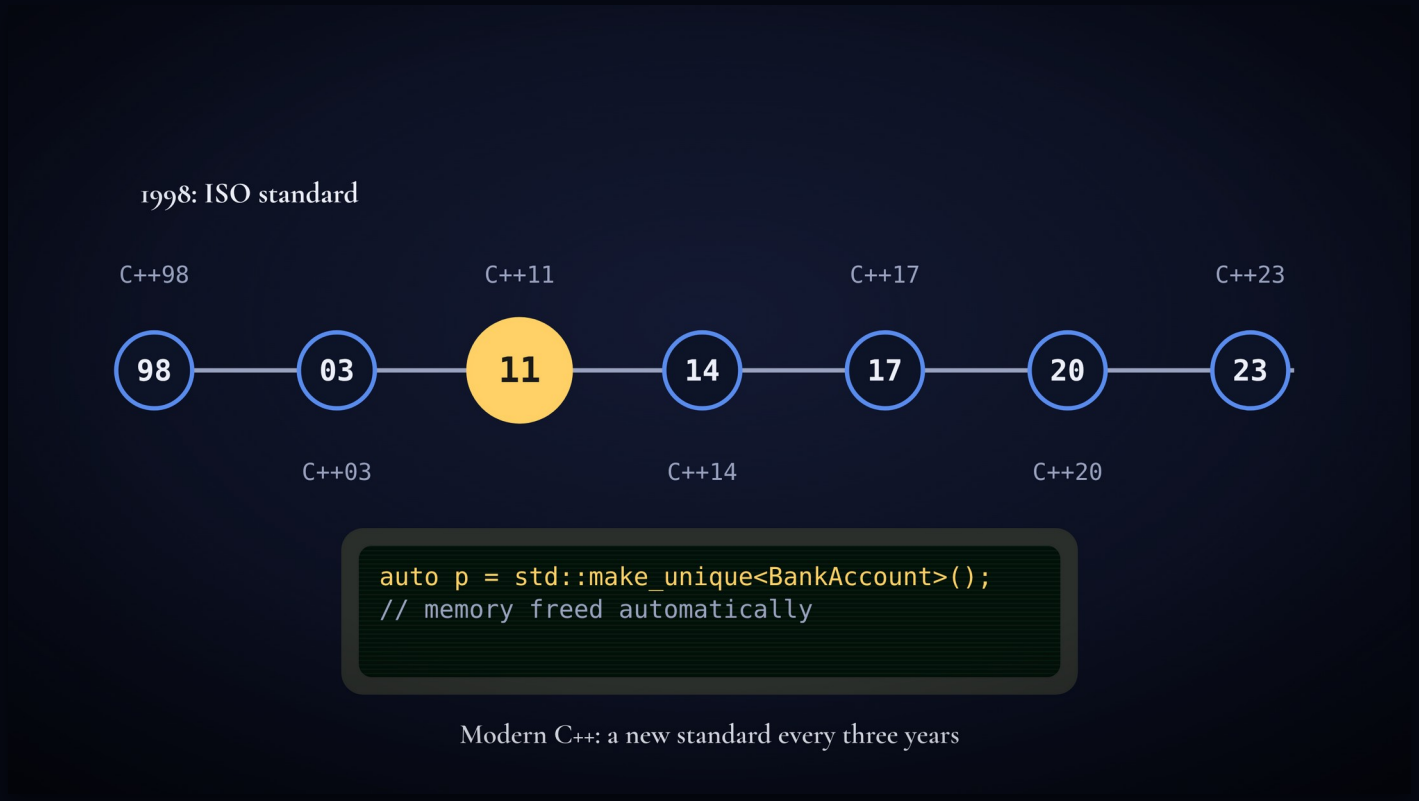
Zero-Overhead Power



- Inheritance · templates · exceptions
- STL (Alexander Stepanov): vector, map, sort
- Zero overhead: don't pay for what you don't use

05

Modern C++



- 1998: ISO standard (C++98)
- 2011: C++11, smart pointers, modern C++
- C++14 · 17 · 20 · 23, every three years

