

AsianPloP® Pattern Bootcamp 2011

Tokyo, Japan



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AsianPloP

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Objectives

- At the end of this “bootcamp” you will:
 - Have knowledge about pattern writing
 - Have a better understanding of the Quality Without A Name
 - Have helped write a pattern
 - Be the newest members of the pattern community!
- Adapted material from Robert Hanmer and Linda Rising.
Thanks Bob and Linda!!



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Agenda

- Introductions
- Parts of a pattern
- Patterns criticism and categorization
- Discussion of *What's a pattern?*
- Choosing a topic
- Group Pattern Writing
- Group Pattern Writing Continued
- Sample Writers' Workshop
- Pattern Languages
- Pattern Ethics

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Part 1: A Pattern's Parts

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Alexander's Pattern Definition

Each pattern describes a problem that occurs over and over again in our environment and then describes the core of the solution to that problem in such a way that you can use this solution a million times over without ever doing it the same way twice.

Alexander - building architect and author

- *The Timeless Way of Building*
- *A Pattern Language*

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Parts of a Pattern (Alexander)

Problem - when to use the pattern

Solution - what to do to solve problem

Context - when to consider the pattern

Forces - pattern is a balance of forces

Consequences, positive and negative

Examples:

- Teach both problem and solution
- Are the best teacher
- Are proof of pattern-hood

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Small Meeting Rooms

151 SMALL MEETING ROOMS*



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Small Meeting Rooms

The larger meetings are, the less people get out of them. But institutions often put their money and attention into large meeting rooms and lecture halls.

It has been shown that the number of people in a group influences both the number who never talk, and the number who feel they have ideas which they have not been able to express.

There is no particularly natural threshold for group size; but it is clear that the number who never talk climbs very rapidly [with group size]. In a group of 12, one person never talks. In a group of 24, there are 6 people who never talk.

Make at least 70% of all meeting rooms really small -- for 12 people or less. Locate them in the most public parts of the building, evenly scattered among the workplaces.

See: *Light on Two Sides of Every Room, Sitting Circle, Different Chairs, Pools of Light, The Shape of Indoor Space*

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Small Meeting Rooms

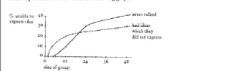
151 Small Meeting Rooms*



... within organizations and workplaces -
 communication is a fundamental skill. Small
 teams (with 4-6 members) and small
 groups (with 7-9 members) are the most
 effective. Small teams and groups are
 more flexible, more adaptable, and
 more innovative. Small teams and groups
 are also more likely to be successful
 in solving complex problems. Small
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 successful in solving complex problems.

The larger meetings are, the less people get out of them. But institutions often put their money and attention into large meeting rooms and lecture halls.

We then discuss the effect size of meetings. It has been shown that the number of people in a group influences both the number who never talk, and the number who feel they have ideas which they have not been able to express. For example, based on Organizational Psychology, James Allen, 1962, p. 201) has conducted an experiment relating group size to participation. The results of this experiment are shown in the following graph.



As size of group grows, more and more people hold back.

There is no particularly natural threshold for group size but it is clear that the number who never talk doubles very rapidly. In a group of 12, one person never talks. In a group of 24, there are six people who never talk.

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Parts of a Pattern (Gamma et. al.)

Intent - brief description of problem and solution

Also Known As

Motivation - prototypical example

Applicability - problem, forces, context

Structure/Participants/Collaborations - solution

Consequences - forces

Implementation/Sample Code - solution

Known Uses

Related Patterns

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Example Pattern Form

Name, Aliases

Context

Forces

Problem

Solution

Resulting Context (Consequences)

Rationale

Related Patterns

Known Uses

Sketch

Author

References

Examples

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Pattern Example

How long should pattern sections be?

As short as possible but no shorter!

Albert Einstein and David Parnas

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Name

Word or short phrase—the essence of the pattern, some say noun phrase.

Naming is not trivial and very important.

Good names enhance communication—especially when you can guess the intent from the name.

Patterns “build” something. The name should say what the pattern builds.

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Aliases

The same pattern may exist elsewhere, at another company, in a publication.

Experts use non-intuitive names that recall folklore or deeper meanings. Aliases can help novices.

An abbreviation or nickname can be helpful for discussions.

