Design patterns wrap-up

Overview

- Definition
  - What exactly is a pattern?
- Pattern catalogs
- Pattern categories
- When to use
- Anti-patterns

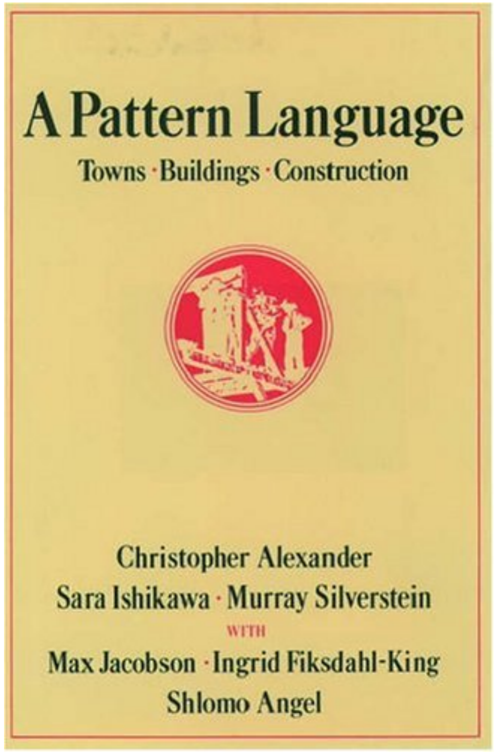
Head First Definition

"A pattern is a solution to a problem in a context"

- Context, situation in which the pattern applies. Should be a *recurring* situation.
- Problem, goal you are trying to achieve. Also any constraints that occur in the context.
- Solution, a general design that anyone can apply resolving the goal and constraints.

An architect's definition

"Each pattern describes a problem which 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"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Christopher Alexander
Sara Ishikawa · Murray Silverstein
WITH
Max Jacobson · Ingrid Fiksdahl-King
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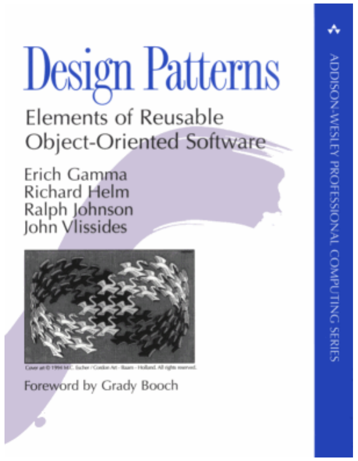
GoF Definition

"descriptions of communicating objects and classes that are customized to solve a general design problem in a particular context"

- Pattern name, handle to describe a design problem, its solutions, and consequences, 1-2 words.
- Problem, when to apply the pattern. Explains the problem and its context.
- Solution, elements that make up the design, their relationships, responsibilities, and collaborations.
- Consequences, results and t*rade-offs* of applying the pattern.

Pattern catalogs

- Details of a catalog of different patterns:
  - Pattern name
  - Classification (category)
  - Intent
  - Motivation
  - Applicability
  - Structure
  - Participants
  - Collaborations
  - Consequences
  - Implementation/sample code
  - Known uses
  - Related patterns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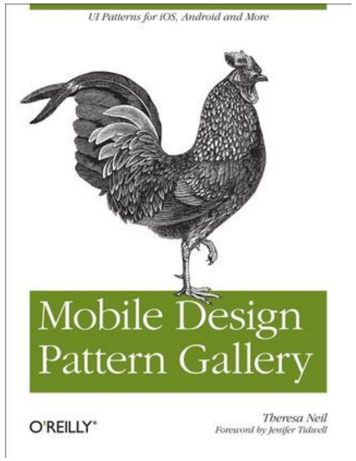
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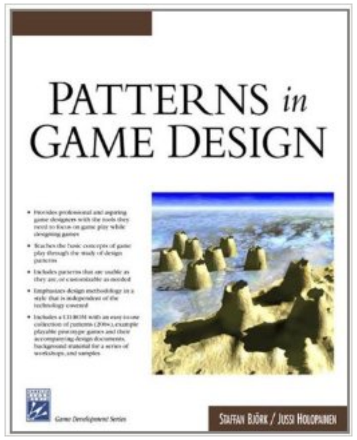

