

The Horror of Learning: Reflections on Object Orientation and Language Wars

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**The only appropriate
response to self-
deprecation is agreement**

- David Ungar

A Banquet Speech

Should be:

Entertaining

Easy to follow

Relevant

Deep

Banquet Speeches vs. Technical Talks

Speech should be:

Entertaining

Easy to follow

Deep

Relevant

Talk is very often:

Dull

Hard to understand

Shallow

Irrelevant

Reflection

- Usually , talks are about something other than themselves (base level)
- Some talks are about themselves (meta-level)
- Reflection is very important in the OO world - and the world is OO!

Computers are Reflective

- The stored-program computer keeps its program in memory
- Therefore, a program can operate on itself
- The von Neumann machine is thus inherently reflective

Computers are Object-Oriented

- The stored-program computer keeps its program in memory together with its data
- The von Neumann machine is thus inherently object-oriented

What is Object Oriented Computing?

Computing where everything, *including the computation itself*, is represented as an object

Is Object-Oriented computing successful?

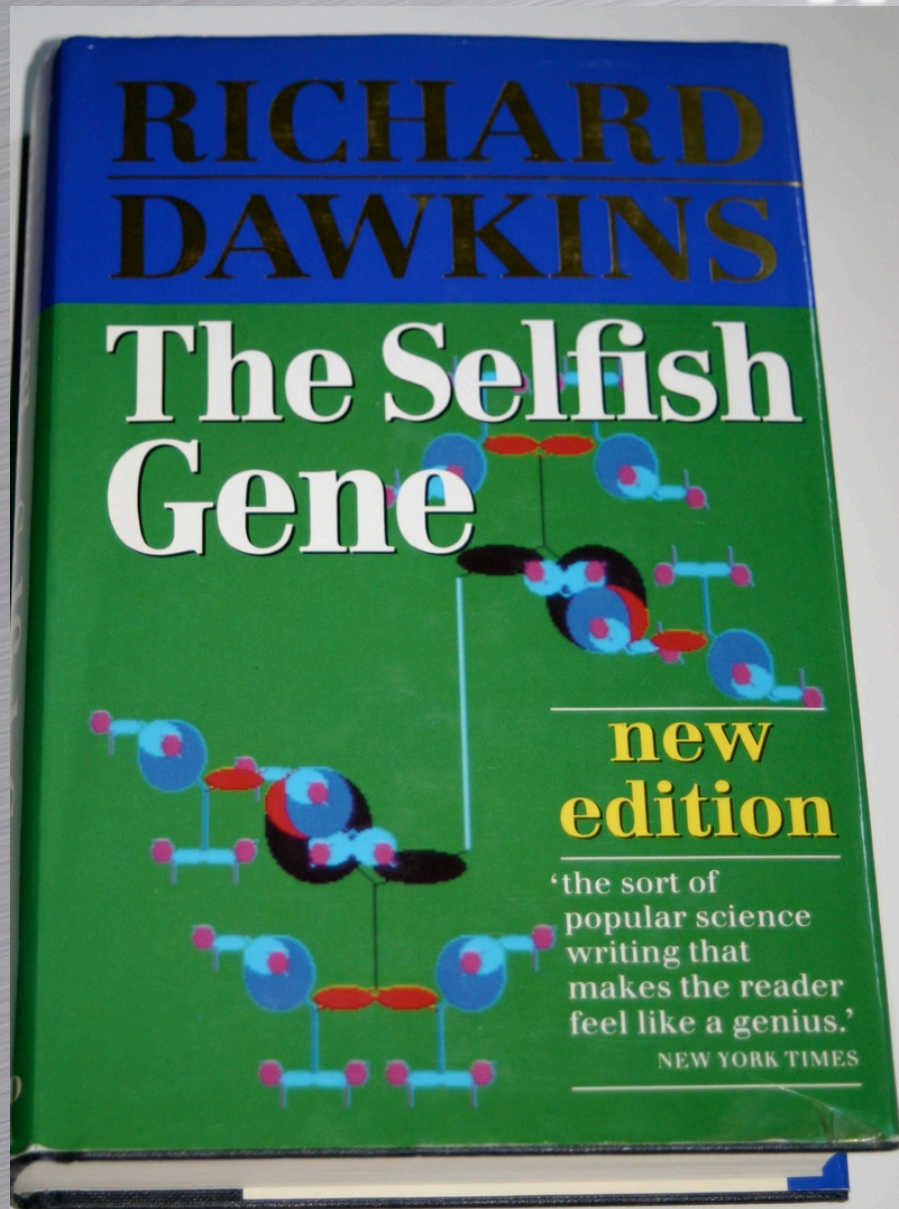
- If so, why?
- If not, why not?
- Same questions for Java

**It depends what “is”
means
- *Bill Gates***

What do you mean by “successful”?

