Worse Is Better, for Better or for Worse

@KevlinHenney


TURING 图灵程序设计丛书
WILEY
Pattern-Oriented Software Architecture Volume 4
A Pattern Language for Distributed Computing
面向模式的软件架构
分布式计算的模式语言
卷4
[德] Frank Buschmann
[英] Kevlin Henney
[美] Douglas C.Schmidt
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肖鹏 陈立 译
人民邮电出版社
POSTS & TELECOM PRESS
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97
Collective Wisdom
from the Experts
程序员
应该知道的
97件事
O'REILLY
Kevlin Henney 编
李军 译 吕骏 审校
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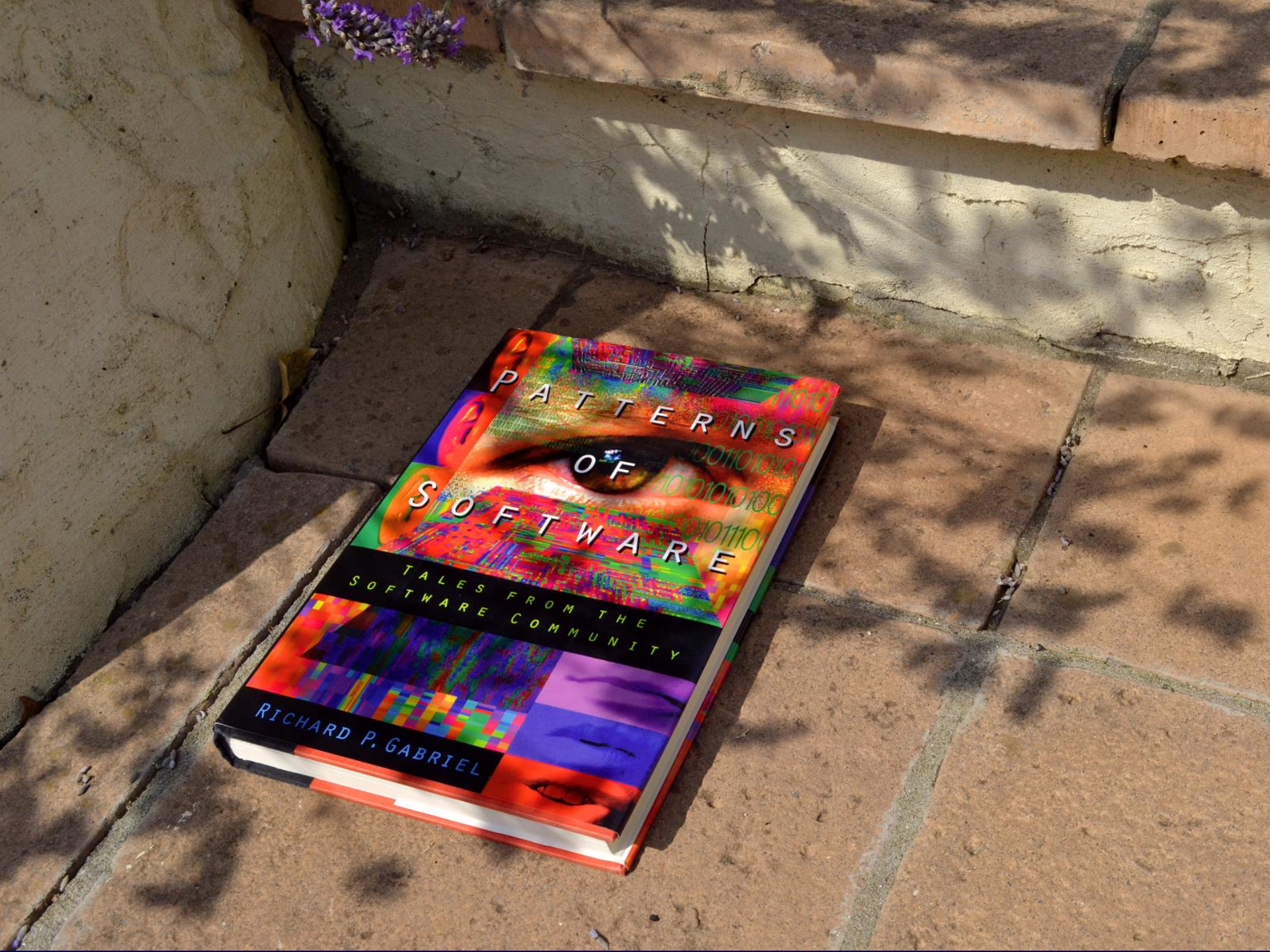
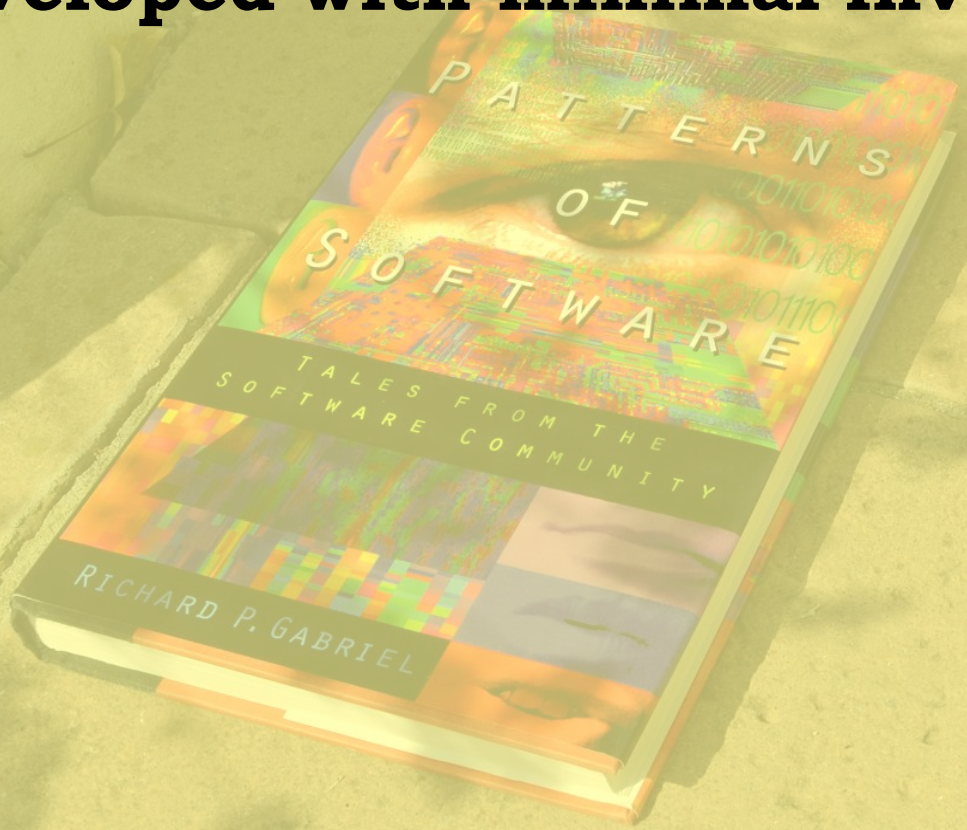
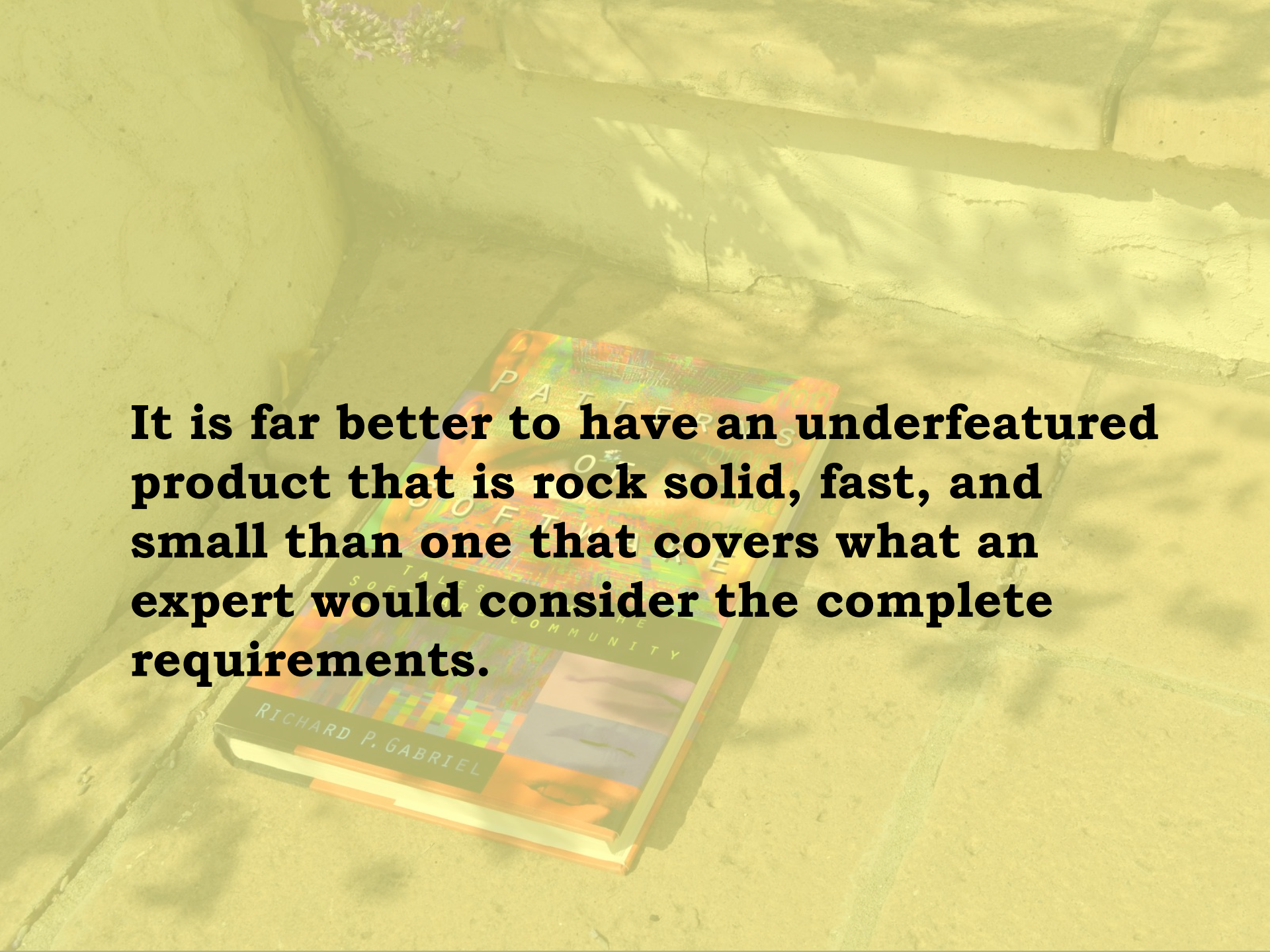