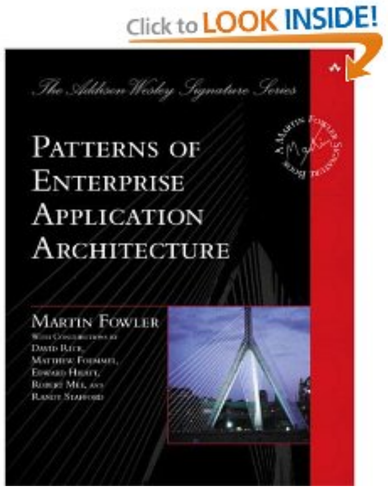
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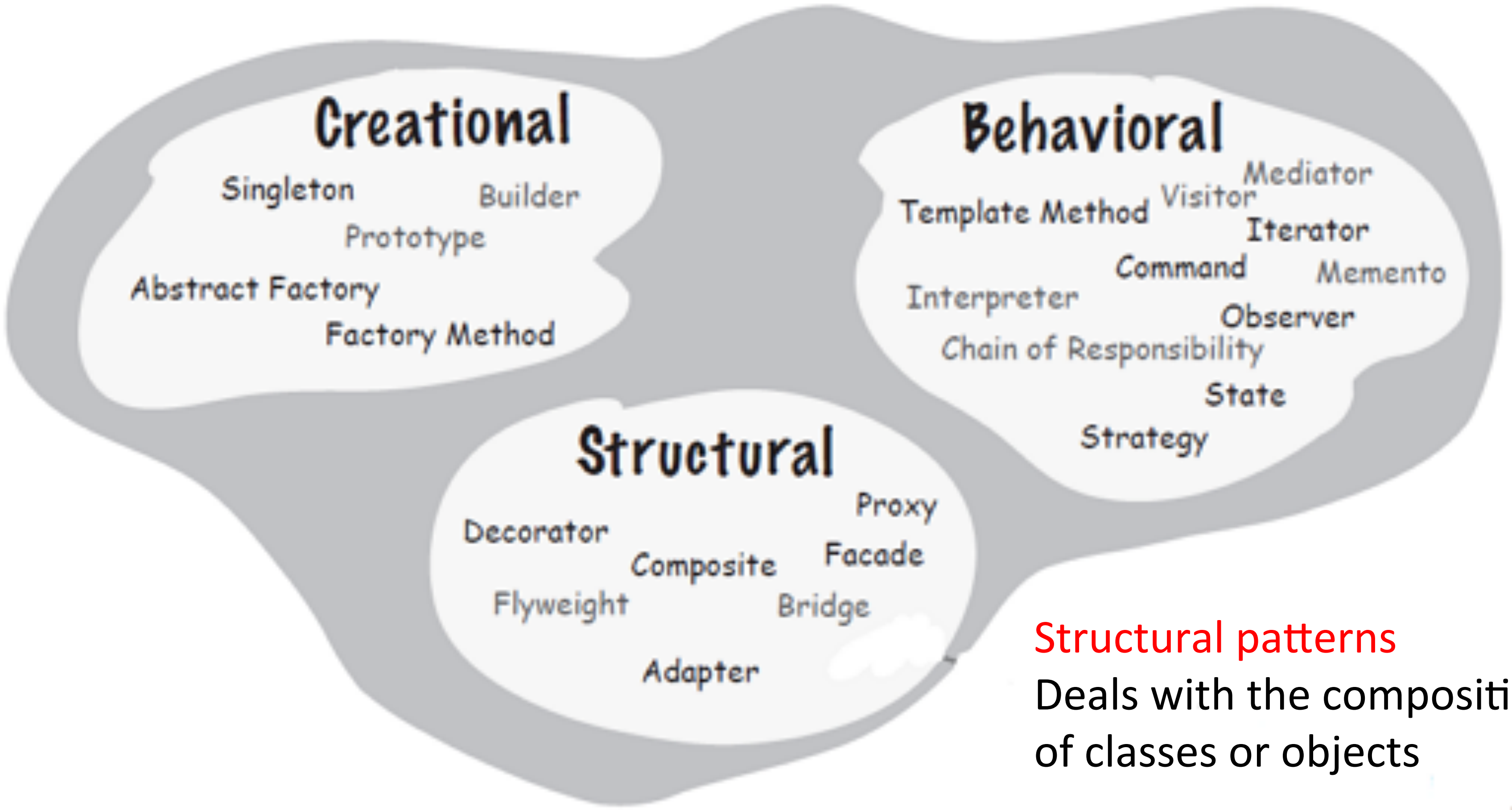
Martin Fowler

http://hillside.net/patterns/patterns-catalog

Pattern categories

Creational patterns
Concerned with the process of object creation

Behavioral patterns
Ways in which classes or objects interact and distribute responsibility



Structural patterns
Deals with the composition of classes or objects

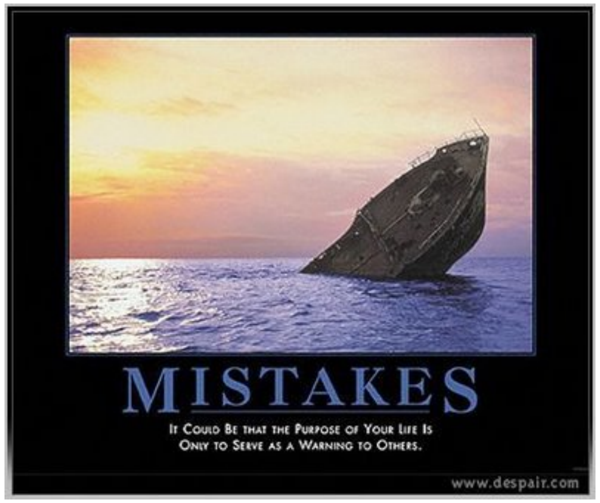
Design patterns considered harmful?

- WARNING: Overuse of design patterns can lead to code that is over-engineered.
  - Keep it simple stupid (KISS)
    - Solve things in the simplest way possible
      - This may be a pattern or it may not
    - Sometimes a more complex solution may be justified
      - Because you have an axis of change that is likely to happen
  - Refactoring time is pattern time!
  - Remove unused patterns

Anti-patterns

"An anti-pattern tells you how to go from a problem to a BAD solution"

- Attractiveness, why a bad solution seemed attractive up front
- Consequences, why the solution will get you into trouble in the long-term
- Solution, point you in the direction of other possibilities that lead to a good solutions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