

Introduction to Minimalist Game Design

Andy Nealen, NYU

In a nutshell

systems
abstraction
audiovisuals
iteration
mechanics
prototyping
teamwork



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

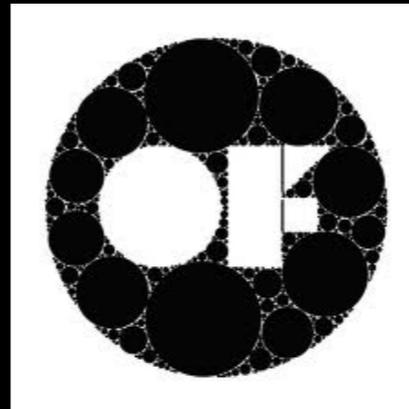
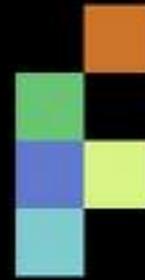
modeling and animation

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

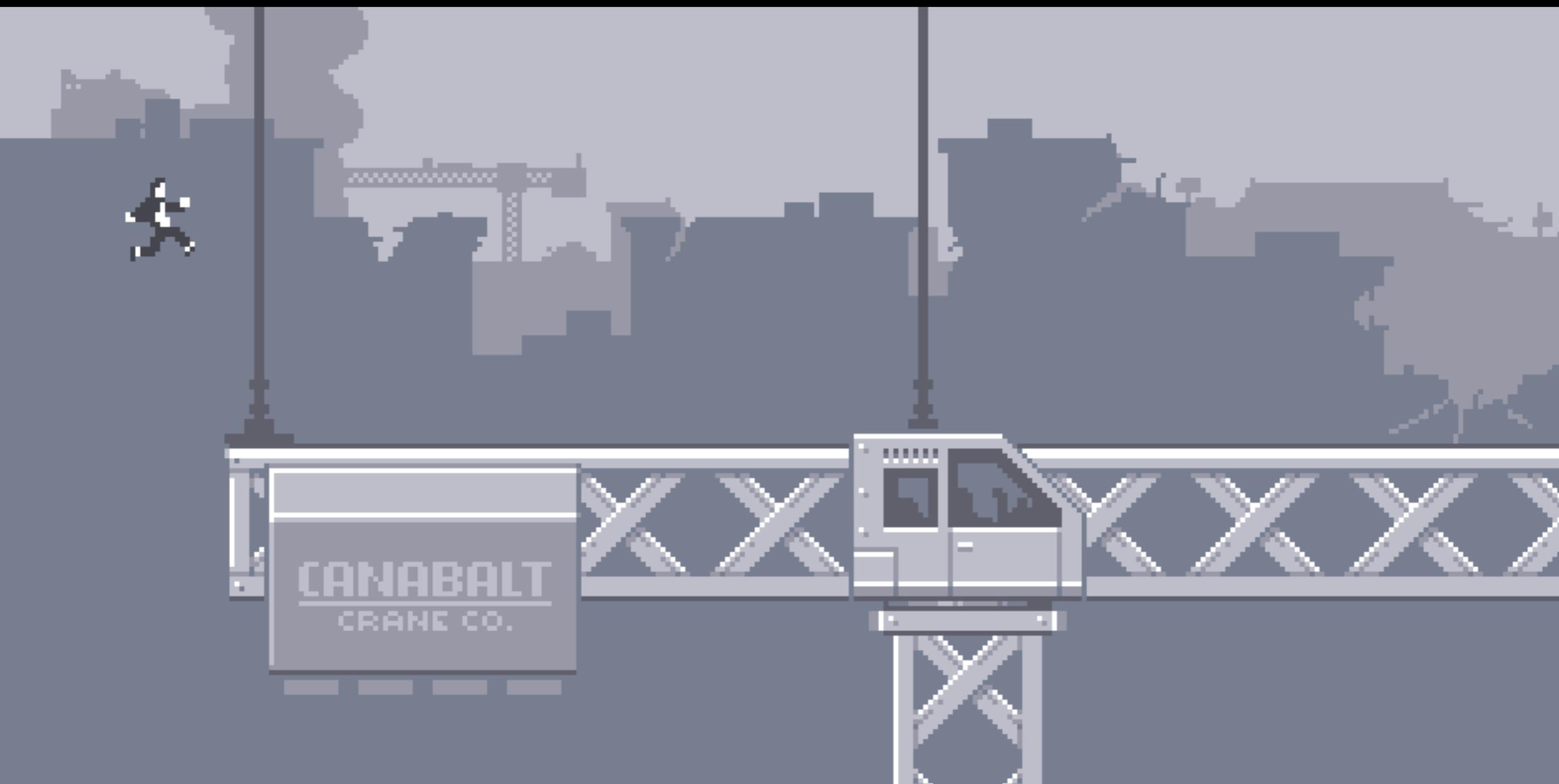
Finji

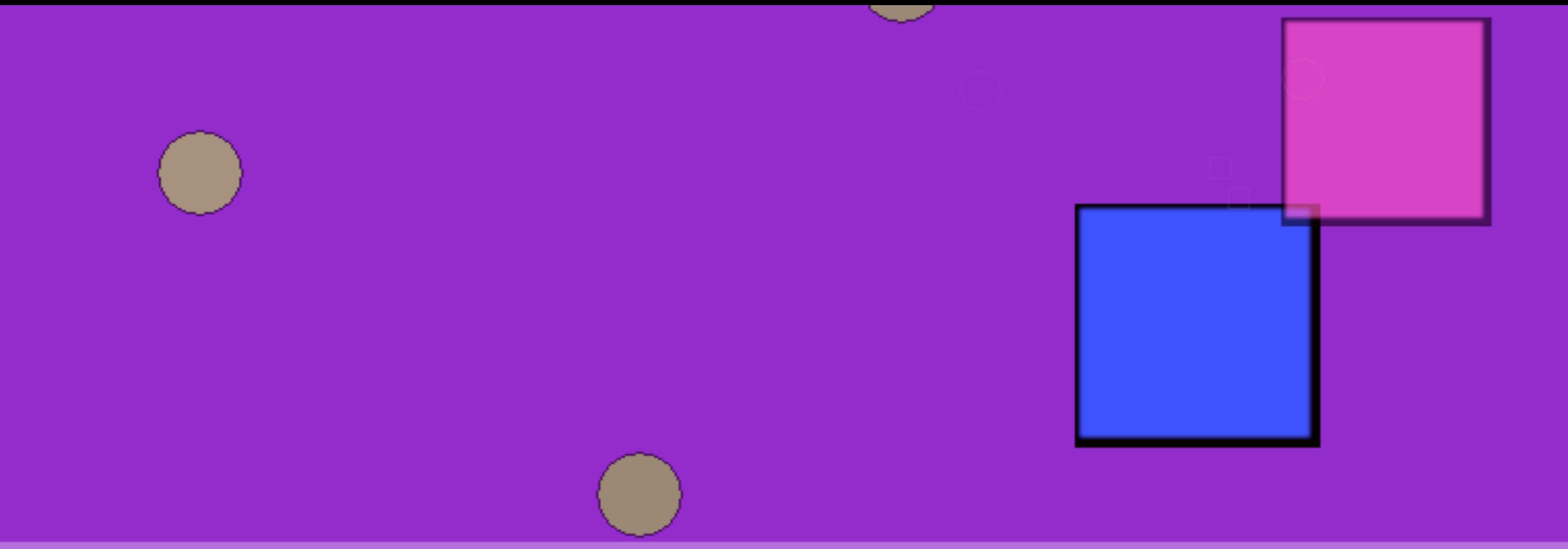
Eddy Boxerman

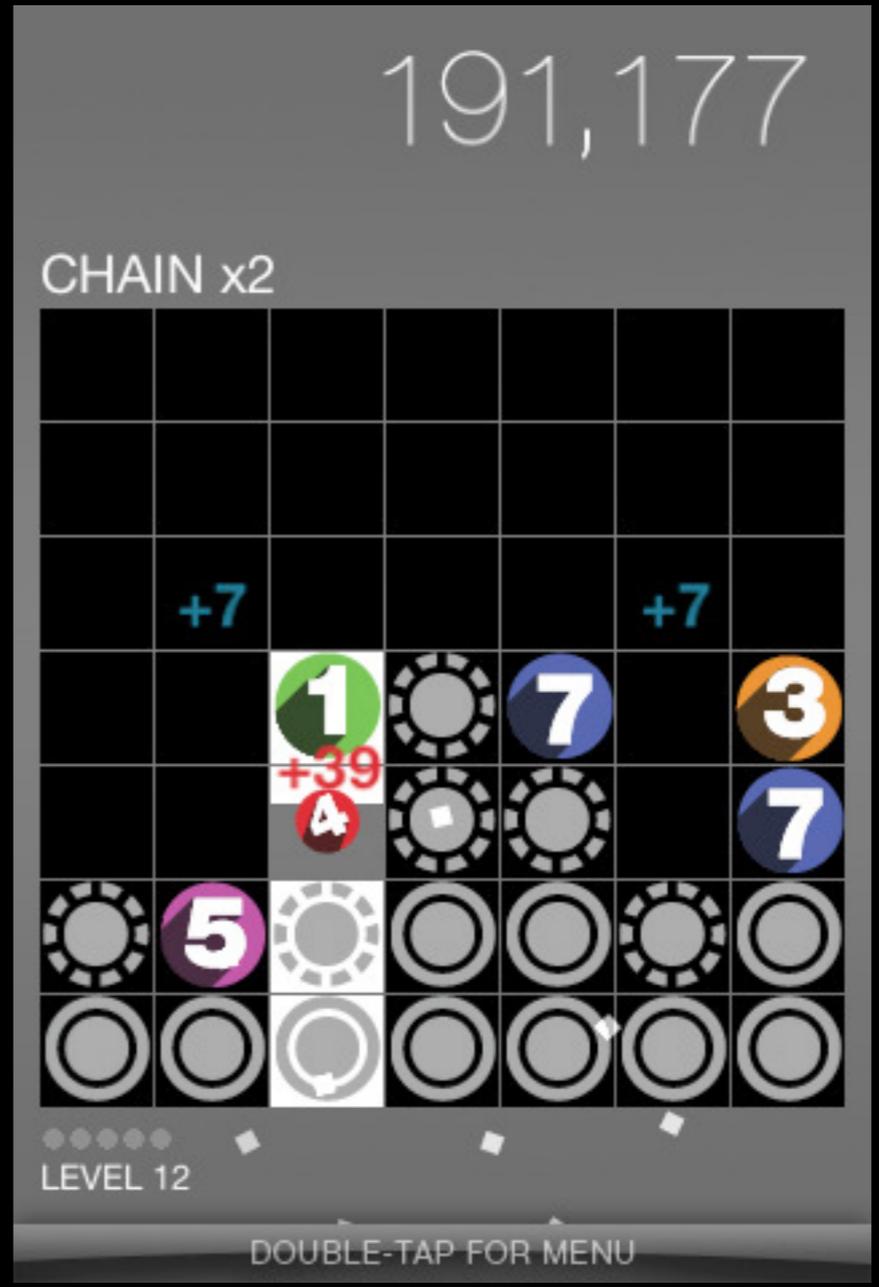
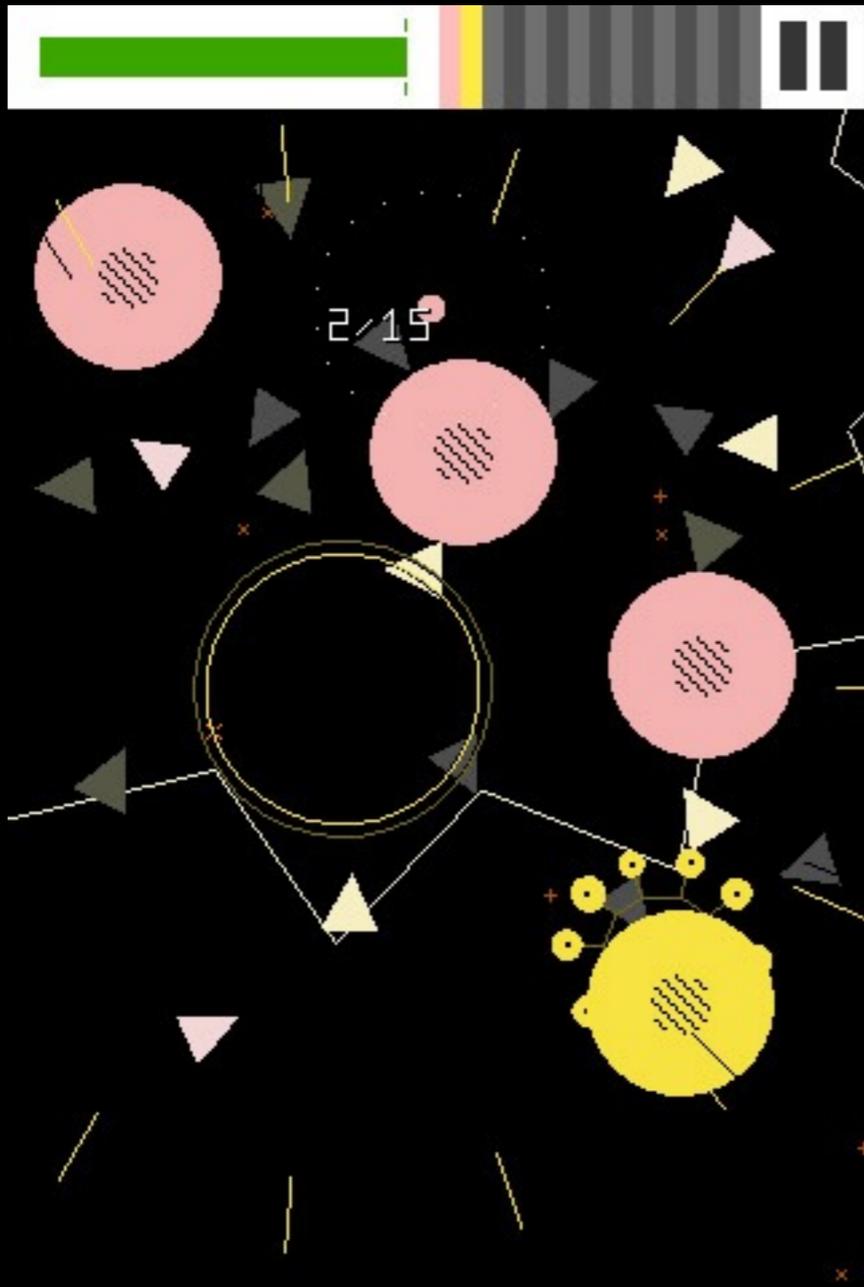
Hemisphere Games

