Games

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Overview

- About me
- Game Design & Philosophy (Mechanic Dynamic Aesthetic: Marc LeBlanc)
- Technical Demo
- Lab

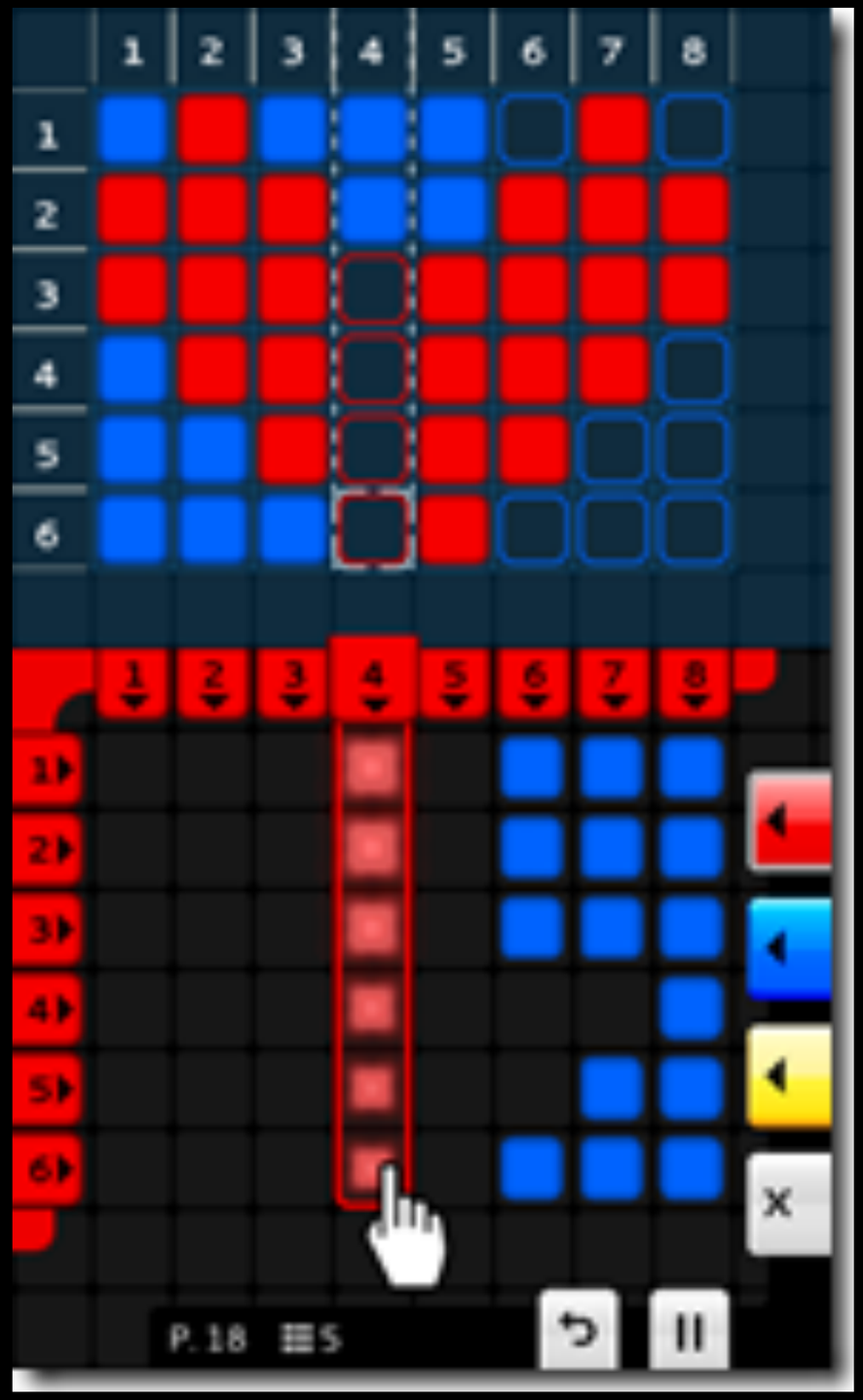
Who am I

- Power head games: 5 years
- Nintendo DS games
- Catz, Dogz, Winx, MLB2K10 for DS