PATTERNS
OF
SOFTWARE
TALES FROM THE
SOFTWARE COMMUNITY
RICHARD P. GABRIEL

In 1990 I proposed a theory, called *Worse Is Better*, of why software would be more likely to succeed if it was developed with minimal invention.





It is far better to have an underfeatured product that is rock solid, fast, and small than one that covers what an expert would consider the complete requirements.

- ***Simplicity*: The design is simple in implementation. The interface should be simple, but anything adequate will do.**
- ***Completeness*: The design covers only necessary situations. Completeness can be sacrificed in favor of any other quality.**
- ***Correctness*: The design is correct in all observable aspects.**
- ***Consistency*: The design is consistent as far as it goes. Consistency is less of a problem because you always choose the smallest scope for the first implementation.**

Implementation characteristics are foremost:

- **The implementation should be fast.**
- **It should be small.**
- **It should interoperate with the programs and tools that the expected users are already using.**
- **It should be bug-free, and if that requires implementing fewer features, do it.**
- **It should use parsimonious abstractions as long as they don't get in the way.**

```
#!/usr/bin/perl
# ---------------------------------------------------------  PerlInterpreter
# PerlInterpreter must be the first line of the file.
#
# Copyright (c) 1995, Cunningham & Cunningham, Inc.
#
# This program has been generated by the HyperPerl
# generator.  The source hypertext can be found
# at http://c2.com/cgi/wikibase.  This program belongs
# to Cunningham & Cunningham, Inc., is to be used
# only by agreement with the owner, and then only
# with the understanding that the owner cannot be
# responsible for any behaviour of the program or
# any damages that it may cause.
# ---------------------------------------------------------  InitialComments
```

```
# InitialComments
print "Content-type: text/html\n\n";
$DBM = "/usr/ward/$ScriptName";
dbmopen(%db, $DBM , 0666) || &AbortScript("can't open $DBM");
$CookedInput{browse} && &HandleBrowse;
$CookedInput{edit}   && &HandleEdit;
$CookedInput{copy}   && &HandleEdit;
$CookedInput{links}  && &HandleLinks;
$CookedInput{search} && &HandleSearch;
dbmclose (%db);
if ($ENV{REQUEST_METHOD} eq POST) {
$CookedInput{post}   && &HandlePost;
}
# &DumpBinding(*CookedInput);
# &DumpBinding(*old);
# &DumpBinding(*ENV);
# ---------------------------------------------------------  WikiInHyperPerl
```

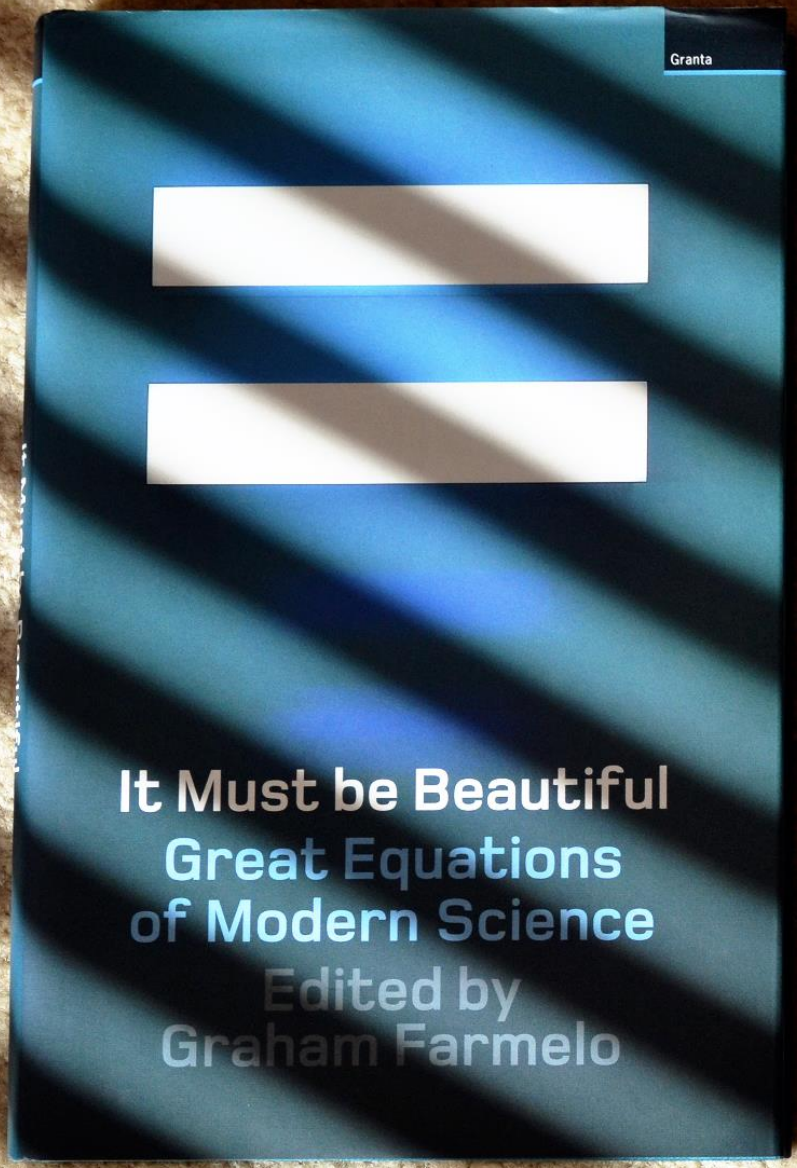
I always have it in the back of my head that I want to make a slightly better C.

