# Patterns for the People

**Kevlin Henney**

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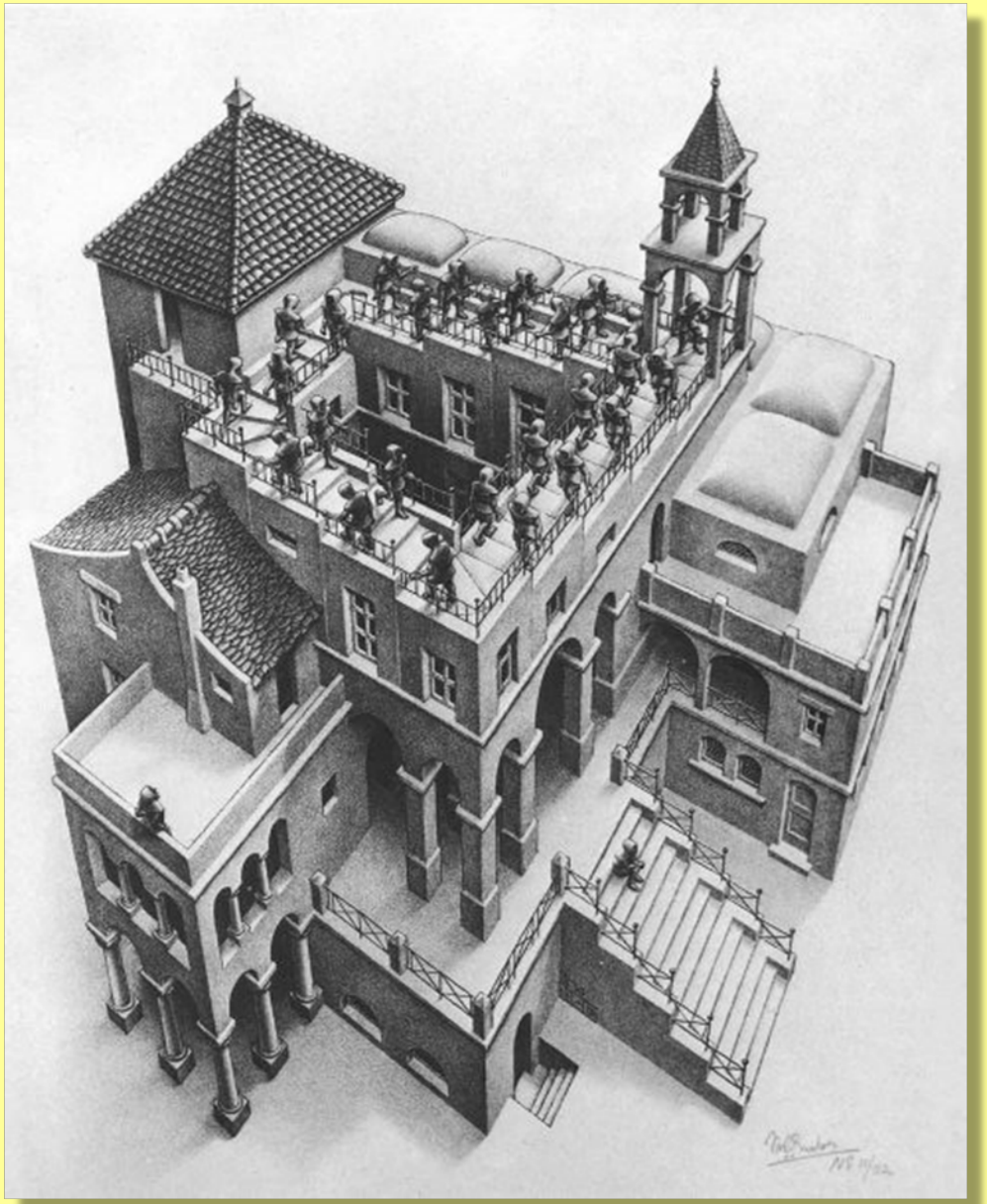
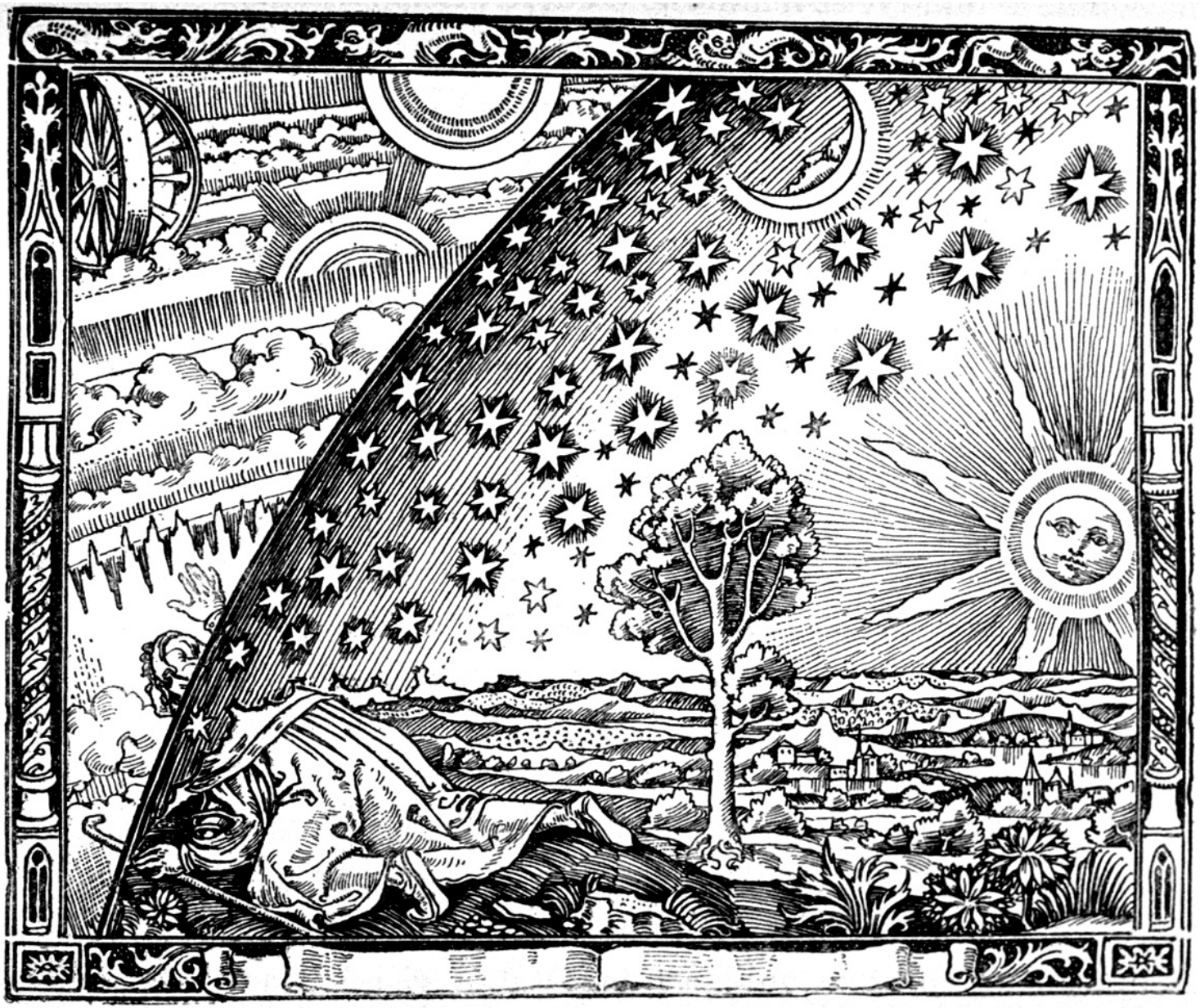
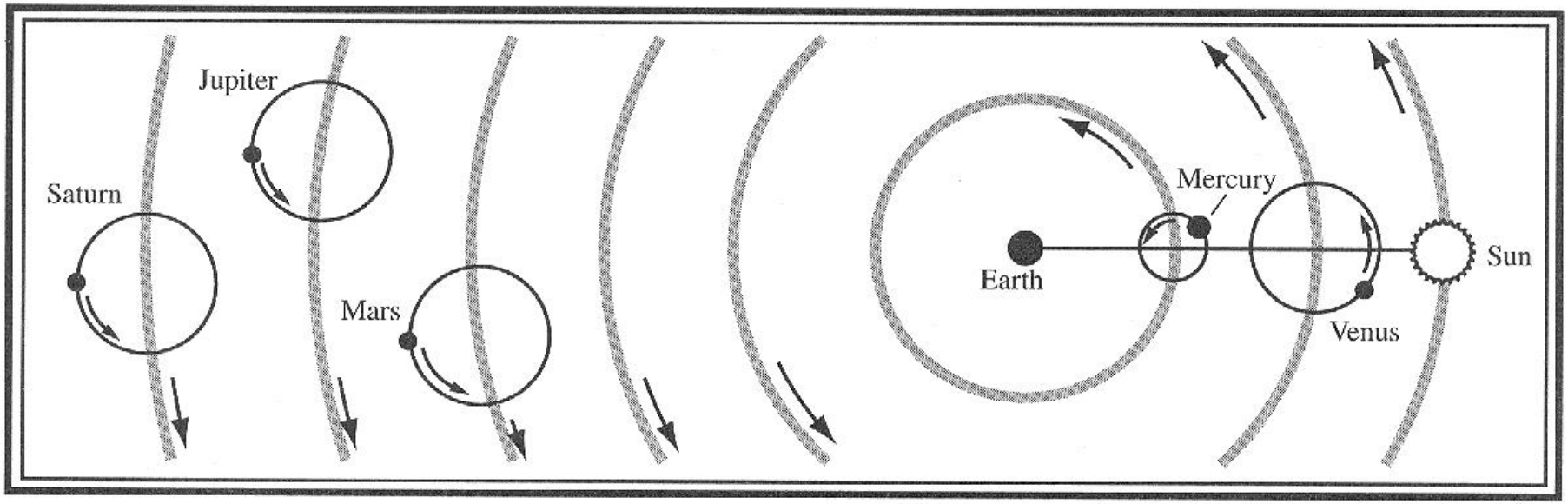
*Habitability is the characteristic of source code that enables programmers, coders, bug-fixers, and people coming to the code later in its life to understand its construction and intentions and to change it comfortably and confidently. [...] Habitability makes a place livable, like home. And this is what we want in software — that developers feel at home, can place their hands on any item without having to think deeply about where it is.*