- Fullfilling a function
(engineering)
- Self propagation
(organisms, markets)

Metarules are what matter



- How memes spread
- Reaching a tipping point
- Ultimately, it's game theory

**Why would you want
more than a machine
language?**

- John von Neumann

So is Java Successful?

- Yes
- Why?
- Netscape!

Surely something about Java helped it spread

- Similarity to other widely known memes
 - In our case C, C++
 - Similarity need not be deep

Syntax was Familiar

- Syntax is how most people perceive programming languages
- Most discussions on language devolve into discussions of meaningless syntactic details

Parkinson's Law of Triviality

... the time spent on any item of the agenda will be in inverse proportion to the sum involved.

Semantics were quite different

Better methods of fast and fearless prototyping and development are needed. The Java language environment is one of those better ways, because it's *interpreted* and *dynamic*.

- *The Java Language Environment :A White Paper*
James Gosling and Henry McGilton

Semantics were quite different

Programmers using “traditional” software development tools have become resigned to the artificial edit-compile-link-load-throw-the-application-off-the-cliff-let-it-crash-and-start-all-over-again style of current development practice.

*- The Java Language Environment :A White Paper
James Gosling and Henry McGilton*

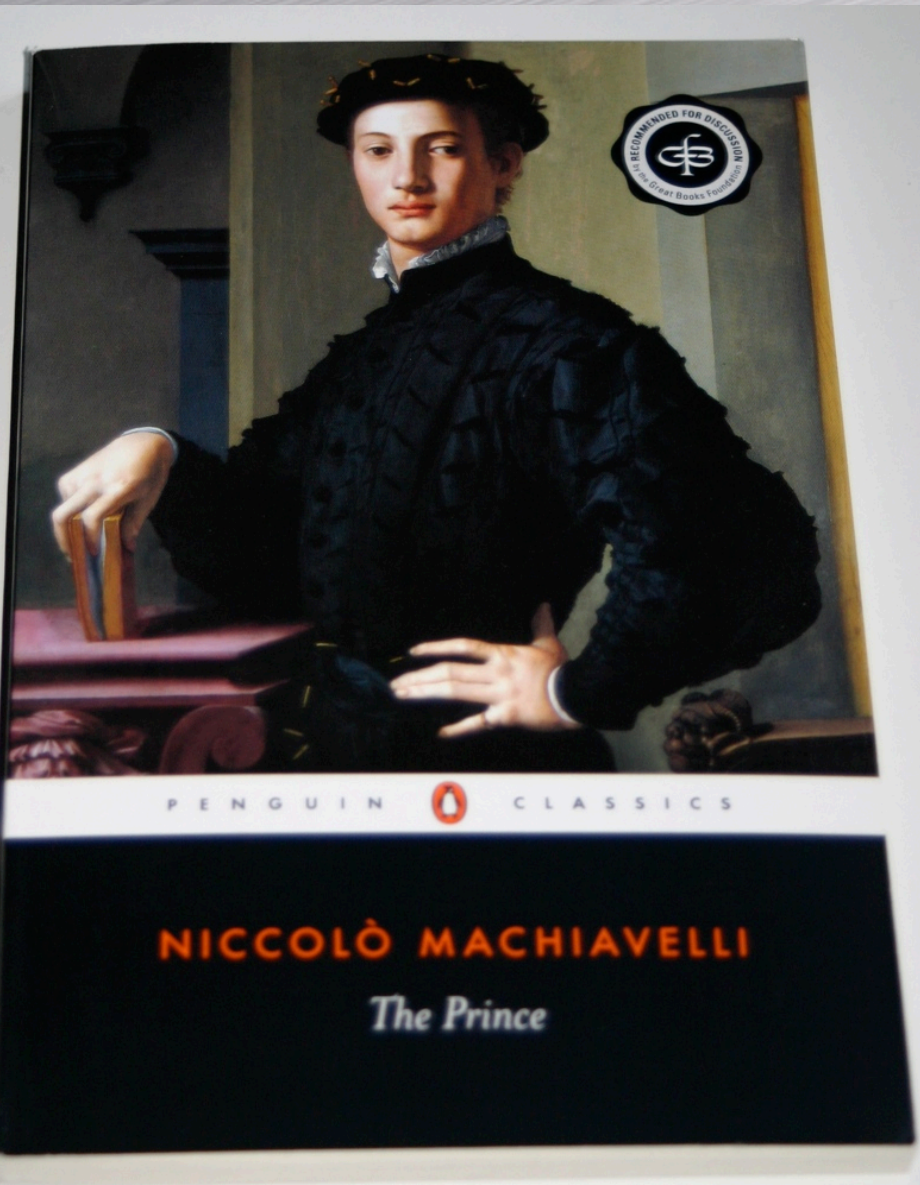
One of the goals of **JAVA** is to enable the construction of software that can run stand-alone in small machines. The size of the basic interpreter and class support is about 30 Kbytes, adding the basic standard libraries and thread support (essentially a self-contained microkernel) brings it up to about 120K.