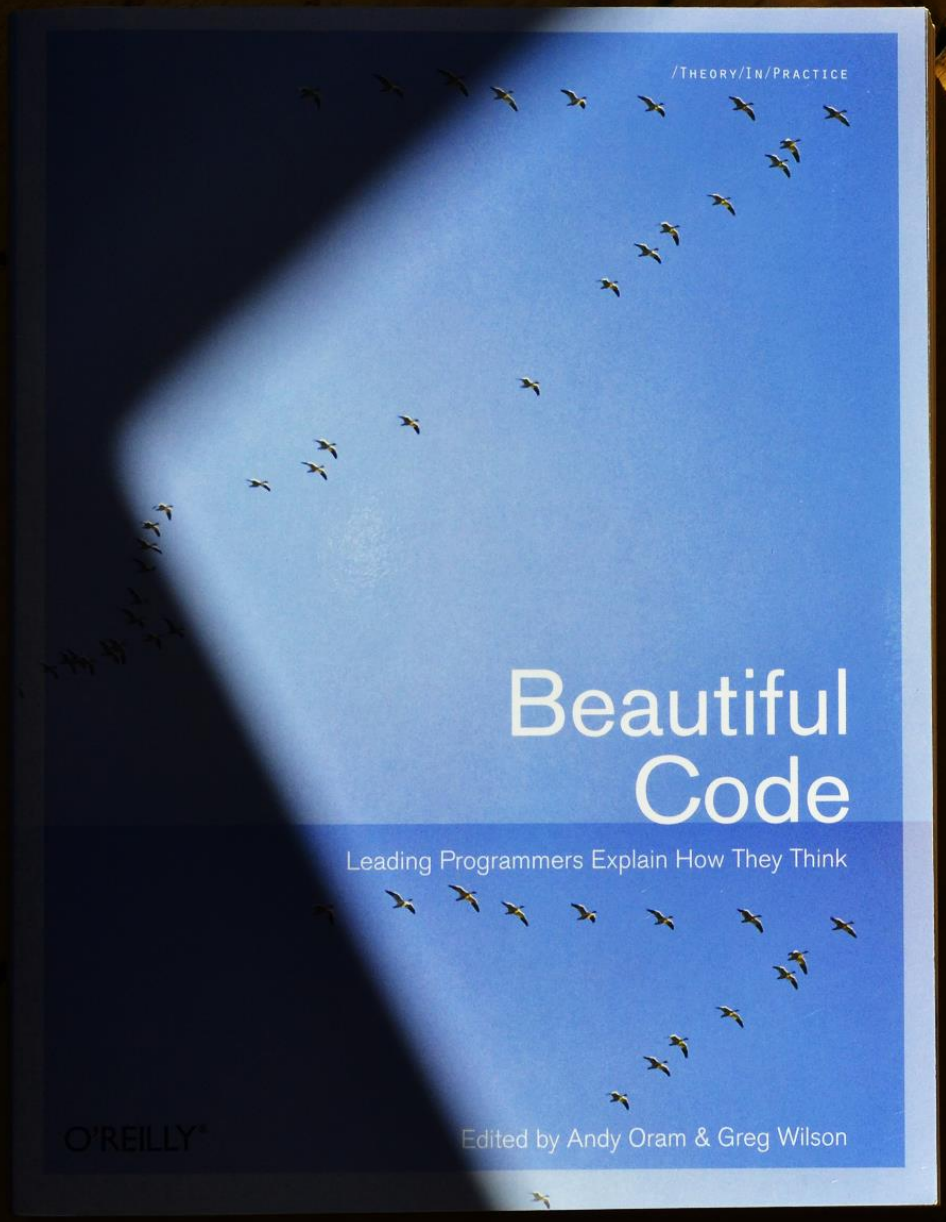
But getting everything to fit, top to bottom, syntax, semantics, tooling, etc., might not be possible or even worth the effort.

As it stands today, C is unreasonably effective, and I don't see that changing any time soon.