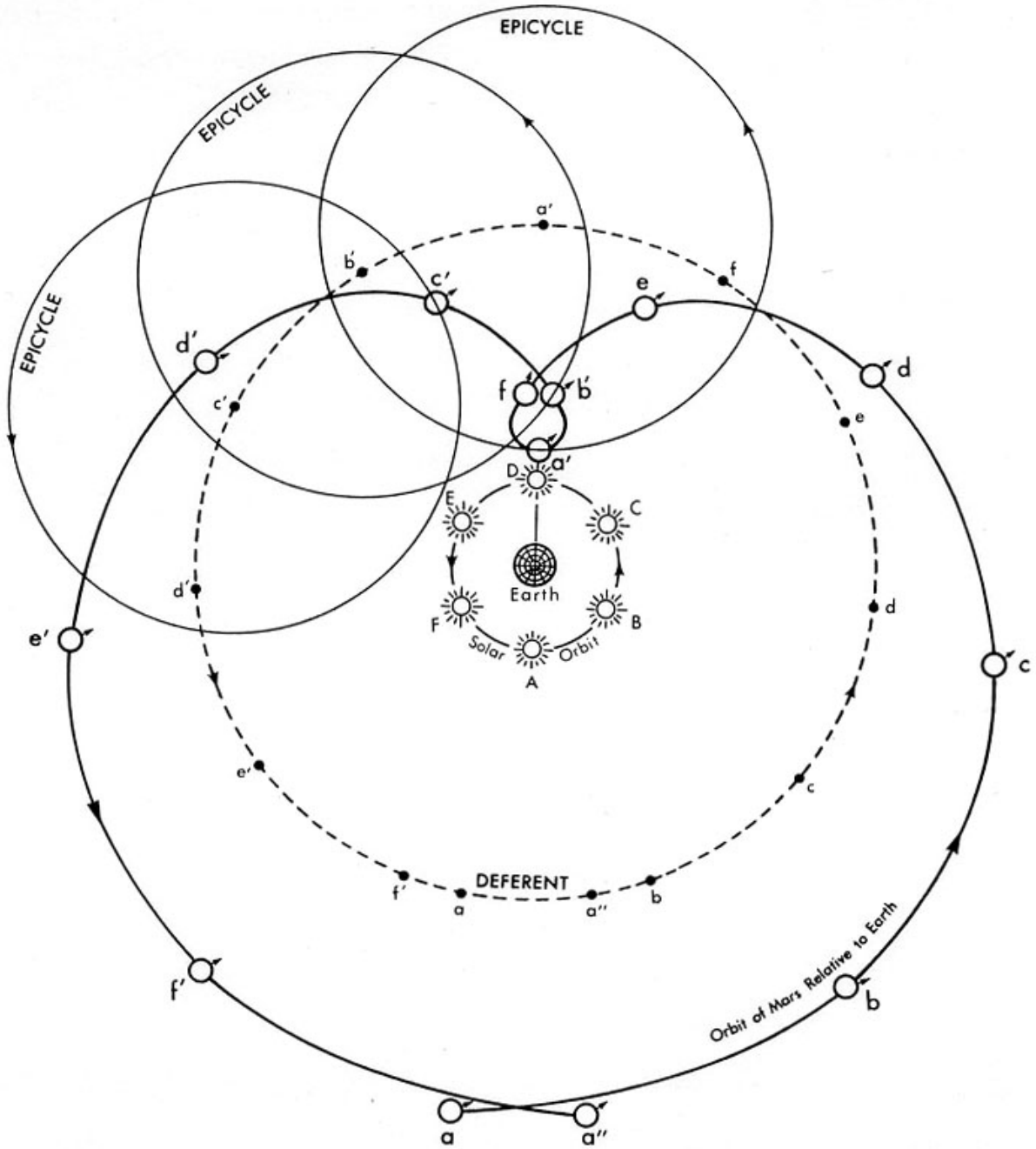
**Richard P Gabriel,** ***Patterns of Software***