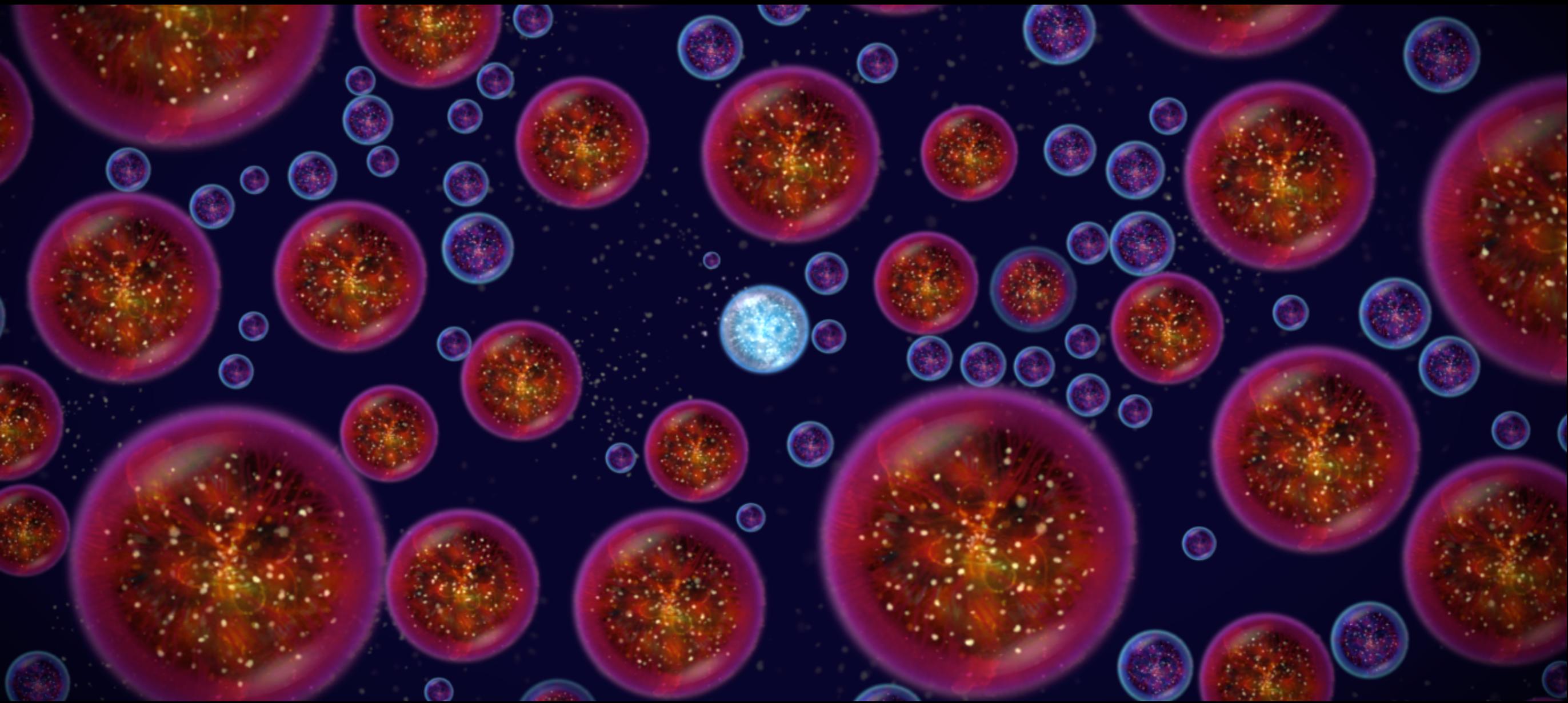
This is you.











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 are very real thing for small, independent developers

A few thoughts

Placing self-imposed, deliberate
constraints on the game and the
design process promotes