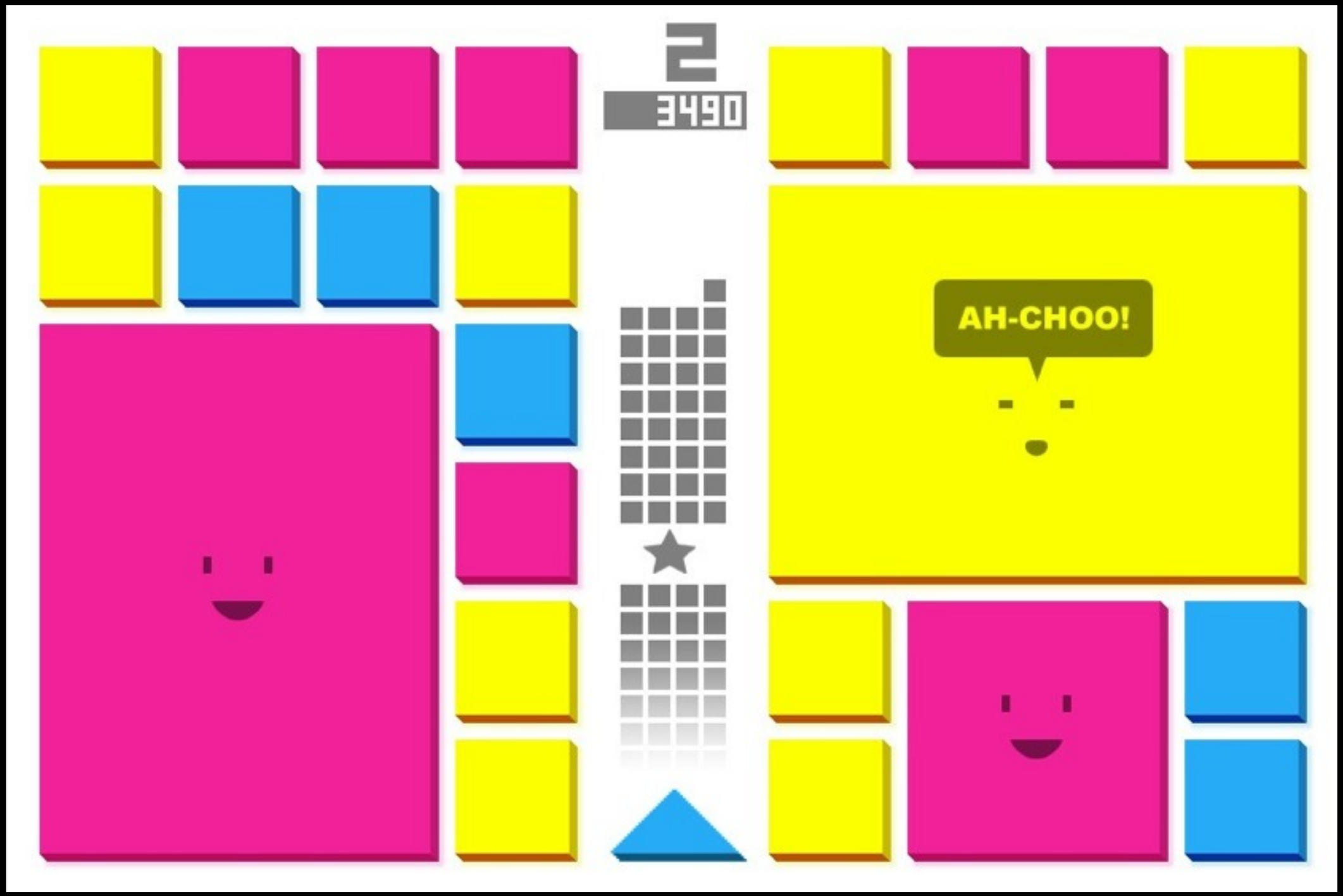

Catz
Winx
Petz Catz 2
CSI:
imagine movie star
Petz Fashion Dogz & Catz
imagine soccer captain
FACTS FOR YOUR DAILY LIFE
My Fun Facts Coach
Backyard Sports Rookie Rush
2K SPORTS MAJOR LEAGUE BASEBALL 2K10
Backyard Sports
DSiWare
glow
ARTISAN
DSiWare
did it myself
ABC123

Who am I (cont.)

- Power head games: 5 years
  - Nintendo DS games
  - Catz, Dogz, Winx, MLB2K10 for DS
  - Glow Artisan, Async Corp (Independent Games Festival acclaims)



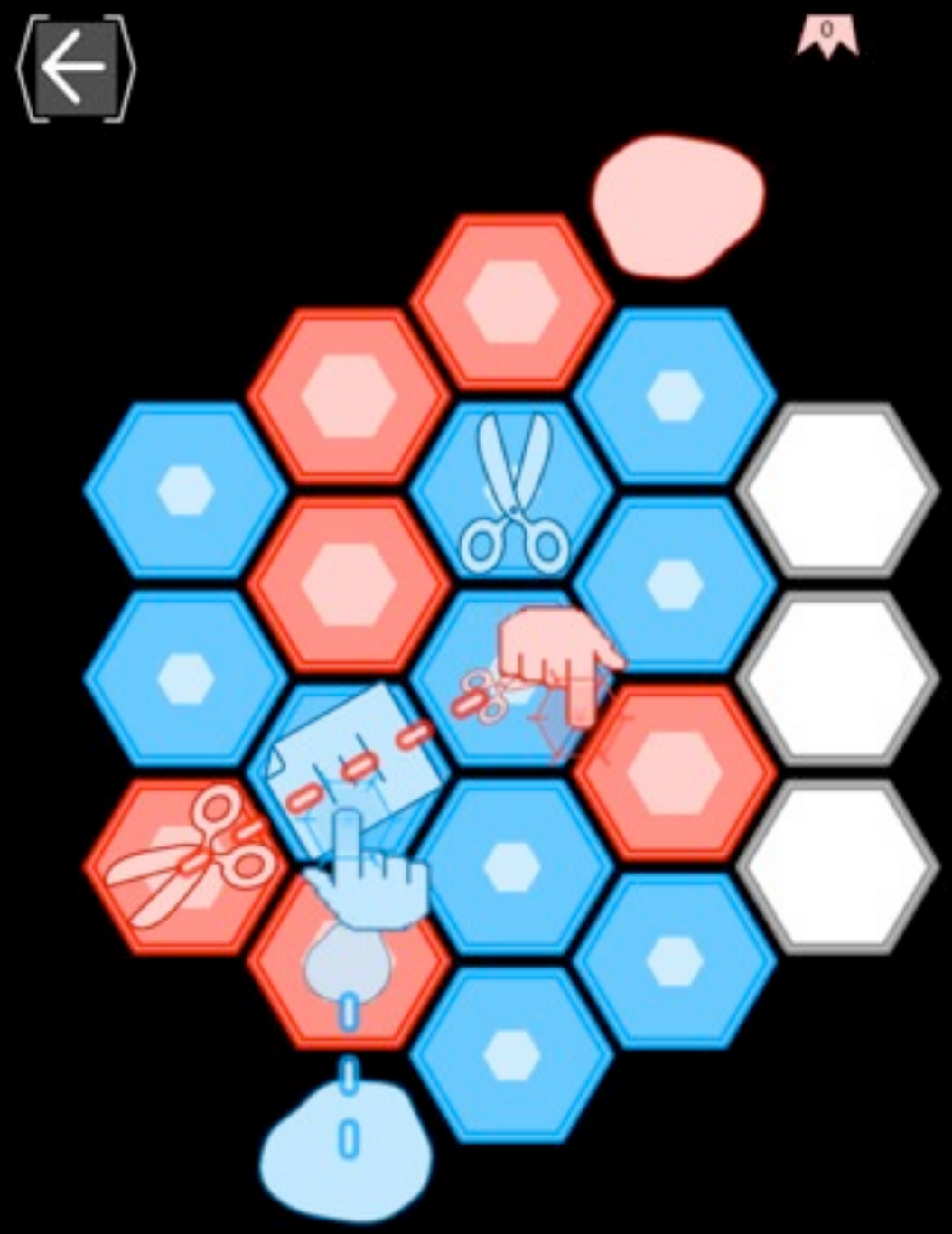
Glow Artisan



Async Corp

Who am I (cont.)

- Callaway Digital Arts: Martha Stewart Craftstudio (card making app)
- Apporchard: Enterprise iOS
- Hexagonal Rochambeau (Rock Paper Scissor, real time strategy for iPad)
- Board games



hexro.com

Who are you?

- How many of you have
  - iPhones
  - iPads
- Do you play games?
  - Favorites?