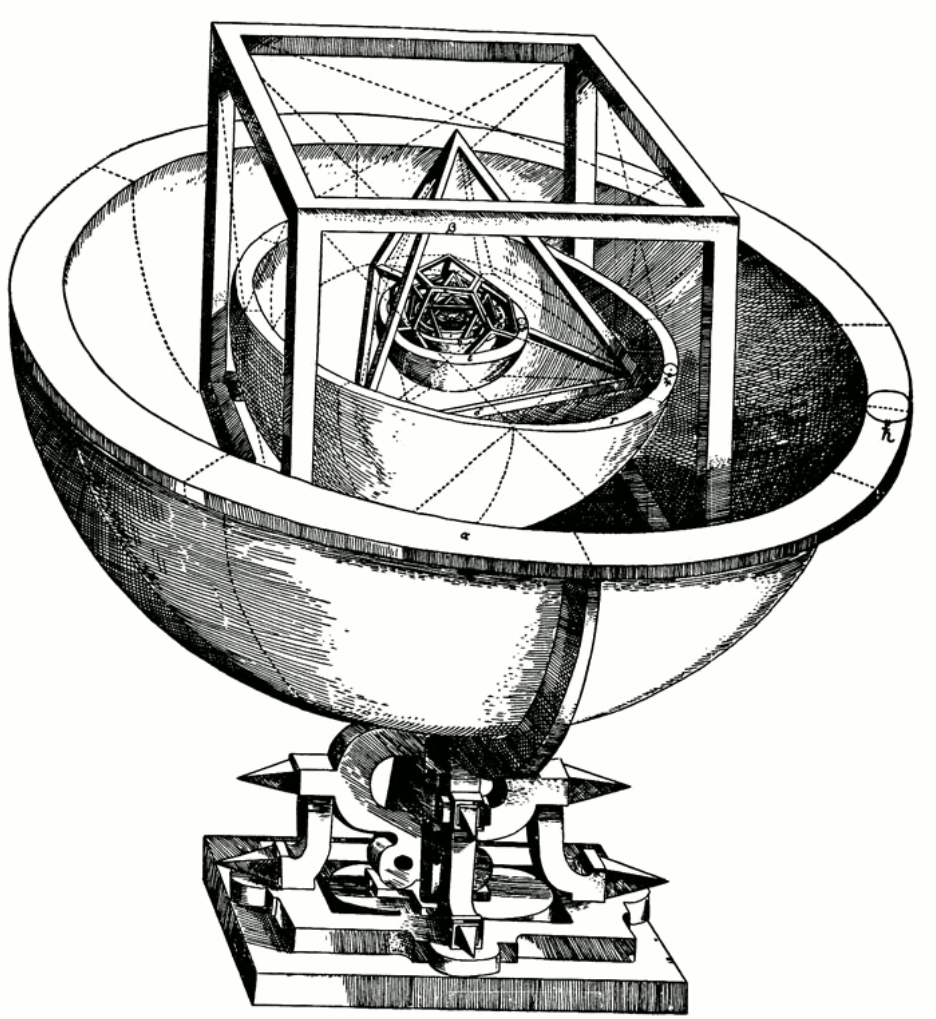




Un missionnaire du moyen âge raconte qu'il avait trouvé le point
où le ciel et la Terre se touchent...


Saturn
Jupiter
Mars
Earth
Mercury
Venus
Sun


EPICYCLE
EPICYCLE
EPICYCLE
a'
b'
c'
d'
e'
f'
a
a''
b
c
d
e
f
D
E
C
F
B
A
Earth
Solar Orbit
DEFERENT
Orbit of Mars Relative to Earth



That which is overdesigned, too highly specific, anticipates outcome; the anticipation of outcome guarantees, if not failure, the absence of grace.

William Gibson

**Never interrupt your enemy when he is making a mistake.**

***Napoleon Bonaparte***

**_Q:_ Why it is important to acknowledge and learn from your mistakes?**

**_A:_ Acknowledging and learning from our mistakes will help to prevent making the same mistakes in the future and to improve productivity in the workplace.**

***http://wiki.answers.com/Q/Why_it_is_important_to_acknowledge_and_learn_from_your_mistakes***

# TO ENGINEER IS HUMAN

## The Role of Failure in Successful Design

With a new afterword by the author

"Serious, amusing, probing, sometimes frightening and always literate."
—*Los Angeles Times*

HENRY PETROSKI

Author of *THE EVOLUTION OF USEFUL THINGS*

**All too often we don't stop, examine our failures, take time to reflect and actually do the learning from them. We've failed, failure is painful, we want to put that behind us, forget about it. Maybe we could make time but do we really want to? Who wants to dwell on what has gone wrong? Naturally, after a failure we are defensive, and when we are defensive our learning process aren't at their most effective.**

***Allan Kelly***

**http://allankelly.blogspot.com/2008/05/do-we-really-learn-from-failure.html**

**It has become commonplace to suggest that failure is good for entrepreneurs. In this view, failure that comes early in a founder's career can teach them important lessons about doing business and harden them up for the next start-up attempt. [...]**

**In the UK, the evidence is that novices are neither more nor less likely to have a business that either grows or survives than experienced founders. In Germany, where much more extensive statistical work has been undertaken, it is clear that those whose business had failed had worse-performing businesses if they restarted than did novices. [...]**

**In short, the assumption that entrepreneurs use the lessons of their own experience to improve their chances of creating a series of profitable businesses is not borne out by the evidence. Success in business remains, as in life, something of a lottery.**

**David Storey, "Lessons that are wasted on entrepreneurs"**

**The assertion that we can learn something from every failure is often heard. This study by Earl Miller and his colleagues Mark Histed and Anitha Pasupathy of the Massachusetts Institute of Technology's Picower Institute for Learning and Memory tests that notion by looking at the learning process at the level of neurons. The study shows how brains learn more effectively from success than from failure. [...] Brain cells keep track of whether recent behaviours were successful or not. When a certain behaviour was successful, cells became more finely tuned to what the animal was learning. After a failure, there was little or no change in the brain – nor was there any improvement in behaviour.**