exploration

convergence

novelty

Terminology

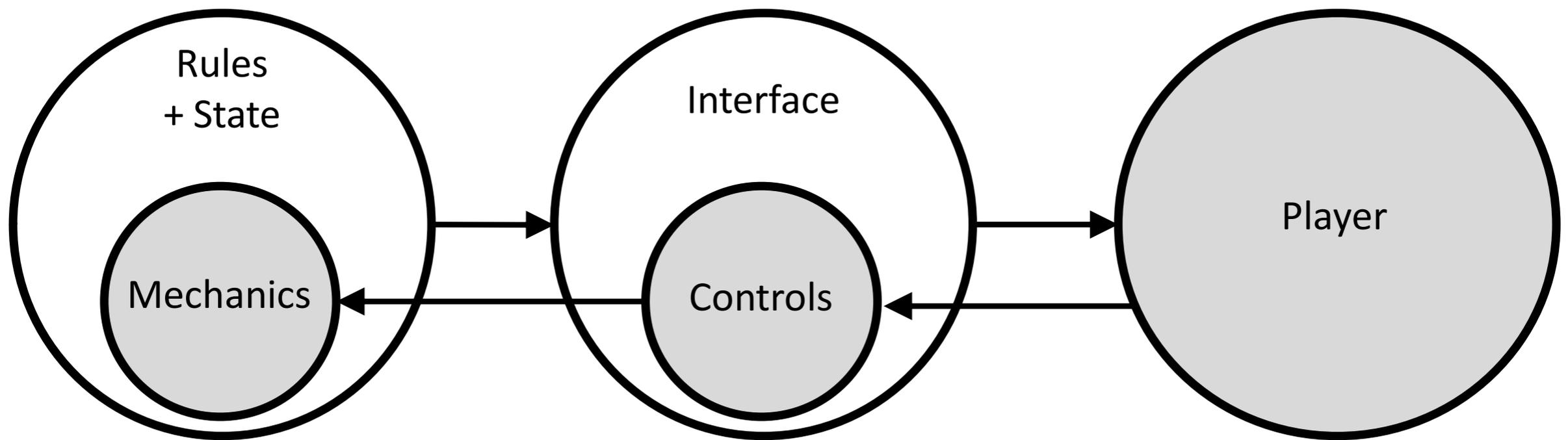
space + entities \rightarrow state

rules \rightarrow state changes

mechanics \rightarrow player invoked rules

controls \rightarrow direct manipulation

interface \rightarrow i/o feedback loop



... Etc. etc.

(read the paper
**“Towards Minimalist Game
Design”**)

