Double dispatch

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Goals

- Look at double dispatch
- Double dispatch does not have to be symmetrical
Remember

> (Stone new vs: Paper new)
#paper

> (Scissors new vs: Paper new)
#scissors
Imagine a game model

- Block
- Box
- BoxOnTarget
- EmptyBlock
- Player
- Wall
GameView >> drawBlock: aBlock on: aCanvas
aBlock isWall
  ifTrue: [ self drawWall: aCanvas ]
  ifFalse: [ aBlock isEmptyBlock
    ifTrue: [ aBlock hasPlayer
      ifTrue: [ aBlock hasTarget
        ifTrue: [ self drawTargetAndPlayer: aCanvas ]
        ifFalse: [ self drawPlayer: aCanvas ]]
      ifFalse: [ aBlock hasBox
        ifTrue: [ aBlock hasTarget
          ifTrue: [ self drawTargetAndBox: aCanvas ]
          ifFalse: [ self drawBox: aCanvas ]]
        ifFalse: [ aBlock hasTarget
          ifTrue: [ self drawTarget: aCanvas ]
          ifFalse: [ self drawEmptyBlock: aCanvas ]]
      ifFalse: [ self drawEmptyBlock: aCanvas ]]]]
A nicer solution

```smalltalk
GameView >> drawBlock: aBlock on: aCanvas
    aBlock isWall ifTrue: [ self drawWall: aCanvas ].
    aBlock isEmptyBlock ifTrue: [ ...

Becomes

```smalltalk
GameView >> drawBlock: aBlock on: aCanvas
    aBlock drawOn: aCanvas view: self

Wall >> drawOn: aCanvas view: aView
    aView drawWall: aCanvas

EmptyBlock >> drawOn: aCanvas view: aView
    aView drawEmptyBlock: aCanvas
```
Double dispatch

Each block *tells* the view how to draw it

GameView >> drawBlock: aBlock on: aCanvas
   aBlock drawOn: aCanvas view: self

Wall >> drawOn: aCanvas view: aView
   aView drawWall: aCanvas

EmptyBlock >> drawOn: aCanvas view: aView
   aView drawEmptyBlock: aCanvas

- We *tell* a block to draw itself and it *tells* how to the canvas
- Sending messages is powerful
- Modular
Conclusion

- Double dispatch is creating a variation point without hardcoding the path
- Modular
- Can be asymmetrical
Advanced Object-Oriented Design and Development with Pharo

A course by
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