**http://www.asfct.org/documents/journal/2009-11/Vol1-2-9.pdf**

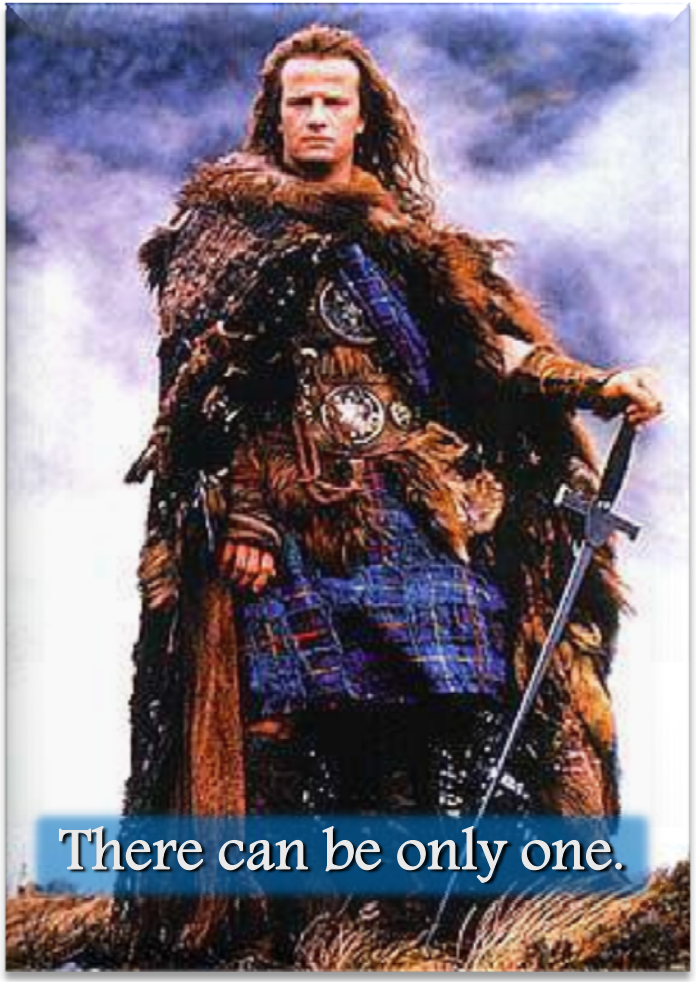
**Anti-patterns don't provide a resolution of forces as patterns do, and they are dangerous as teaching tools: good pedagogy builds on positive examples that students can remember, rather than negative examples. Anti-patterns might be good diagnostic tools to understand system problems.**

***James O Coplien,* Software Patterns**

**Wise men profit more from fools than fools from wise men; for the wise men shun the mistakes of fools, but fools do not imitate the successes of the wise.**

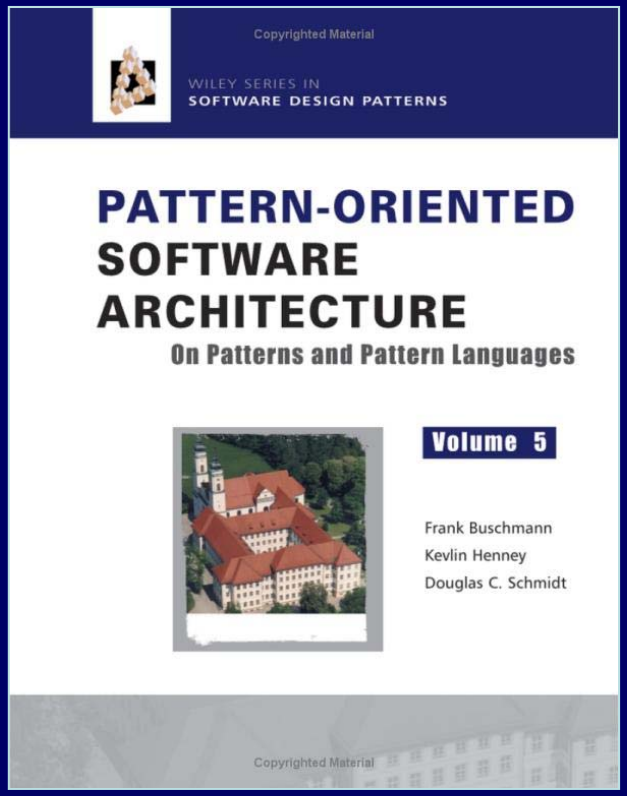
***Cato the Elder***


PATTERN
SHOP
Caution
Uneven Floor

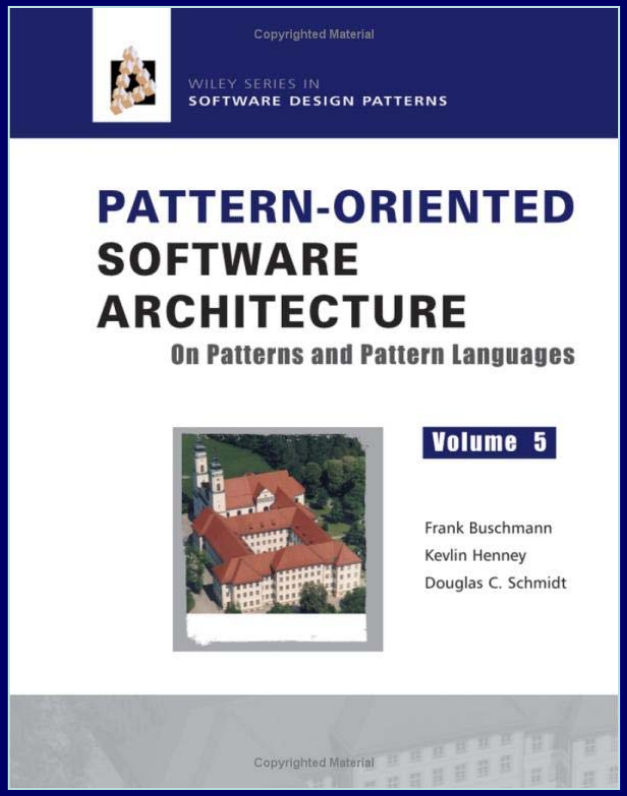

There can be only one.