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Context

The setting—target user, patterns applied, size, scope, timing, memory constraints, anything that might invalidate the solution if changed.

↳ You're an *Evangelist* or *Dedicated Champion* who has called a meeting to introduce a new idea. Members of the user community are free to attend or not. You have resources, your own personal contribution or those of a *Local Sponsor* or *Corporate Angel*.

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Forces

Why the problem is hard.

The forces are often contradictory—create tension:

- You want to make your customers happy.
- You have limited resources.

↳ There's always more important work to do.
↳ Most people are curious about new ideas.

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Problem

Short, complete statement of the problem the pattern will solve.

↳ Usually a meeting is just another ordinary, impersonal event.

↳ How do we get people to want to attend our meeting?

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Solution

Your proposed method of solving the problem.

Resolve important forces determined by context; other forces may be ignored.

Keep the target audience in mind.

Best Patterns are Generative

↳ Have food at the meeting—donuts or bagels in the morning, with coffee, tea, and juice, and cookies and drinks in the afternoon, lunch at noon-time.

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Resulting Context

What happens if the solution is applied, what forces resolved, what problems may arise, what costs and benefits.

Just “problem solved” is not enough.

↳ **Food will turn a mundane meeting, presentation or other gathering into a more special event. If offered in the beginning, it starts the meeting on a positive note.**

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Rationale

Why the solution solves the problem.
Sell the pattern, teach the reader.

↳ **In Alexander’s pattern *Communal Eating* (147), “eating plays a vital role in almost all human societies as a way of binding people together and increasing the extent to which they feel like members of a group. The act of eating together is by its very nature a sign of friendship.”**

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Other Sections

Known Uses: A one-time occurrence is an event. A double occurrence is a coincidence. If it occurs more than twice, it’s a pattern.

Jim Coplien/Gerald Weinberg/Bunny Duhl

Related Patterns: Use, be used with, be similar to other patterns

- **While the prospect of free food is nice, *Brown Bag* can be used when funding is not available. People can still eat together, even if they bring their own food.**

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Ward’s Tips for Writing Patterns

- Pick a whole area, not just one idea
- Make a list of things you learned
- Cast each item on your list as a solution
- Now write each item as a Pattern
 - Try a four paragraph form where the second paragraph ends with the pivotal “therefore”
- Organize your patterns into sections
- Write an Introduction

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Joe’s Tips for Writing Patterns

- Take some small 3x5 or equivalent cards
- Brainstorm the catalogue of ideas
- For each pattern, take a card and write the problem solution as simple sentences
- Add any other ideas such as forces, related patterns, aliases, etc.
- Organize the patterns
- Use this to start writing the patterns

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Part 2: Pattern Basics

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Patterns

- “The pattern is, in short, at the same time a thing, which happens in the world, and the rule which tells us how to create that thing, and when we must create it. It is both a process and a thing; both a description of a thing which is alive, and a description of the process which will generate that thing.”

-- Christopher Alexander,
The Timeless Way of Building

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Christopher Alexander

- Building architect and theorist
- Many books on architecture and art:
 - [A Pattern Language](#)
 - [The Timeless Way of Building](#)
 - [The Oregon Experiment](#)
 - [The Production of Houses](#)
 - [A Foreshadowing of 21st Century Art -- The Color and Geometry of Very Early Turkish Carpets](#)
 - [The Nature of Order](#) (4 volumes)
- <http://www.livingneighborhoods.org>

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The Quality Without A Name

- “There is a central quality which is the root criterion of life and spirit in a man, a town, a building, or a wilderness. This quality is objective and precise, but it cannot be named.”

– Alexander, [The Timeless Way of Building](#)

- (“but with an acronym” -- Joe Davison)

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What is a Pattern

Quite often you hear:

“A pattern is a proven solution to a problem in a context.”

Alexander writes:

“Each pattern is a three-part rule, which expresses a relation between a certain context, a problem, and a solution.”

Are these definitions the same?