Marc LeBlanc's

Mechanic Dynamic Aesthetic

Mechanics, Dynamics, Aesthetics

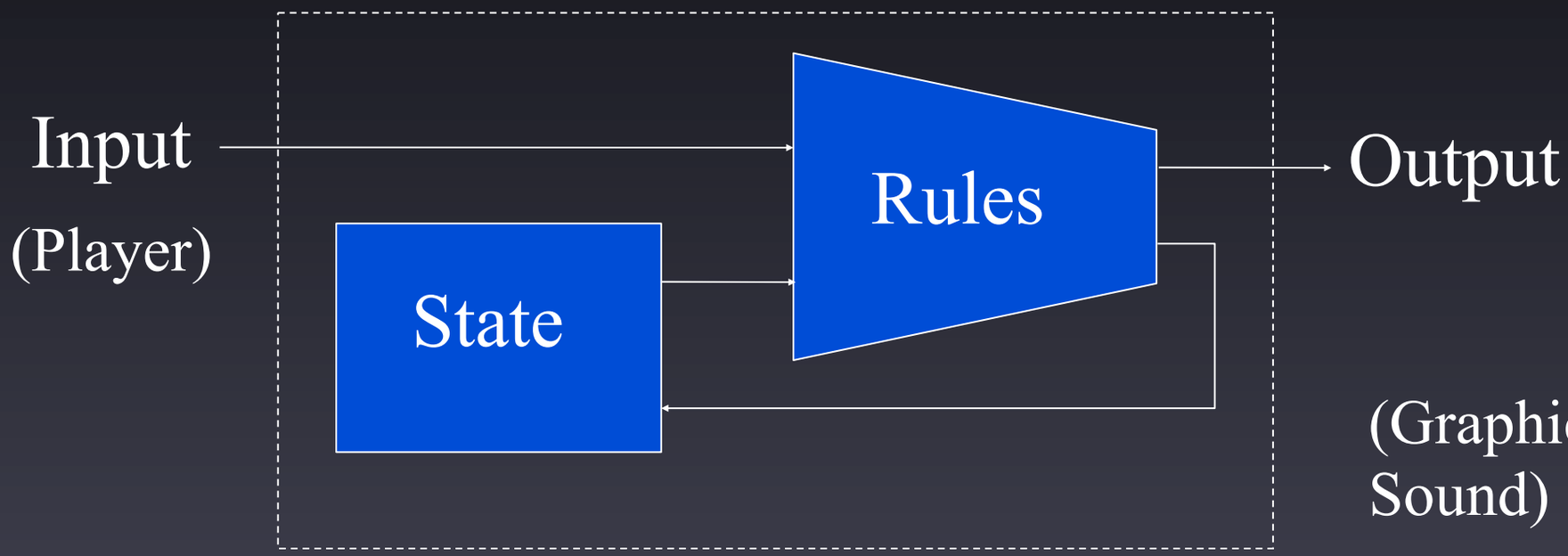
A Formal Approach to Game Design

Marc “MAHK” LeBlanc

April 2004

http://8kindsoffun.com/

Games are State Machines



- *All* games are computer games.
- Game design transcends media.

The Punch Line:

Game design is programming.

Part I: Games as Software

Games vs. Other Software

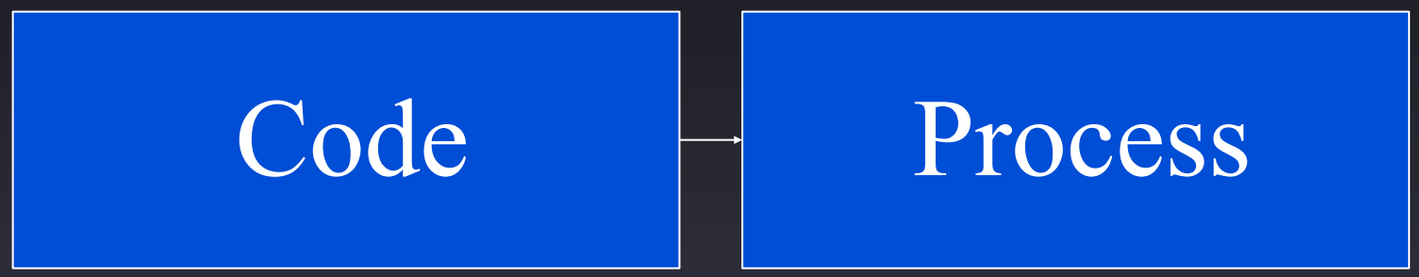
What makes a "program" a "game?"

- Fun!
- That is, games serve an *emotional* purpose, not a *pragmatic* one.
- This isn't a definition.

Games *as* Software

Code

Games *as* Software



Games *as* Software

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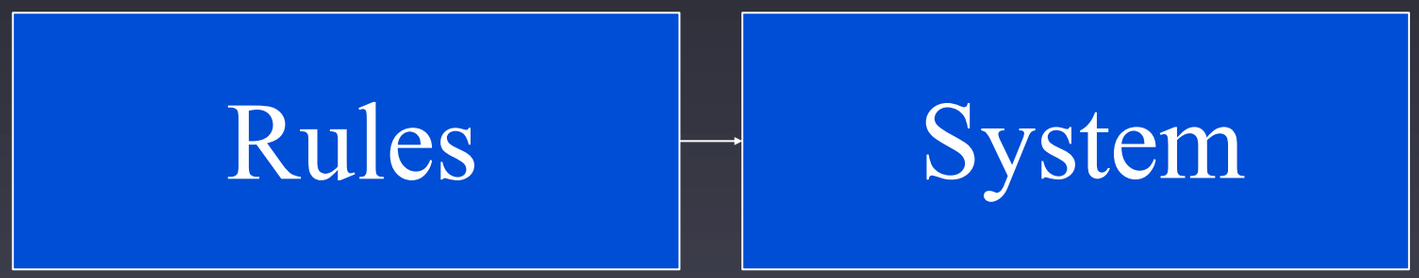