Damien Katz

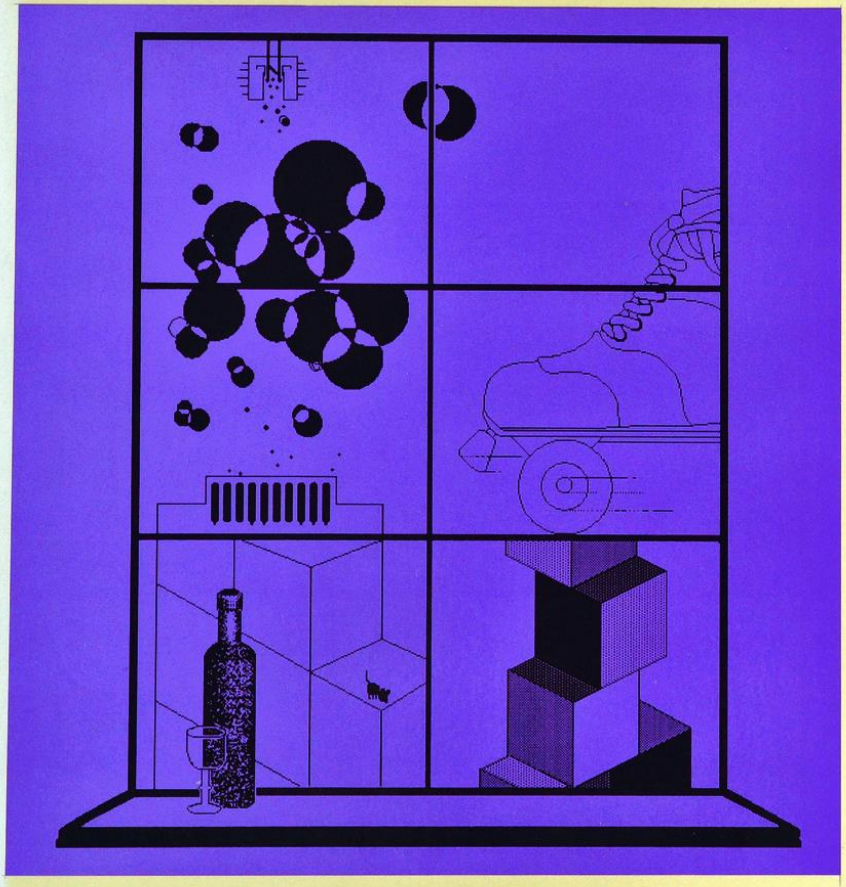
http://damienkatz.net/2013/01/the_unreasonable_effectiveness_of_c.html


Granta
It Must be Beautiful
Great Equations
of Modern Science
Edited by
Graham Farmelo


/Theory/In/Practice
Beautiful Code
Leading Programmers Explain How They Think
O'REILLY
Edited by Andy Oram & Greg Wilson

SMALLTALK-80

THE LANGUAGE



Adele Goldberg and David Robson


MONOGRAPHS IN COMPUTER SCIENCE
A THEORY OF OBJECTS
Springer
MARTÍN ABADI
LUCA CARDELLI

In a purist view of object-oriented methodology, dynamic dispatch is the only mechanism for taking advantage of attributes that have been forgotten by subsumption. This position is often taken on abstraction grounds: no knowledge should be obtainable about objects except by invoking their methods. In the purist approach, subsumption provides a simple and effective mechanism for hiding private attributes.

OOP to me means only messaging, local retention and protection and hiding of state-process, and extreme late-binding of all things. It can be done in Smalltalk and in LISP.

There are possibly other systems in which this is possible, but I'm not aware of them.

Alan Kay

One of the most pure object-oriented programming models yet defined is the Component Object Model (COM).

It enforces all of these principles rigorously.

William Cook
"On Understanding Data Abstraction, Revisited"

Lambda-calculus

was the first

object-oriented

language (1964)

1962

William Cook, "On Understanding Data Abstraction, Revisited"

LISP 1.5 Programmer's Manual

The Computation Center
and Research Laboratory of Electronics

Massachusetts Institute of Technology

$$
\begin{aligned}
&\mathbf{newStack} = \\
&\quad \lambda \bullet (\textit{let}\ \mathbf{items} = \textit{ref}(\langle\rangle) \bullet \\
&\qquad \{ \\
&\qquad\quad \mathbf{isEmpty} = \lambda \bullet \#\mathbf{items} = 0, \\
&\qquad\quad \mathbf{depth} = \lambda \bullet \#\mathbf{items}, \\
&\qquad\quad \mathbf{push} = \lambda\ x \bullet \mathbf{items} := \langle x\rangle\hat{}\langle \mathbf{items}_y \mid y \in 0 \ldots \#\mathbf{items}\rangle, \\
&\qquad\quad \mathbf{top} = \lambda \bullet \mathbf{items}_0 \\
&\qquad \})
\end{aligned}
$$

```
var newStack = function() {
    var items = []
    return {
        isEmpty: function() {
            return items.length === 0
        },
        depth: function() {
            return items.length
        },
        push: function(newTop) {
            items = items.unshift(newTop)
        },
        top: function() {
            return items[0]
        }
    }
}
```