Design studies

On process

Design studies

Part I

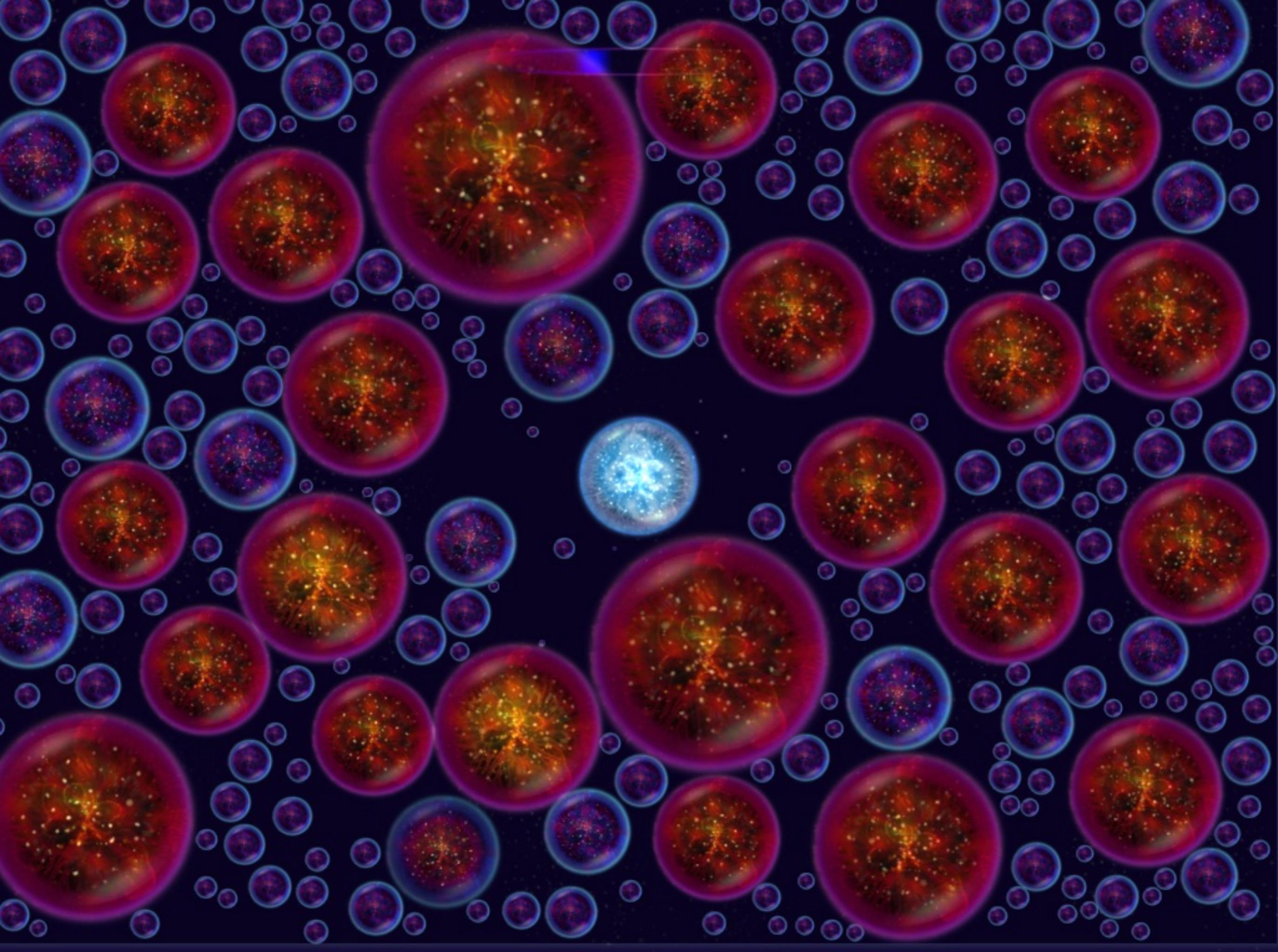
Osmos: some process & history

Part II

Grow 21: a game that designed itself

Part I

Osmosis

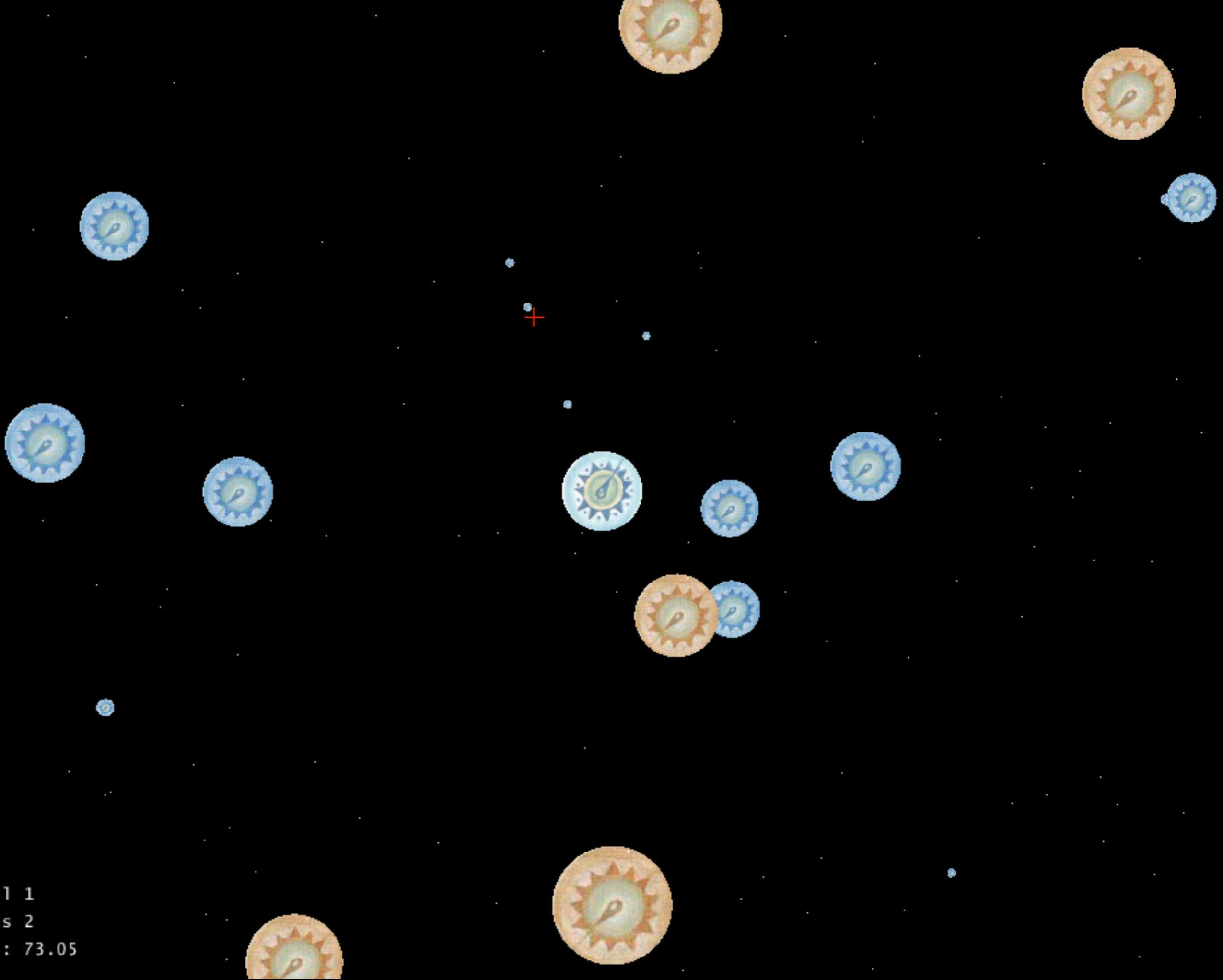


Dev history

2006

First two-week prototype

level 1
lives 2
size: 73.05



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 III

Grow21

“Do not make the player feel smart. Make the player smart.”

