Introduction to Minimalist Game Design

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In a nutshell

- systems
- abstraction
- audiovisuals
- iteration
- mechanics
- prototyping
- teamwork

Life meter (Castlevania)
Power ups (Super Mario Bros.)
Bosses (R-Type)
Me

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Assistant professor of computer science at NYU poly since 2012 + member of Hemisphere Games

Research in computer graphics, game design, perception, shape modeling
Class

3–4 prototypes per person
1 prototype/week for 4 weeks

teams of 3 work on N/3 games
starting in week 6

each team sees the chosen game
through to completion
Nice to know

(computer graphics) programming

game design experience

modeling and animation

sound design and composition

organization and team management

everything else...?
Tools
Choose wisely

If you’ve never used OpenGL before, don’t start now.

Understanding how your game objects and game state interact is crucial to all tools.

Can’t hurt to try some coding for the minimal prototypes.
Constraints

consider the time constraints, and formulate design constraints

finding suitable constraints is what **game** design is all about

Constraints are your friend
Resources
Recommended books

Garfield et al., Characteristics of Games
Salen and Zimmerman, Rules of Play
Swink, Game Feel
Meadows, Thinking in Systems
Montfort and Bogost, Racing the Beam
Koster, A Theory of Fun
Crawford, The Art of Computer Game Design
Alexander, The Timeless way of Building
Norman, The Design of Everyday Things
Alexander, Notes on the Synthesis of Form
Gigerenzer, Gut Feelings
Towards Minimalist Game Design

Andy Nealen
NYU / Hemisphere Games

Adam Saltsman
Finji

Eddy Boxerman
Hemisphere Games

This is you.
Play more games
Questions...

Why minimalism?

Why exploratory game design under minimalist constraints?

What makes this mode of design compelling?
A few thoughts

Video game minimalism was once a technological necessity

Hardware constraints are still a thing

Time and labor are very real things for small, independent developers
A few thoughts

Placing self-imposed, deliberate constraints on the game and the design process promotes exploration, convergence, and novelty.
Terminology

space + entities -> state
rules -> state changes
mechanics -> player invoked rules
controls -> direct manipulation
interface -> i/o feedback loop
... Etc. etc.

(read the paper “Towards Minimalist Game Design”)
Design studies
On process
Design studies

Part I
Osmos: some process & history

Part II
Grow 21: a game that designed itself
Part I

Osmos
Dev history

2006
First two-week prototype
Dev history

2006
First two-week prototype

Winter 2007
IGF submission – zero nominations

Spring/summer 2008
Intro levels – difficulty curve
Awards

2009
IGF + PAX10 awards

2010
iOS version – iPad game of the year

2011
Apple design award
Hindsights

1
Creative vision – ambient – minimal

2
Carving out many constraints a priori

3
Understandability – accessibility
Hindsights

4

Narrow and deep

5

Information hiding

6

No initial pressure
Part II
Grow21
“Do not make the player feel smart. Make the player smart.”
– Jonathan Blow
“Do not make the player feel smart. Make the player smart.”
– Jonathan Blow

Make the player and the designer smart(er)
“Do not make the player feel smart. Make the player smart.”
– Jonathan Blow

Make everyone smart(er)
Constraints

1. Knowledge in the world
2. Spatial – no board required
3. One simple mechanic – few choices
Constraints

4
Readable

5
Compact

6
Deep
Solutions

Knowledge in the world
Two player card game – symmetric
Spatial – no board required
Adjacent card placement
One simple mechanic – few choices
Draw one card – build stable groups
Solutions

Readable
All cards are hidden – no hand

Compact
Single connected component

Deep
Set packing is NP complete
“I mean, I’m pretty sure I saw the pattern of the universe laid out in front of me last night.”

– Sarah Elmaleh (twitter)
Part III

A minimalist game
Minimalist game

1
Few rules

2
Even fewer mechanics

3
Narrow and deep
Minimalist game

4
Simple controls

5
Systemically & visually abstract

6
Maybe tightly coupled systems
Conclusions

1
Process is key

2
Context is palette

3
Perception is fascinating
Thanks for your attention