Unearthing the Excellence in JavaScript

JavaScript: The Good Parts

O'REILLY® | YAHOO! PRESS

Douglas Crockford

Any application that *can* be written in JavaScript, *will* eventually be written in JavaScript.

Atwood's Law

Javascript PC Emulato

bellard.org/jslinux/

```
Starting Linux
Linux version 2.6.20 (bellard@voyager) (gcc version 3.4.6 20060404 (Red Hat 3.4.
6-9)) #2 Mon Aug 8 23:51:02 CEST 2011
BIOS-provided physical RAM map:
sanitize start
sanitize bail 0
 BIOS-e801: 0000000000000000 - 000000000009f000 (usable)
 BIOS-e801: 0000000000100000 - 0000000001000000 (usable)
16MB LOWMEM available.
Zone PFN ranges:
  DMA             0 ->     4096
  Normal       4096 ->     4096
early_node_map[1] active PFN ranges
    0:        0 ->     4096
DMI not present or invalid.
Allocating PCI resources starting at 10000000 (gap: 01000000:ff000000)
Detected 3.333 MHz processor.
Built 1 zonelists.  Total pages: 4064
Kernel command line: console=ttyS0 root=/dev/ram0 rw init=/sbin/init notsc=1
Initializing CPU#0
Disabling TSC...
PID hash table entries: 64 (order: 6, 256 bytes)
Console: colour dummy device 80x25
Dentry cache hash table entries: 2048 (order: 1, 8192 bytes)
Inode-cache hash table entries: 1024 (order: 0, 4096 bytes)
Memory: 11956k/16384k available (1265k kernel code, 4040k reserved, 324k data, 1
24k init, 0k highmem)
virtual kernel memory layout:
    fixmap  : 0xffffc000 - 0xfffff000   (  12 kB)
    vmalloc : 0xc1800000 - 0xffffa000   ( 999 MB)
```

Clear clipboard


"After 20 years, this is still the best exposition of the workings of a 'real' operating system."
Ken Thompson
Lions' Commentary on UNIX® 6th Edition
with Source Code
John Lions
Foreword by Dennis Ritchie
"BOOK OF THE YEAR"
Unix Review
1980

There have always been fairly severe size constraints on the Unix operating system and its software. Given the partially antagonistic desires for reasonable efficiency and expressive power, the size constraint has encouraged not only economy but a certain elegance of design.

Dennis Ritchie and Ken Thompson
"The UNIX Time-Sharing System", *CACM*

This is the Unix philosophy: Write programs that do one thing and do it well. Write programs to work together. Write programs to handle text streams, because that is a universal interface.

Doug McIlroy

The hard part isn't writing little programs that do one thing well. The hard part is combining little programs to solve bigger problems. In McIlroy's summary, the hard part is his second sentence: Write programs to work together.

John D Cook

http://www.johndcook.com/blog/2010/06/30/where-the-unix-philosophy-breaks-down/

Software applications do things they're not good at for the same reason companies do things they're not good at: to avoid transaction costs.

John D Cook

http://www.johndcook.com/blog/2010/06/30/where-the-unix-philosophy-breaks-down/


THOS. SMITH & SONS
OF SALTLEY L9
1901

Architecture is the decisions that you wish you could get right early in a project, but that you are not necessarily more likely to get them right than any other.

Ralph Johnson


101 Things I Learned
in Architecture School
Matthew Frederick

Properly gaining control of the design process tends to feel like one is *losing* control of the design process.

The classic essay on "worse is better" is either misunderstood or wrong.

Jim Waldo

Decide for yourselves.

Richard P Gabriel

Thank you and goodbye.

Hope you enjoyed the conference!