Games *as* Software

A Design Vocabulary

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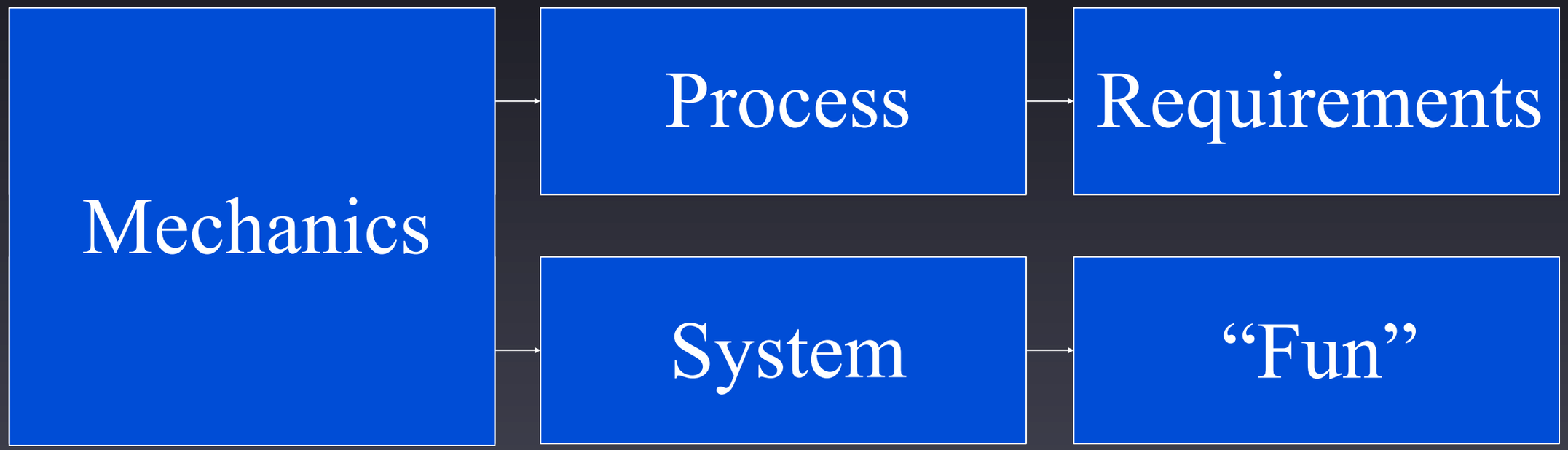
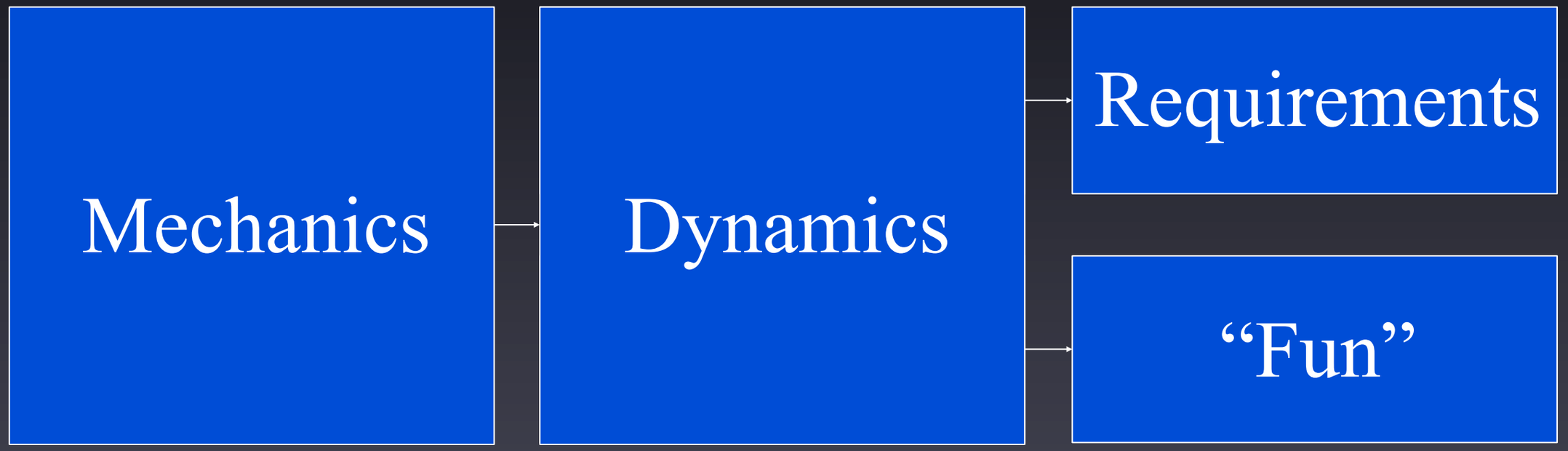
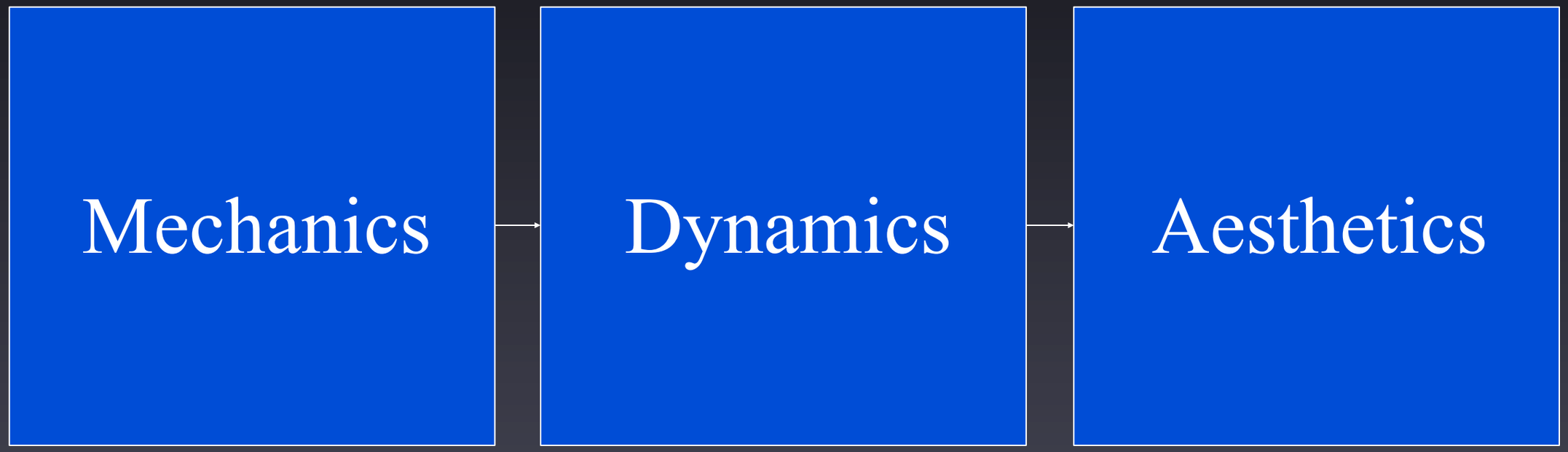