06

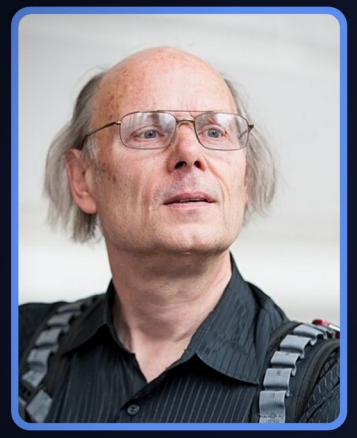
Where C++ Runs



- Browsers (Chrome, Firefox) · Unreal Engine
- Trading systems, databases, AI library engines
- Power with responsibility: memory safety matters

07

Teacher and Guide



Bjarne Stroustrup

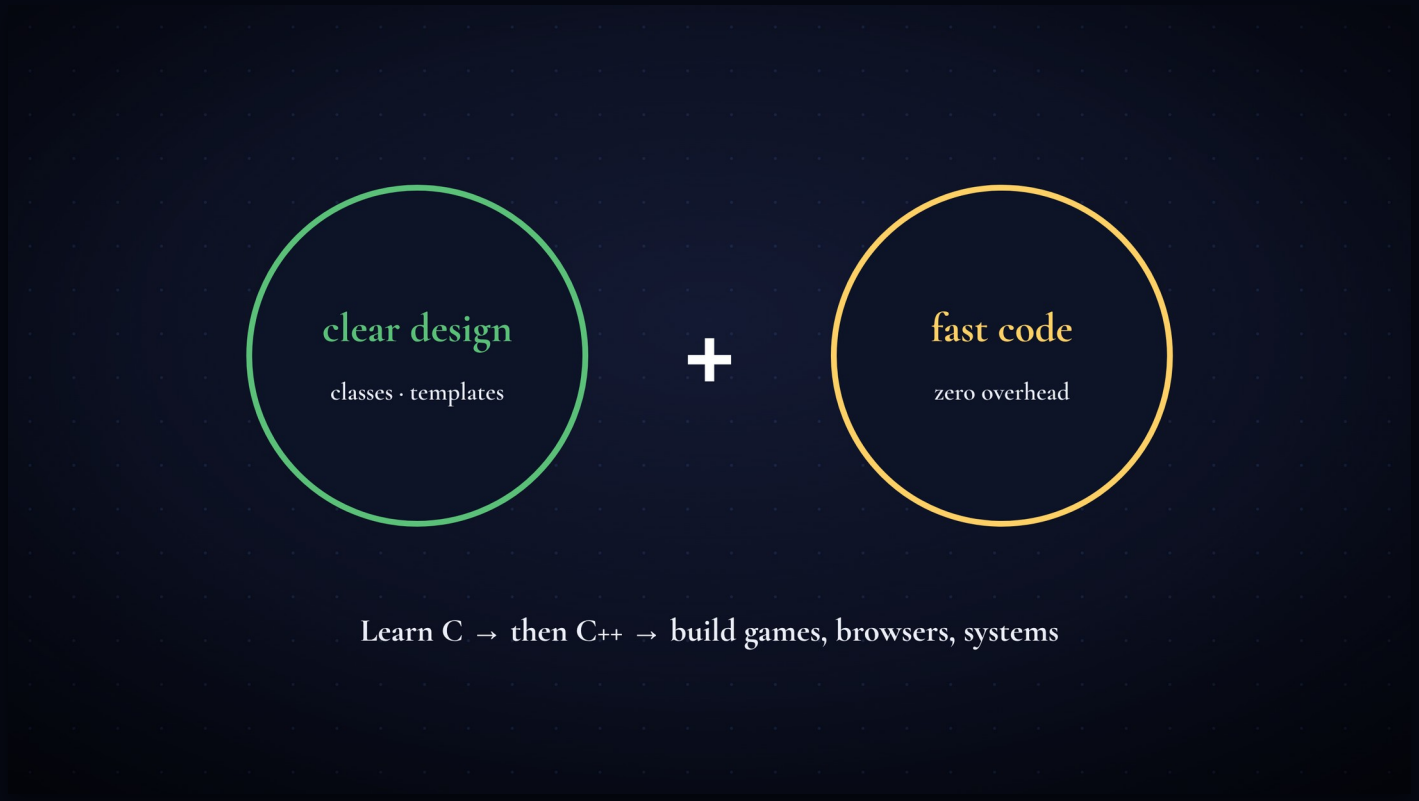
Photo: via Wikimedia Commons

2018	Charles Stark Draper Prize
2014–2022	Morgan Stanley
2022–	Columbia University, New York
today	A Tour of C++ · safer C++