*- The Java Language Environment :A White Paper
James Gosling and Henry McGilton*

The Horror of Learning

- Once we recognize a pattern, we have difficulty distinguishing it from similar but distinct patterns

Put another way



... there is nothing more difficult to execute, nor more dubious of success, nor more dangerous to administer than to introduce a new order of things

The Horror of Learning

It is practically impossible to teach good programming to students that have had a prior exposure to BASIC: as potential programmers they are mentally mutilated beyond hope of regeneration.

Edsger Dijkstra, EWD498

The Horror of Learning

**The use of COBOL cripples the mind;
its teaching should, therefore, be
regarded as a criminal offense.**

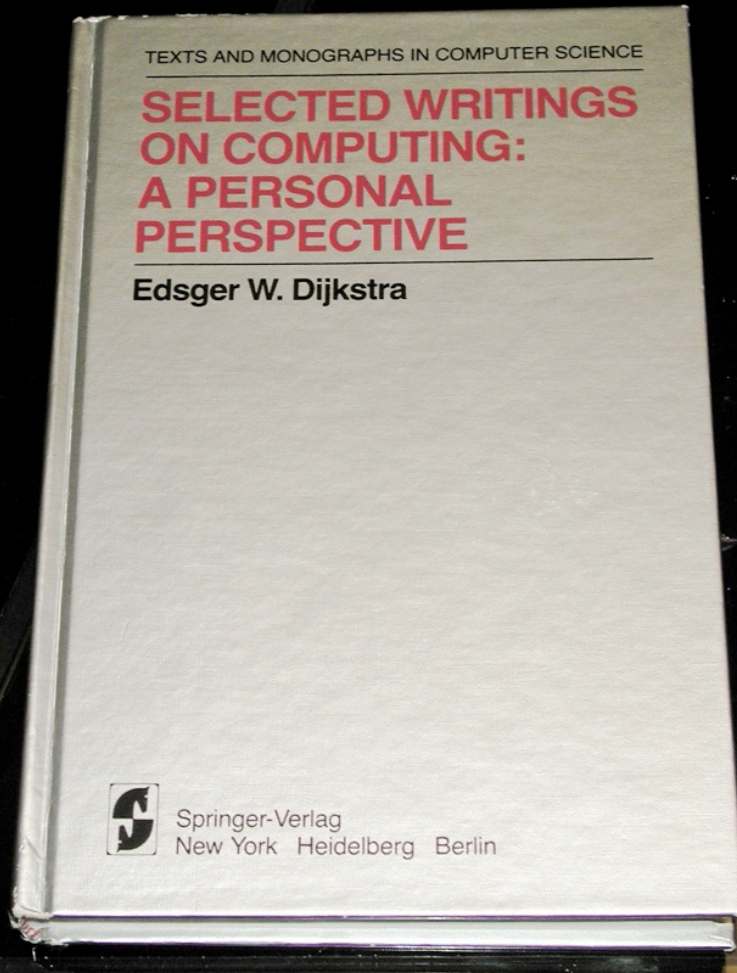
Edsger Dijkstra, EWD498

The Horror of Learning

**If the truths are sufficiently
impalatable, our audience is
psychically incapable of accepting
them and we will be written off as
totally unrealistic, hopelessly
idealistic, dangerously revolutionary,
foolishly gullible or what have you.**