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What is a Pattern

It must be a solution to a problem in a context

You must be able to tell the problem solver what to do, how to solve the problem

It must be a mature, proven solution (Rules of 3)

It must contribute to human comfort or quality of life

It must be something you didn't invent yourself (Buschmann's Rule)

The solution should build on the insight of the problem solver, and can be implemented a million times without being the same twice

It cannot be formalized or automated (if it can, do that instead of writing a pattern)

It should have a dense set of interacting forces that are independent of the forces in other patterns

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Patterns Are:

- A form of architectural documentation
- An architectural relationship that cuts across system parts
- “Solution to a Problem in a Context”
- A way of explaining non-traditional solutions
- A family of solutions that abstractly address related problems in a specific context
- A literary form
- A resolution of forces

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A Patterns Should

- Provide Facts (ref manual) about solving problem
- Be prescriptive about the solution
- Tell a good story which captures the experience of the experts
- Help to comprehend existing systems
- Help to construct new systems

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What is not a Pattern

Just a simple solution to a problem in a context

- A simple rule
- A prescriptive recipe
- An algorithm
- A data structure

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Patterns Will Not:

- ... make you an instant expert
- ... provide a “turn the crank” approach to software
- ... eliminate the need for intelligence and taste
- ... make you rich and famous
 - unless you become a snake oil salesman
- ... generate code
 - *Paul S. R. Chisholm, AT&T 10/94*

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Part 3: Community, Culture, and Writers Workshops

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Patterns Community

- Pattern movement origins
 - 1989-1992
 - [Advanced C++ Programming Styles & Idioms](#) by James Coplien
 - OOPSLA
 - “Center for Object-Oriented Programming”
- The Hillside Group (<http://hillside.net>)
 - “The mission of the Hillside Group is to improve the quality of life of everyone who uses, builds, and encounters software systems—users, developers, managers, owners, educators, students, and society as a whole.
 - “Developing software is one of the most difficult human activities, and it affects every aspect of modern life. Understanding and helping the human element is critical for achieving success. The Hillside Group believes that software systems and software development can be made more humane by paying attention to real people and existing practices.
 - “The Hillside Group promotes the use of patterns and pattern languages to record, analyze, and improve software and its development, and supports any new practices that help achieve its mission.
 - “The Hillside Group sponsors a variety of activities to achieve this mission—organizing workshops, conferences, and publications for discussing, recording, and documenting successful software practices.” -- hillside.net/mission

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Patterns Community Gatherings

- Pattern Conferences
 - **PLoP®** since 1994 at *Allerton House, Monticello, IL*
 - Except: 2006: OOPSLA in Portland, OR
 - 2008: OOPSLA in Nashville, TN
 - 2009: AGILE in Chicago, IL
 - 2010: Splash in Reno, NV
 - 2011: Splash in Portland, OR
 - Euro PLoP® since 1996 at Kloster Irsee, Bavaria
 - SugarLoaf PLoP® since 2001, various locations in Brazil
 - Viking PLoP® since 2002 rotating among Scandinavian countries
 - AsianPLoP® @ 2010, 2011 in Tokyo Japan
 - ScrumPLoP® @ 2009, 2010, 2011 in Scandinavian countries
 - Chili PLoP® “A different Kind of PLoP”, near Phoenix, AZ since 1998
 - ParaPLoP® @ Parallel programming patterns, held with ChiliPLoP since 2009
 - Koala PLoP® 2000-2002 in Melbourne, Australia
 - Mensore PLoP® 2001 Okinawa, Japan
 - MetaPLoP® @ 2011 in Douro Valley, Portugal
 - UP 1998 Mohonk Mountain House, New Paltz, NY

For more information visit <http://hillside.net/conferences>
- **Transactions on Pattern Languages of Programming**
 - The new peer reviewed pattern journal.
 - Published by Springer
 - *More information: <http://hillside.net/plop>*

Except
2006: OOPSLA in Portland, OR
2008: OOPSLA in Nashville, TN
2009: AGILE in Chicago, IL
2010-2011: Splash (Reno, Portland)



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Community Peer-Reviewed Journal

- **Transactions on Pattern Languages of Programming**
 - The new peer reviewed pattern journal.
 - Published by Springer
 - *More information:* <http://hillside.net/patterns/tplop>
- **Transactions on Pattern Languages of Programming I**
- **Transactions on Pattern Languages of Programming II**
 - Special Issue on Applying Patterns

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“Culture”