A Design Vocabulary



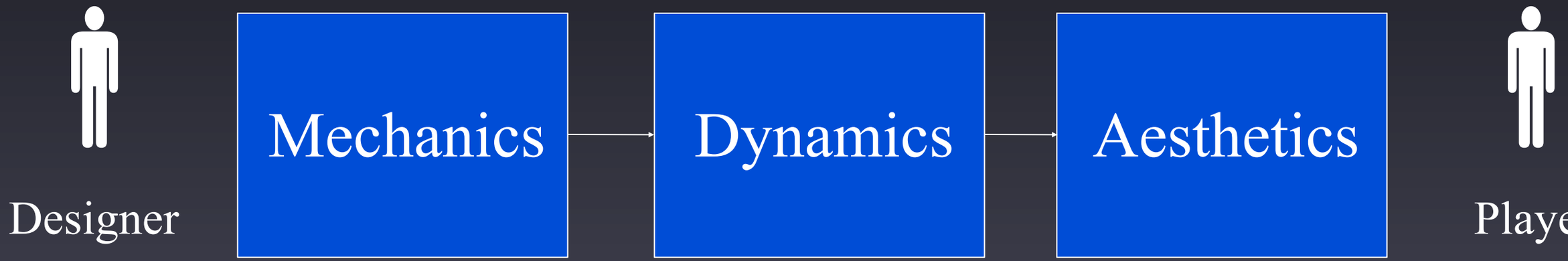
A Design Vocabulary



Definitions

- Mechanics: The rules and concepts that formally specify the game-as-system.
- Dynamics: The run-time behavior of the game-as-system.
- Aesthetics: The *desirable emotional responses* evoked by the game dynamics.

The Designer and The Player



The Player's Perspective

The Designer's Perspective

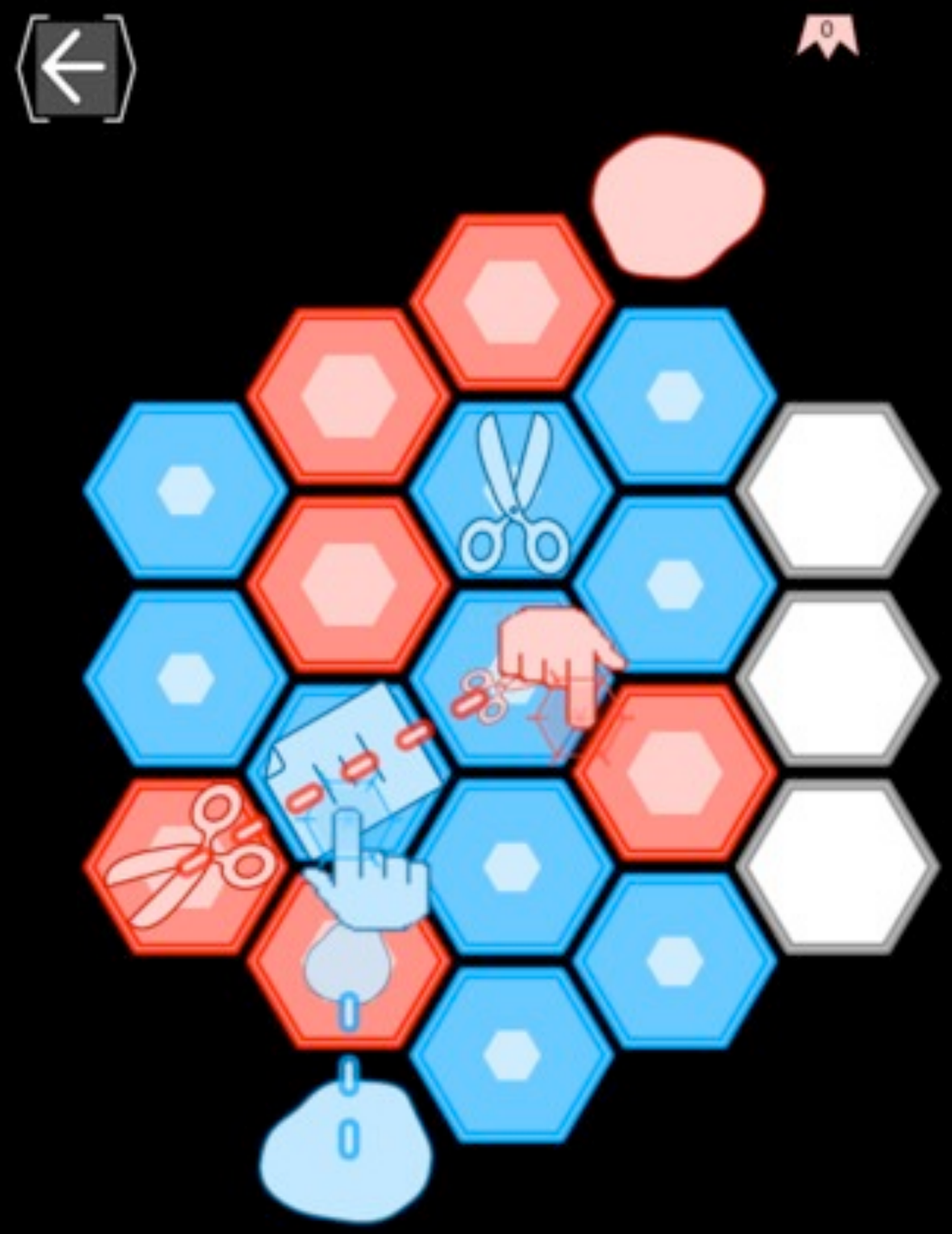
MDA is a "Taxonomy" of Design Knowledge

- Knowledge of Aesthetics
- Knowledge of Dynamics
- Knowledge of Mechanics
- Knowledge of the *interactions* between them.

Let's play a game...

Backup

- watch vid: http://vimeo.com/36462540



hexro.com

Observations?

Mechanics

- What are the mechanics of Hexagonal Rochambeau?
- Specifically, can we identify any “standard” mechanics.

Aesthetics

- What are the aesthetics of Hexagonal Rochambeau?
- That is, what's so fun about it?

Dynamics

- How did the rules create the fun?
- What patterns emerged in the dynamics of the game?

Discussion

- What other settings, genres or subjects might fit this game?

Part II: Aesthetics Explored

“Requirements Analysis” for Games

- We need to understand the *emotional* requirements of our software.

Requirements Analysis…

Scenario: The customer wants to cancel an order and get a refund.

Actions:

- Log onto website.
- Navigate to “pending orders” page.
- Click “cancel” button next to order.

…for Games?

Scenario: The player wants to blow stuff up.

Actions:

- Find rocket launcher.
- Find victims.
- Kick major booty.

What's the Difference?

- With productivity software, the user brings his goals to the application.
- With games, the application brings goals to the user.

- Software eschews emergent behavior.
- Games embrace it.

We Need an Aesthetic Lexicon

We need to get past words like "fun" and "gameplay."

- What kinds of "fun" are there?
- How will we know a particular kind of "fun" when we see it?