– Jonathan Blow

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– Jonathan Blow

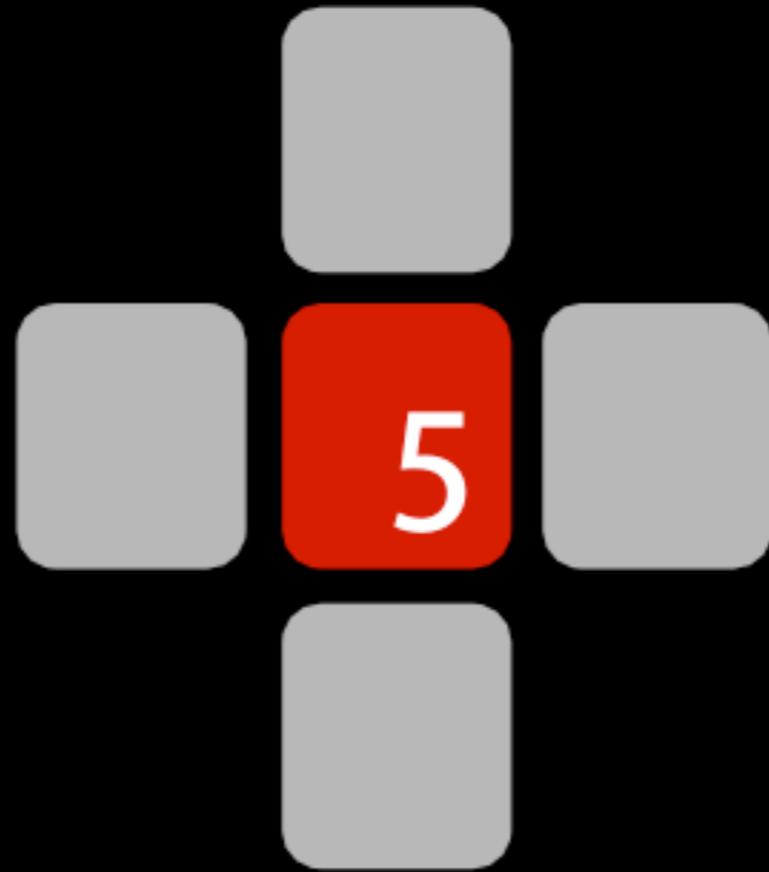
Make the player and the designer smart(er)

“Do not make the player feel smart. Make the player smart.”

– Jonathan Blow

Make everyone smart(er)