Style is the art of getting yourself out of the way, not putting yourself in it.

David Hare




The form used for a pattern description matters a great deal to both pattern authors and readers. It defines a vehicle for presentation, along with the perspective and bias that can bring. Thus, although in one sense the choice of form can be considered arbitrary, in another sense it is anything but: the essence of a good pattern can be considered independent of any description of it, but the description frames how the pattern will be perceived.

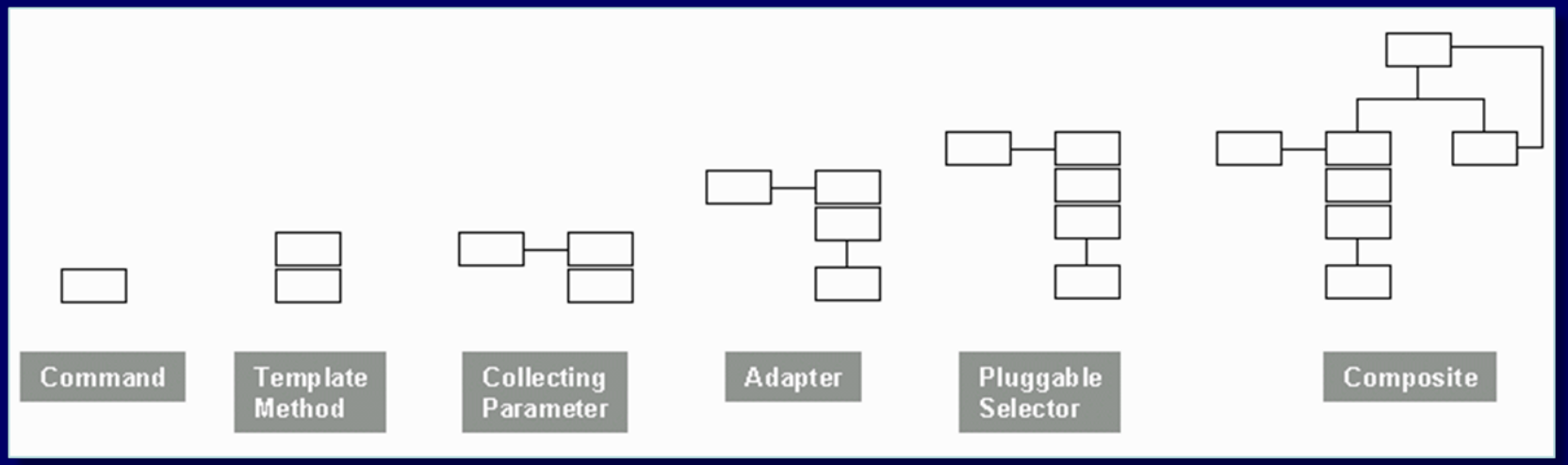


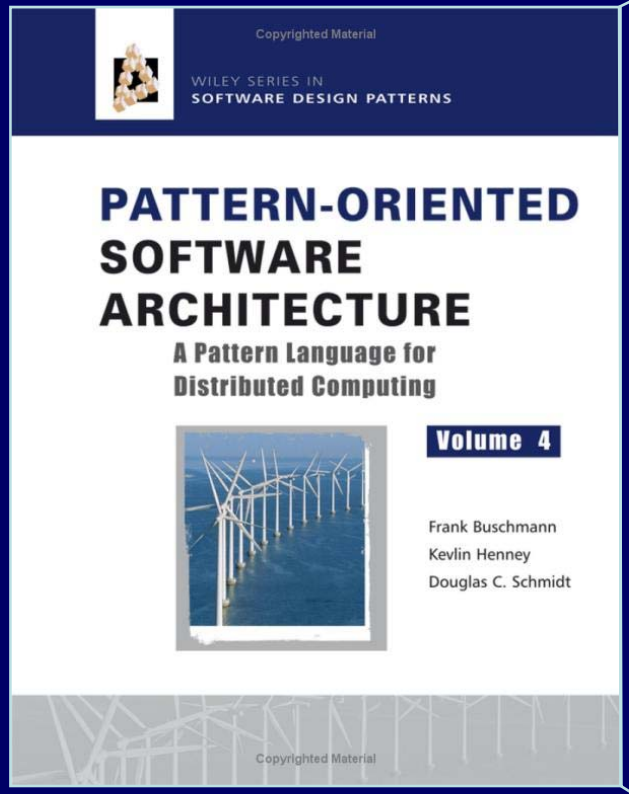

A pattern's audience is ultimately always human. Although a developer may support application of a software pattern solution through libraries and generators, it is the developer and not the technology that is aware of the pattern. A pattern is more than just a solution structure, so its audience must also have a sense of the context, the forces, and the consequences that are associated with a solution.