- “5a: the integrated pattern of human knowledge, belief, and behavior that depends upon man's capacity for learning and transmitting knowledge to succeeding generations
- “5b : the customary beliefs, social forms, and material traits of a religious, or social group
- “5c : the set of shared attitudes, values, goals, and practices that characterizes a company or corporation”
 - Merriam Webster Collegiate Dictionary on the web <http://www.m-w.com/dictionary.htm>
- Shared experiences
- Shared rituals
 - Writers' Workshop

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Writers Workshop

Writers' Workshops & the Work of Making Things...Gabriel

A circle of interested colleagues, led by a strong, neutral moderator, that provides feedback to the author on how the pattern is understood by the group.

Roles:

- Author
- Moderator
- Summarizer
- Sympathetic Participants

Participants read the pattern before the workshop begins.

The author stands, reads a selection from the pattern, then becomes a “fly on the wall,” outside the circle. No eye contact is made. The author's name is never mentioned; use “the author.”

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Writers' Workshops

- Structured discussion of the merits and suggestions for improvement
- “Criticism” is not welcome -- offer only suggestions for improvement.
 - “I suggest the author add a reference to the paper by Beck and Auer in the Context as it will help establish how their works complement each other.”
- Praise always welcome
 - What people like about a pattern is very important.
- Author is present for note taking but does not participate except at very specific times.
- Strong moderation.

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Writers Workshop

A summary of the pattern is given by someone other than the author or moderator.

Begin with positive comments. Say what the author should leave alone.

Next, suggestions for improvement. State the opportunity and then the suggested improvement.

Those who know the pattern should not clarify or speak for the author. The pattern must stand on its own.

The moderator constrains discussion to the pattern at hand, usually with, “point noted.” Save meta issues for later.

Trivial comments and typos can be made on a marked-up copy for the author after the workshop.

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Writers Workshop

End with a positive closing comment or two.

Invite the author back into the circle.

The author thanks the group for the feedback and only asks questions to clarify comments from the group.

The author should not explain or answer any comments. The author should **never apologize** during this discussion.

The author is considered an expert and is assumed to act appropriately to suggestions. The author owns all comments.

The group stands and applauds the author's contribution.

If another pattern is to be workshopped, everyone takes a different seat and someone tells an unrelated story.

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Writers' Workshops

- Jim Coplien has published a pattern language for Writers' Workshops.
 - PLOPD4, chapter 25
 - <http://users.rcn.com/jcoplien/Patterns/WritersWorkshop/>
 - He (and co-author/shepherd Bobby Woolf) delve into the reasons behind way that Writers' Workshops are structured.

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Part 4: Pattern Languages, Generativity and Wrap-up

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Pattern Languages

- Individual patterns are useful, but . . .
- they are most powerful when combined into a language
- “Each pattern then, depends both on the smaller patterns it contains, and on the larger patterns within which it is contained.”

Alexander, TTWOB, p 312.

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Pattern Languages

- Individual Patterns are good
 - No individual pattern balances *all* the tradeoffs.
- To address real sized problems, languages are really essential
- A language is a collection of patterns that work together.
- Within a pattern language the patterns build upon each other, resolving unbalanced forces from previous patterns.

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Pattern Languages (cont.)

- Pattern languages must be complete in two ways
 - Morphologically
 - Patterns fit together to form a complete structure without gaps.
 - Functionally
 - Any new forces introduced by the patterns are resolved by the patterns themselves.
- If they are not complete in these ways we refer to them as a “collection”
 - The GOF and POSA books are collections

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Parts of a Pattern Language

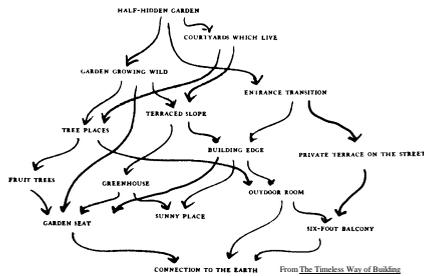
- Language intent
 - A short description of what the language is intended to accomplish
 - Like an abstract for the language
- Language map
 - A diagram that shows how the patterns build upon and relate to each other
- Language context
 - A description of how the pattern language is morphologically and functionally complete
- And of course . . . the patterns that make up the language