Edsger Dijkstra, EWD498

A Good Place to Experience the Horror



*Selected Writings on
Computing: A Personal
Perspective*

Edsger W. Dijkstra

Study Meta-rules

- Study Programming in light of:
 - Cognitive science
 - Game theory
 - Evolution

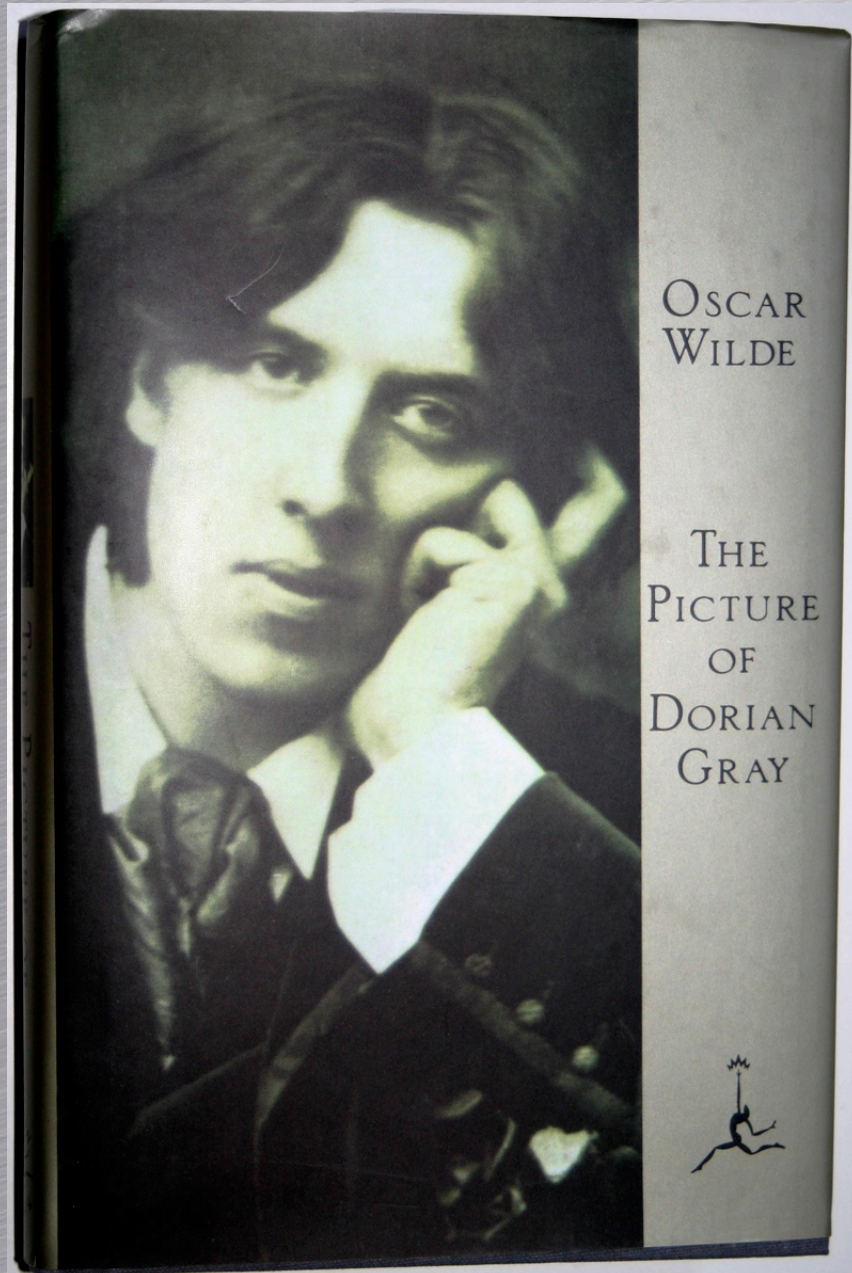
Popular \neq Good

- Technical Merit has little to do with Adoption
 - Will not ensure widespread adoption
 - Widely adopted technologies are not exemplars of technical merit

To Minimize Damage

- Teach many languages, many paradigms
- Teach principles, not details
- Research ideas, not manifestations

Conclusion



You want to look at
your reflection in a
mirror and be
comfortable with
what you see