COMMAND PATTERN
NEED TO KNOW WHEN THE COMMAND
BEEN EXECUTED
EXAMPLE
SYSTEM
ACTOR


Peppes Pizza
970
2222 5555
www.peppes.no

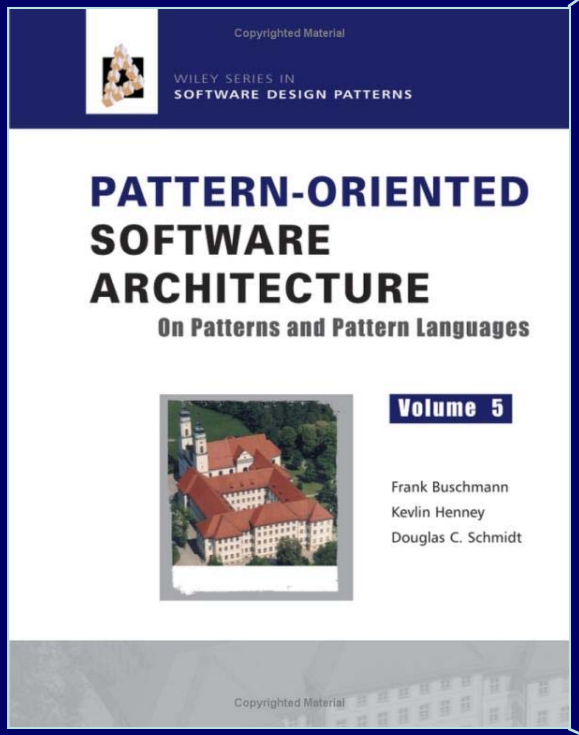

55
0
5
10
15


Command
Template Method
Collecting Parameter
Adapter
Pluggable Selector
Composite



History rarely happens in the right order or at the right time, but the job of a historian is to make it appear as if it did.

***James Burke***






portion from the grammar of our example pattern language for request handling, derived from the pattern sequences presented above:

∅ →° (COMMAND → EXPLICIT INTERFACE →°
(MEMENTO →° COMPOSITE →° COMMAND PROCESSOR →
COLLECTIONS FOR STATES → STRATEGY → NULL OBJECT)
| (COMPOSITE →° MEMENTO))

A BNF-derived notation [EBNF96], as used for specifying the syntax of programm
grammar of a
alternative:

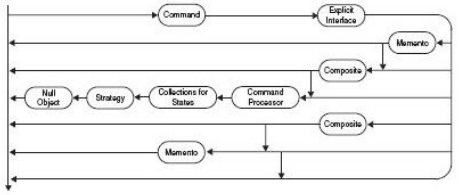
COMMAND
lowed by
followed
POSITE, w
which if
which m
NULL OBJ
followed
MENTO.

Graphical no
pattern langu
which visuall
design [CzEi0
language for
root *concept* i
combinations
as whether t
tional. In bor
confused witl
concepts via

Another grap
'railroad' nota
since the 197
in particular



The portion of our pattern language for request handling outlined above could be represented as follows using the 'railroad notation':




The preferences of pattern language authors or the demands of their target audience determine the specific expression of a grammar that works best—whether a list of pattern sequences, formal or semi-formal prose, or a graphical form of describing grammar rules, and whether interwoven with the pattern descriptions or separate. For example, the pattern language for distributed computing from POSA4 expresses grammar rules in prose, interwoven with the pattern descriptions [POSA4]. This option has been chosen by most pattern languages in the software area, from design-centric pattern languages [VSW02] [Fow02] [HoWo03] [VKZ04] to pattern languages for development process and organization, and project and people management [Ker95] [Cun96] [CoHa04].

Regardless of which grammar form is chosen, however, it is important that documented pattern languages actually offer guidance on the issue of meaningful paths through a language. Otherwise, it is hard to avoid the selection of ill-formed pattern sequences that create fundamentally broken software. The set of sensible sequences through a language is part of the language and not something accidental or separate. Thus making the grammars of pattern languages more explicit is one method for supporting their appropriate use. However, we must also recognize some practical limitations in this endeavor: the grammar for

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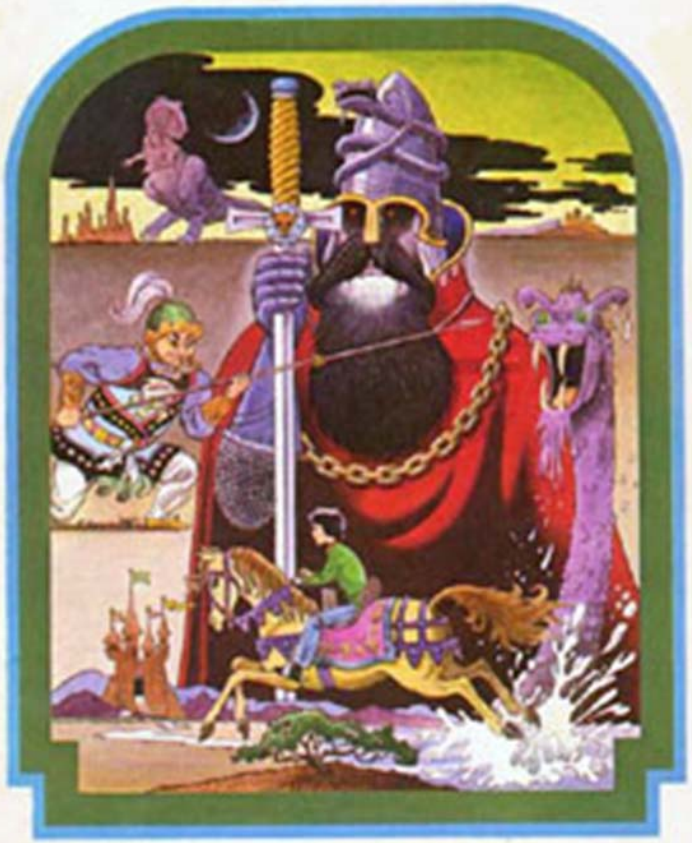
YOU'RE THE STAR OF THE STORY!
CHOOSE FROM 40 POSSIBLE ENDINGS