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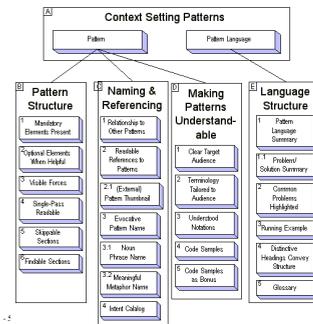
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Example Pattern Languages:

- Alexander's Garden
 - The only known pattern language diagram from Alexander



A Pattern Language for Writing Patterns (Meszaros & Doble)

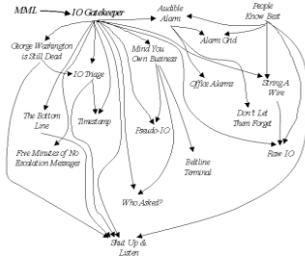


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Another Example

- Telecommunications I/O

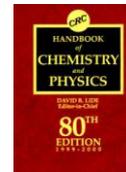


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Patterns Handbook

- We use the Handbook Model
 - Patterns available in reference book easily accessible to designers
 - No need to memorize all the details -- the reference book is available



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"How do I find a pattern that can help me?"

- Be familiar with existing pattern literature.
- Ask others in pattern community.
- The Pattern Almanac



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Becoming Familiar with Pattern Literature

- Read!
- Participate in online mailing lists
 - frequently new pattern sources (i.e. books or articles) are mentioned
- Attend a conference such as this one.

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Ask the Community

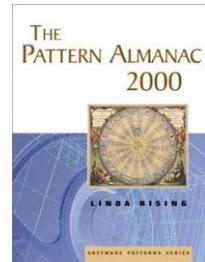
- Frequent postings to the pattern-discussion mailing list are requests for patterns in a particular domain.
- Internal mailing lists.

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The Pattern Almanac

- Published 3/2000
- Summarizes all the published, widely available patterns
- Indices based upon pattern intent
- Planned to be updated regularly and to be available on the internet



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Pattern Ethics

- Buschmann's rule: Never capture your own ideas in a pattern
 - Focus on broad, lasting, positive patterns
- Intellectual currency paradox: Ideas are worth more if given away
- "Aggressive Disregard for Originality" (*Brian Foote*)
 - Let's encourage people to be secure in telling their secrets
 - Let's reward people who created these techniques or who first took the trouble to commit them to writing
- Patterns are solutions that have withstood the test of time
- Don't Hype!

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What's Next

- Refine your pattern with the feedback from your Writers' Workshop
- Take your pattern (and its friends???) to future *PLoP conferences
- Continue writing patterns
- Build a pattern culture within your organization

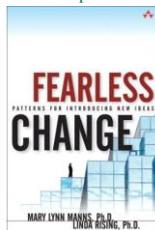
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Introducing Patterns Into Organizations

- Mary Lynn Manns and Linda Rising are collecting patterns related to introducing new technologies into a workplace.
 - <http://www.cs.unca.edu/~manns/intropatterns.html>

- Some examples:
 - *Do Food*
 - *Corporate Sponsor*
 - *Evangelist*
 - *Trial Run*



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Example pattern

Reading List

Problem

The number of books you need to read is increasing faster than you can read them.

Solution

Maintain a reading list to track the books you plan to read, and remember the books you've read.

Related pattern *Study the Classics*

The ACM has identified a collection of Classics.

<http://portal.acm.org/toc.cfm?id=SERIES11430&type=series&coll=ACM&dl=ACM&CFID=1744172&CFTOKEN=77646249&qualifier=LUI007652>

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Example pattern

Be the Worst

Problem

Your rate of learning has leveled off

Solution

Surround yourself with developers that are better than you are. Find a stronger team where you are the weakest member and will have room to grow.

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Let's Write a Pattern!

Name, Aliases

Context

Forces

Problem

Solution

Resulting Context

Rationale

Related Patterns

Known Uses

Sketch

Author

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Examples



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Conclusions

- Good writing is not an accident—it comes from dedication, focus, and practice.... <http://www.dreamsongspress.com/>
- Writing patterns is not necessarily hard but can take patience and iterations
- Just do it, thinking about it or theorizing about it will not write the pattern
- Get regular feedback specifically from the Patterns Community

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