Eight Kinds of "Fun"

1. Sensation

   Game as sense-pleasure

2. Fantasy

   Game as make-believe

3. Narrative

   Game as drama

4. Challenge

   Game as obstacle course

Eight Kinds of "Fun"

1. Sensation
   Game as sense-pleasure
2. Fantasy
   Game as make-believe
3. Narrative
   Game as drama
4. Challenge
   Game as obstacle course
5. Fellowship
   Game as social framework
6. Discovery
   Game as uncharted territory
7. Expression
   Game as self-discovery
8. Submission
   Game as pastime

Clarifying Our Aesthetics

- **Charades** is “fun.”
- **Quake** is “fun.”
- **Final Fantasy** is “fun.”

Clarifying Our Aesthetics

- **Charades**: Fellowship, Expression, Challenge
- **Quake**: Challenge, Sensation, Competition, Fantasy
- **Final Fantasy**: Fantasy, Narrative, Expression, Discovery, Challenge, Masochism

- *Each game pursues multiple aesthetics.*
- *No Grand Unified Theory.*

Clarifying Our Goals

- As designers, we can choose certain aesthetics as *goals* for our game design.
- As with other software, our process is driven by *requirements*, not *features*.

- However, one word is not enough to describe a goal.

Aesthetic Models

- Our substitute for “use cases” or “scenarios.”
- A rigorous definition of an aesthetic goal.
- Serves as an “aesthetic compass.”
- States criteria for success as well as possible modes of failure.

Some examples…

Goal: Competition

Model: A game is *competitive* if:

- Players are adversaries.
- Players have an *ongoing emotional investment* in defeating each other.

Some Failure Modes:

- A player feels that he can't win.
- A player can't measure his progress.

Goal: Realistic Flight Simulation

Possible Models: Our flight dynamics are *realistic* if:

- They match a mathematical formula, *or,*
- They pass our “realism checklist,”

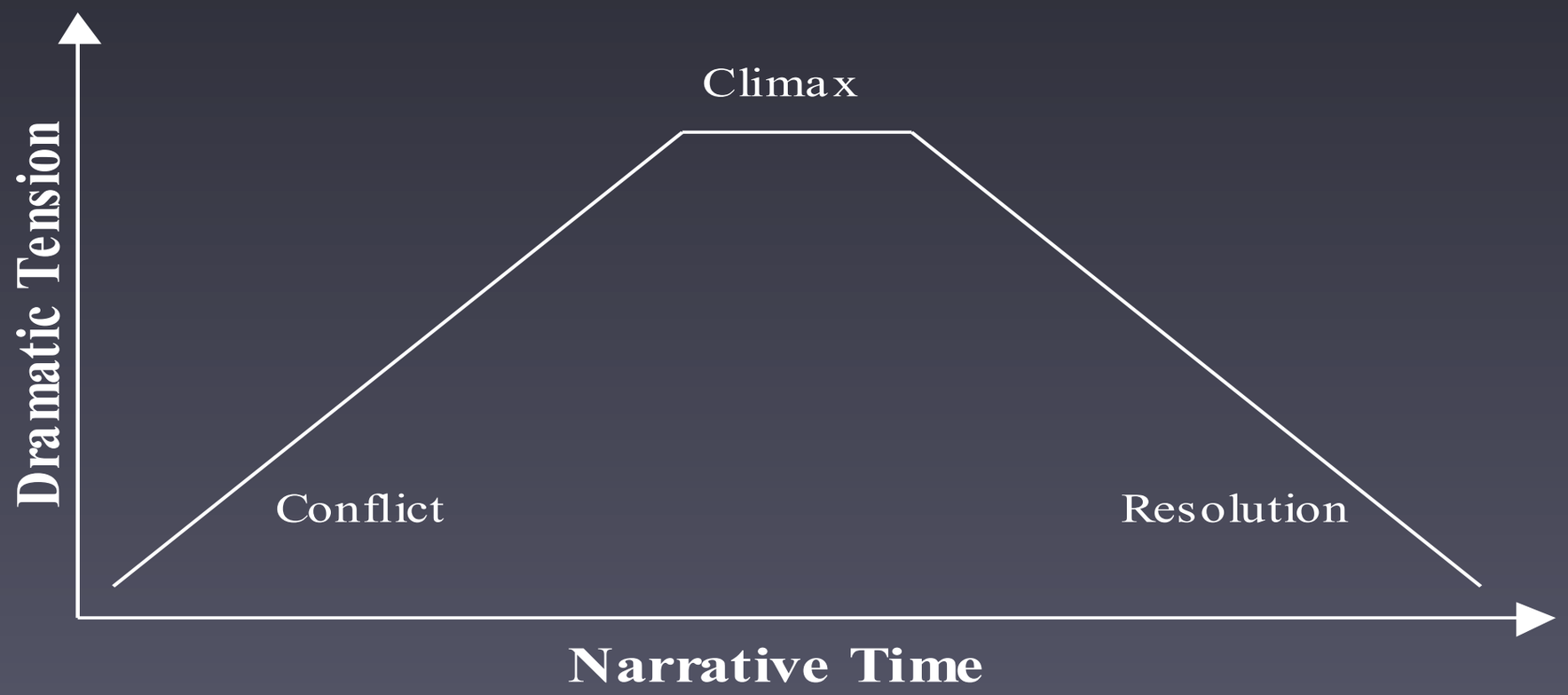
Failure Modes:

- Counter-intuitive system behavior.

Goal: Drama

Model: A game is *dramatic* if:

- Its central conflict creates *dramatic tension.*
- The dramatic tension builds towards a *climax.*



Goal: Drama

Failure Modes:

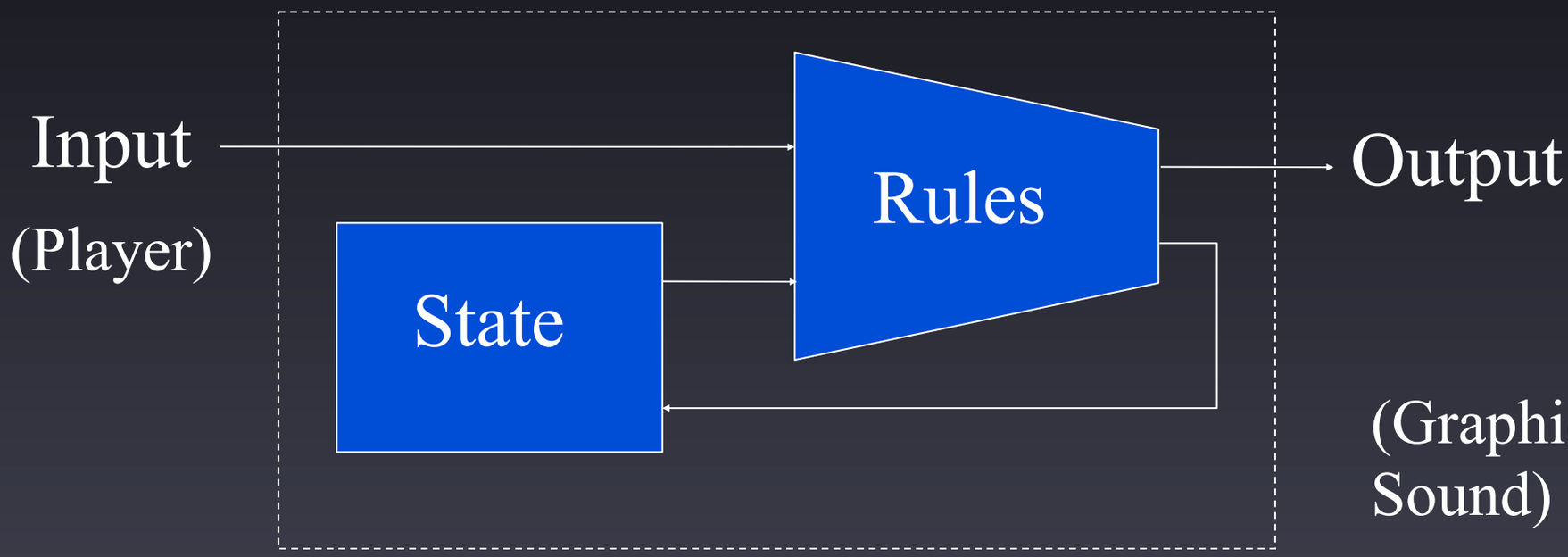
- Lack of conflict.
  - The conflict's outcome is obvious (no *uncertainty*).
  - No sense of forward progress (no *inevitability*).
- Tension does not increase towards a climax.

Part III: Dynamics in Detail

Understanding Dynamics

- What about the game's behavior can we *predict* before we go to playtest?
- How can we *explain* the behavior that we observe?

Formalizing Game Dynamics



The “State Machine” Model

Examples: Chess, Quake

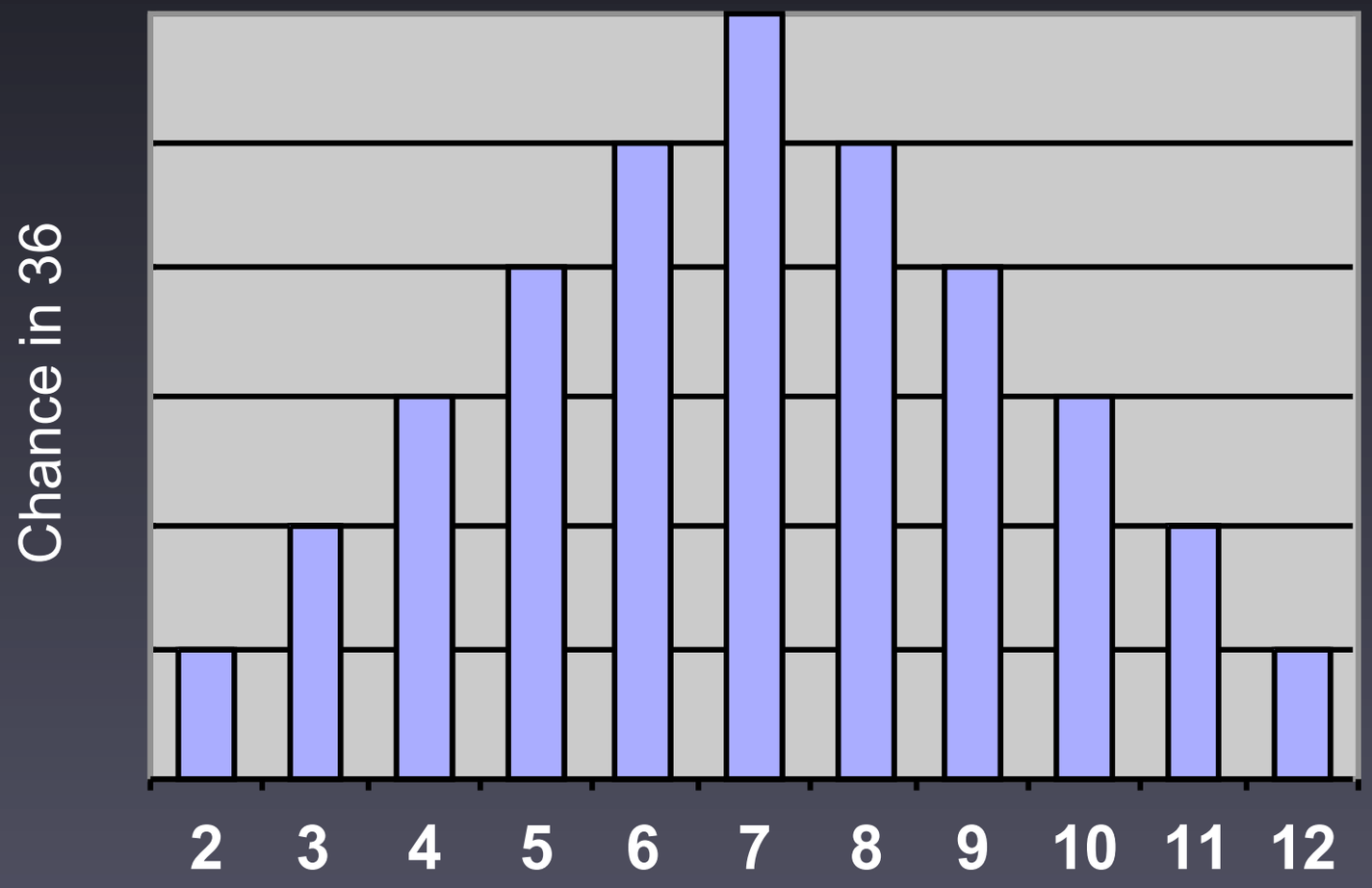
Models of Game Dynamics

- Again, no Grand Unified Theory
- Instead, a collection of many *Dynamic Models*.
- Dynamics models are analytical in nature.