# THE CAVE OF TIME

BY EDWARD PACKARD



ILLUSTRATED BY PAUL GRANGER

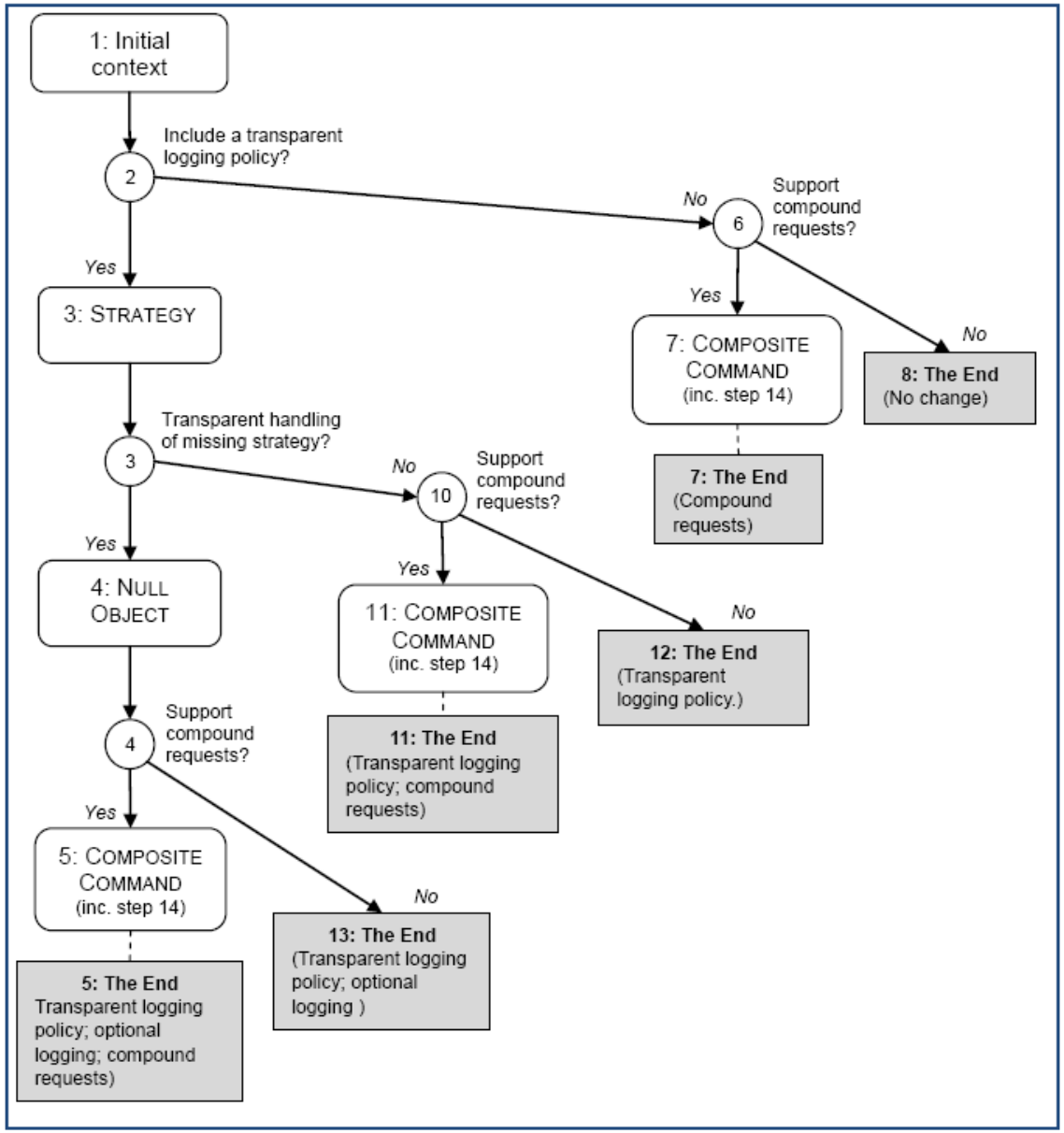
BANTAM BOOKS

## 2

You now realise that the framework needs a logging facility for requests, and wonder how logging functionality can be parameterized so that users of the framework can choose how they wish to handle logging, rather than the logging facility being hard-wired.

*If you wish to use inheritance to support variations in housekeeping functionality, turn to 7.*

*Otherwise if you prefer the use of delegation, turn to 3.*


1: Initial context
Include a transparent logging policy?
2
No
6
Support compound requests?
Yes
3: STRATEGY
Yes
7: COMPOSITE COMMAND (inc. step 14)
No
8: The End (No change)
Transparent handling of missing strategy?
3
No
10
Support compound requests?
7: The End (Compound requests)
Yes
4: NULL OBJECT
Yes
11: COMPOSITE COMMAND (inc. step 14)
No
12: The End (Transparent logging policy.)
Support compound requests?
4
11: The End (Transparent logging policy; compound requests)
Yes
5: COMPOSITE COMMAND (inc. step 14)
No
13: The End (Transparent logging policy; optional logging )
5: The End Transparent logging policy; optional logging; compound requests)

# Patterns Manifesto

We are uncovering better ways of developing software by seeing how others have already done it.