- 2018: Charles Stark Draper Prize
- Morgan Stanley (2014–2022) · Columbia University (2022–)
- A Tour of C++ · work on safer C++

08

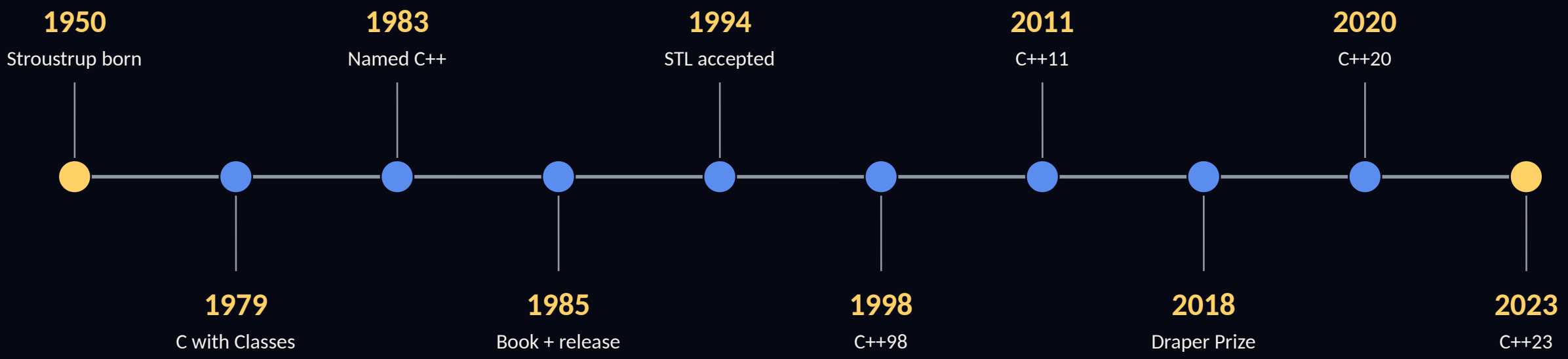
Clear Design, Fast Code



- Turn frustration into a tool
- Learn C → understand the machine
- Learn C++ → organize big, fast programs

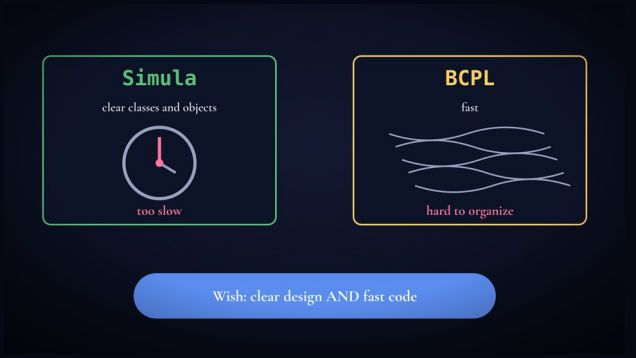
09

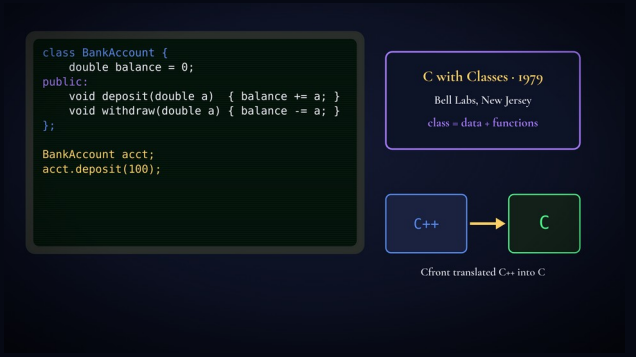
Timeline: 1950 to 2023



Sources and Further Reading

1. Bjarne Stroustrup, “A History of C++: 1979–1991” (HOPL-II, 1993)
2. Bjarne Stroustrup, The C++ Programming Language (1985; 4th ed. 2013) · stroustrup.com
3. Bell Labs, “The rise of C++” — bell-labs.com
4. National Academy of Engineering, 2018 Draper Prize — nae.edu
5. Photo: Bjarne Stroustrup — via Wikimedia Commons (original author and license listed there).





Thank you for watching

MyWebUniversity.com

Free technical education since 2000 — English and Dari

@MyWebUniversity · @MyWebUniversity-Dari