Some examples…

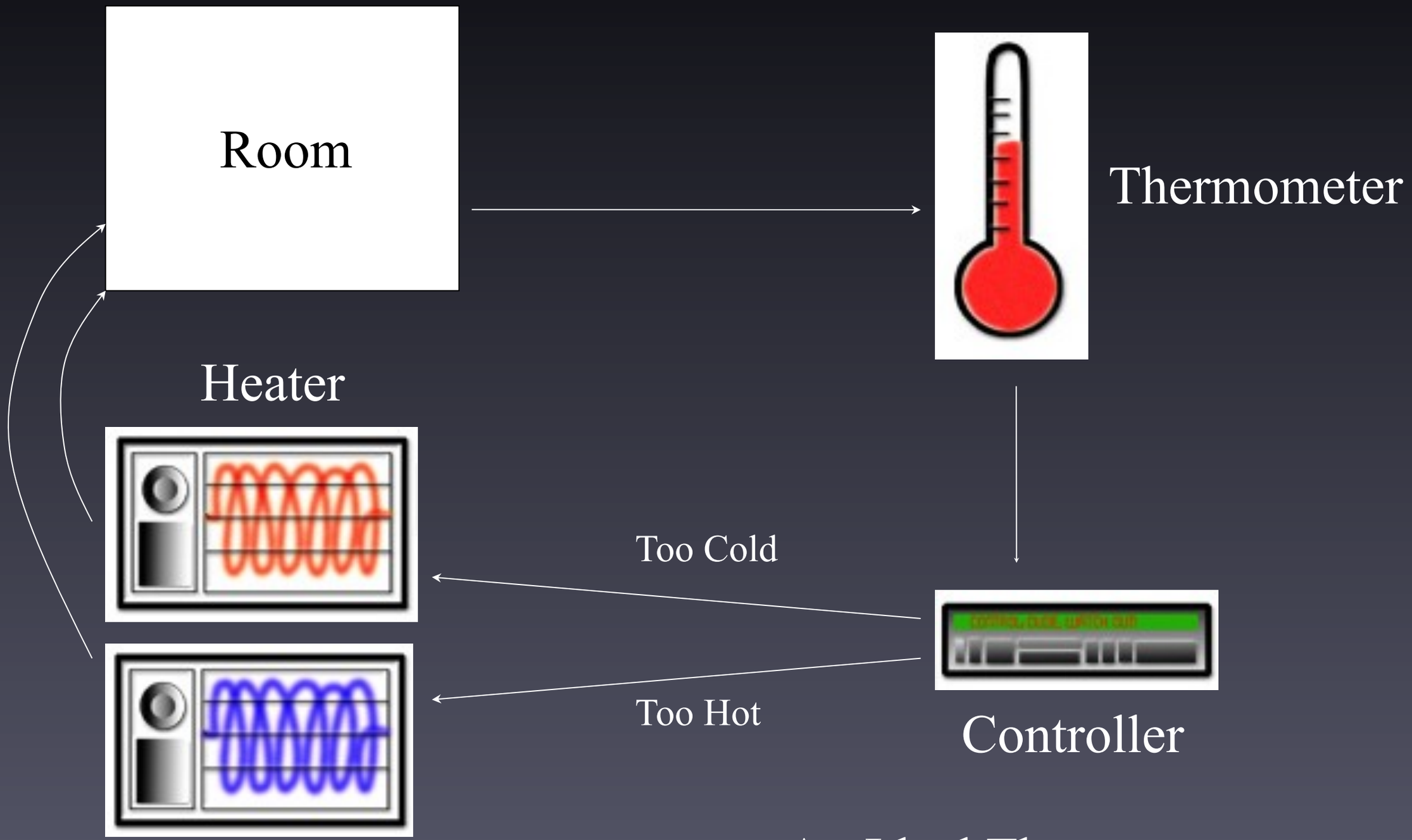
Example: Random Variable

This is a model of 2d6:



Example: Feedback System

A feedback system monitors and regulates its own state.



An Ideal Thermostat

Example: Operant Conditioning

- The player is part of the system, too!
- Psychology gives us models to explain and predict the player's behavior.

Where Models Come From

- Analysis of existing games.
- Other Fields: Math, Psychology, Engineering…
- Our own experience.

On to Mechanics...

Part IV: Mechanics

Understanding Mechanics

- There's a vast library of common game mechanics.

Examples

- Cards: Shuffling, Trick-Taking, Bidding
- Shooters: Ammunition, Spawn Points
- Golf: Sand Traps, Water Hazards

Mechanics vs. Dynamics

- There's a grey area.
  - Some behaviors are direct consequences of rules.
  - Others are indirect.
  - "Dynamics" usually means the latter.

Mechanics vs. Dynamics

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- Dynamics and Mechanics are different *views* of games.

Mechanics vs. Dynamics

- There's a grey area.
  - Some behaviors are direct consequences of rules.
  - Others are indirect.
  - "Dynamics" usually means the latter.
- Dynamics and Mechanics are different *views* of games.
- Dynamics *emerge* from Mechanics.

Part V: MDA Interactions

Interaction Models

- How do specific dynamics emerge from specific mechanics?
- How do specific dynamics evoke specific aesthetics?

Example: Time Pressure

- "Time pressure" is a dynamic.
- It can create dramatic tension.
- Various mechanics create time pressure:
  - Simple time limit
  - "Pace" monster
  - Depleting resource

Apply

- to hexagonal rochambeau
  - what are the aesthetics and how did we get to them through the dynamics or interaction of the mechanics?

<break>

- end of MDA

Games Vs Apps

- Constantly changing

- Mostly static, Activate with User Input

Update Loop

```
- (void)viewDidLoad
{
   [...]
   CADisplayLink * displayLink = [CADisplayLink
     displayLinkWithTarget:self
     selector:@selector(update:)];

   [displayLink addToRunLoop:[NSRunLoop
   mainRunLoop] forMode:NSRunLoopCommonModes];

}

- (void) update:(CADisplayLink*)displayLink
{
   [...meat...]
}
```

Live Demo

- Pong

Frame animation

```
    self.ball.animationImages =
[NSArray arrayWithObjects:
[UIImage imageNamed:@"ballFrame001"],
[UIImage imageNamed:@"ballFrame002"],
[UIImage imageNamed:@"ballFrame003"],
nil];
    self.ball.animationDuration = 1.4f;
    self.ball.animationRepeatCount = 0;
//0 repeat count is infinite
    [self.ball startAnimating];
    [...]
    [self.ball stopAnimating];
```

Expand Pong

source: github.com/randallli/pong

- Score
- Breakout [arkanoid]
- Mechanics Dynamics Aesthetic

- cocos2d-iphone.org
- Box2D (physics): box2d.org
- CocosDenshion (sound): cocos2d-iphone.org/wiki/doku.php/cocosdenshion:faq
- raywenderlich.com/457/intro-to-box2d-with-cocos2d-tutorial-bouncing-balls

Art Assets

- inkscape.org
- gimp.org

- photoshop.com
- adobe.com/products/illustrator.html

- unity3d.com
- 3D
- Cross Platform (web, console, mobile)

The End

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