Software Design Patterns

What are Software Design Patterns?

- Reusable solutions to commonly occurring problems
- Emerge over time as developers write code and establish best practices
- Solve particular problems in code generation and interactions
- Powerful if used in the correct way and applied in the correct circumstance

```
elif _operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

    #selection at the end -add back the deselec
mirror_ob.select= 1
modifier_ob.select=1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier
    #mirror_ob.select = 0
```

WHO WERE THE ‘GANG OF FOUR’?

Design Patterns:
Elements of Reusable Object-Oriented Software **(1994)**

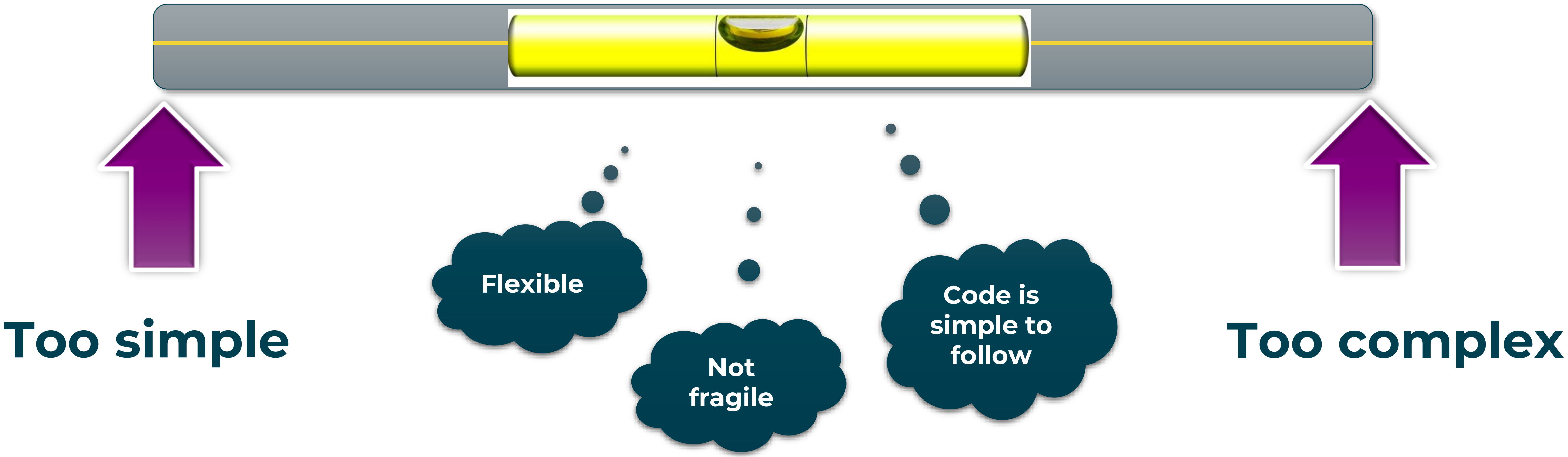
- Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides

‘Capturing a wealth of experience about the design of object-oriented software, **four top-notch designers present a catalog of simple and succinct solutions to commonly occurring design problems**. Previously undocumented, these 23 patterns allow designers to create more **flexible, elegant, and ultimately reusable designs** without having to rediscover the design solutions themselves.’

- Addison-Wesley publishers, emphasis added for this session

The Principle of Balance

Find the balance between...



Too simple

Flexible

Not fragile

Code is simple to follow

Too complex

COMMON DESIGN PATTERNS

- **Facade**
- **Proxy**
- **Command**
- **Observer** (subsumed into .NET as events)
- **State**
- **Strategy / Template Method**
- **Factory**
- **Singleton**

https://refactoring.guru/design-

GANG OF FOUR PATTERNS

THREE TYPES

Creational Design Patterns

- Builder
- Factory
- Singleton
- Prototype

GANG OF FOUR PATTERNS

THREE TYPES

Structural Patterns

- Adapter
- Bridge
- Composite
- Decorator
- Facade
- Flyweight
- Proxy

GANG OF FOUR PATTERNS

THREE TYPES

- Behavioural Patterns
  - Chain of Responsibility Pattern.
  - Command Pattern.
  - Template Pattern
  - Iterator Pattern.
  - Observer Pattern.
  - State Pattern.
  - Memento Pattern.
  - Strategy Pattern.

LAB

Please do the lab for this chapter