2 5







2

10

10

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

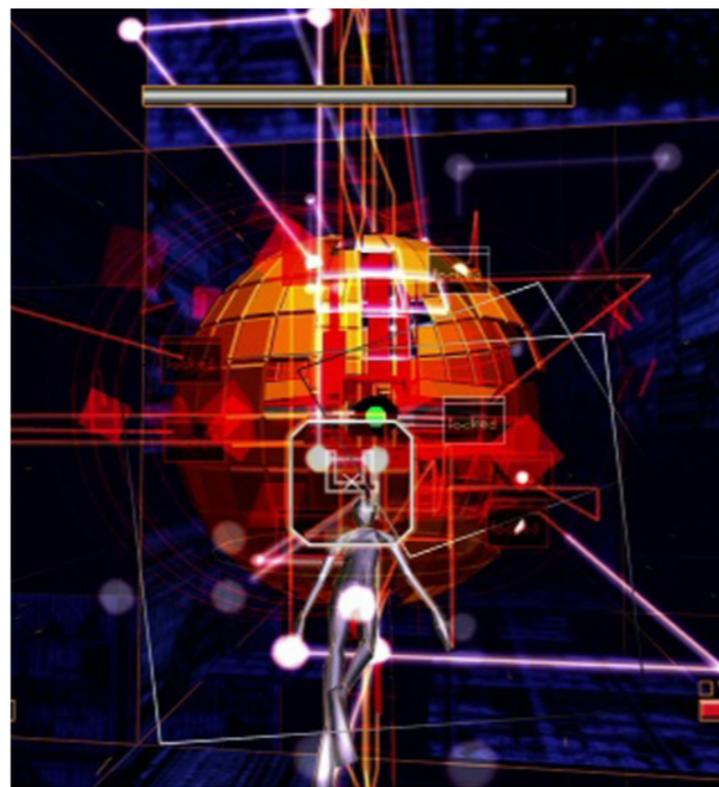
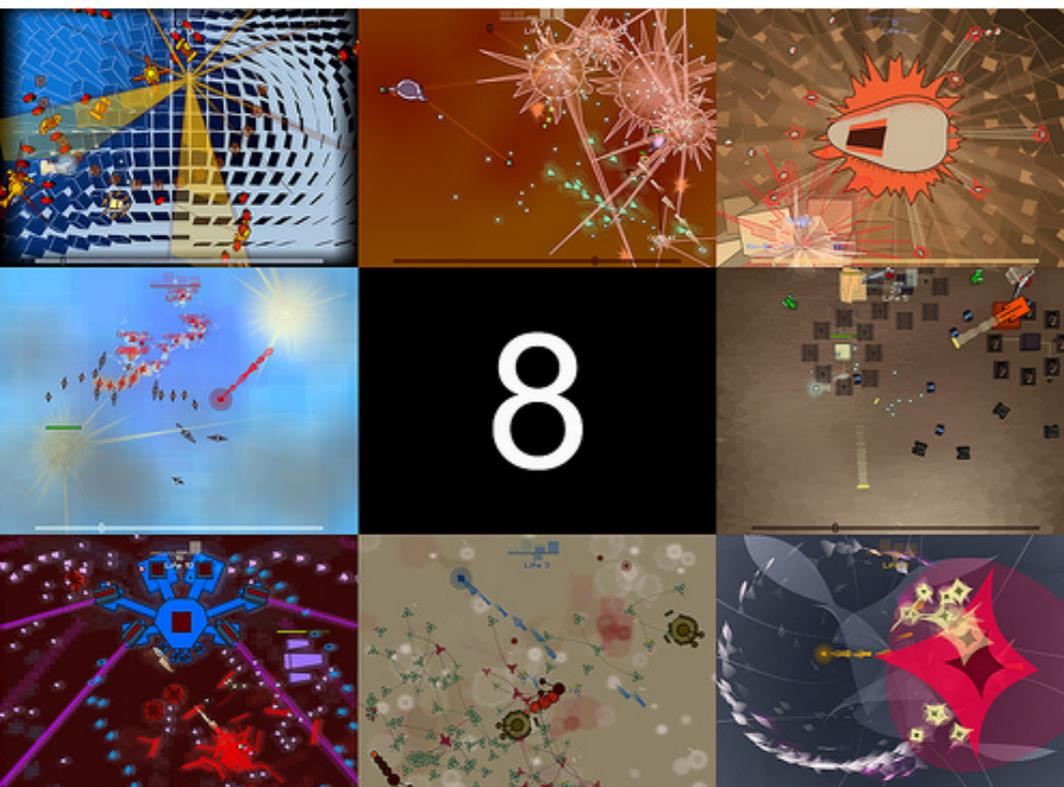
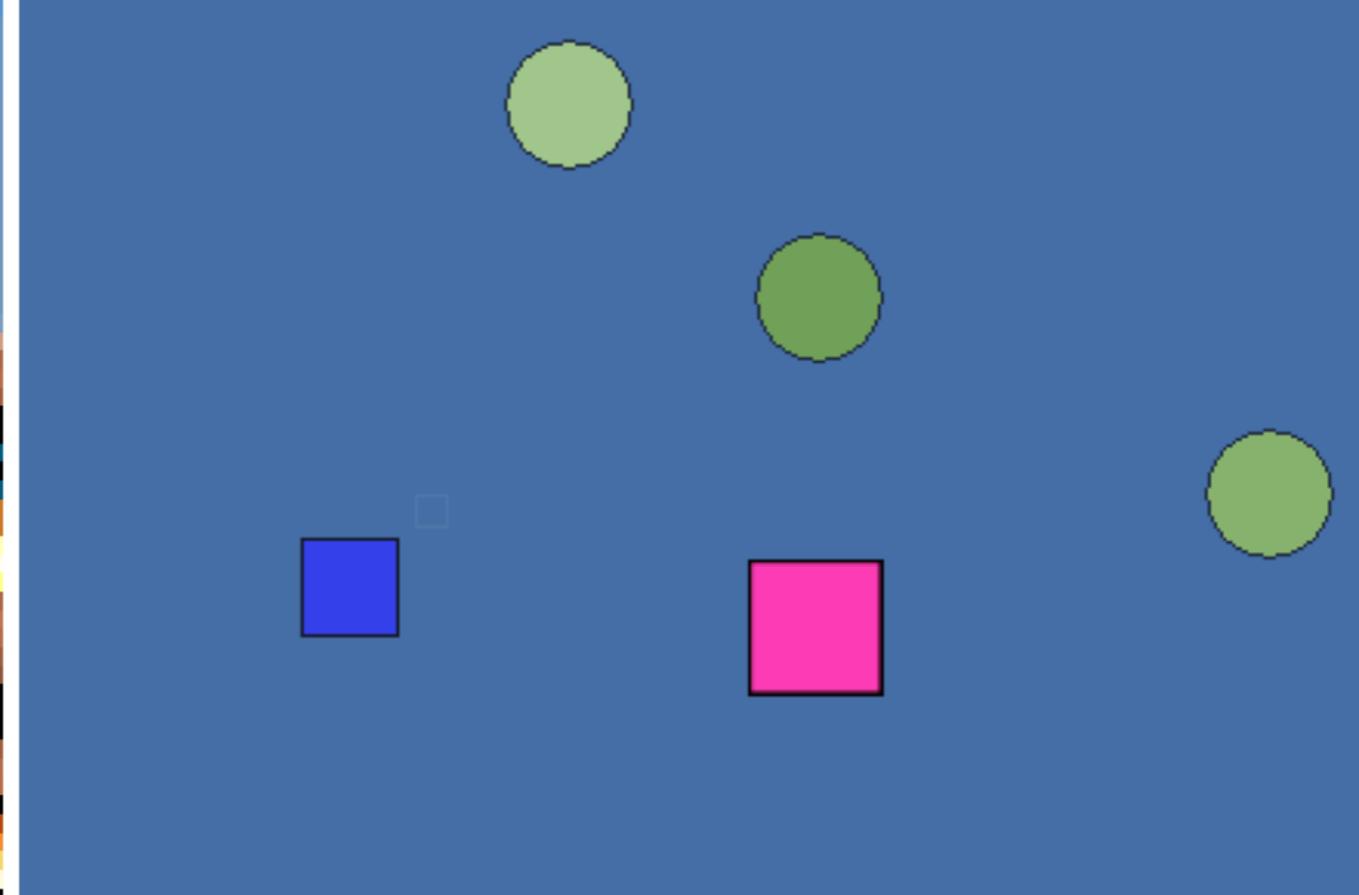
Simple controls

5

Systemically & visually abstract

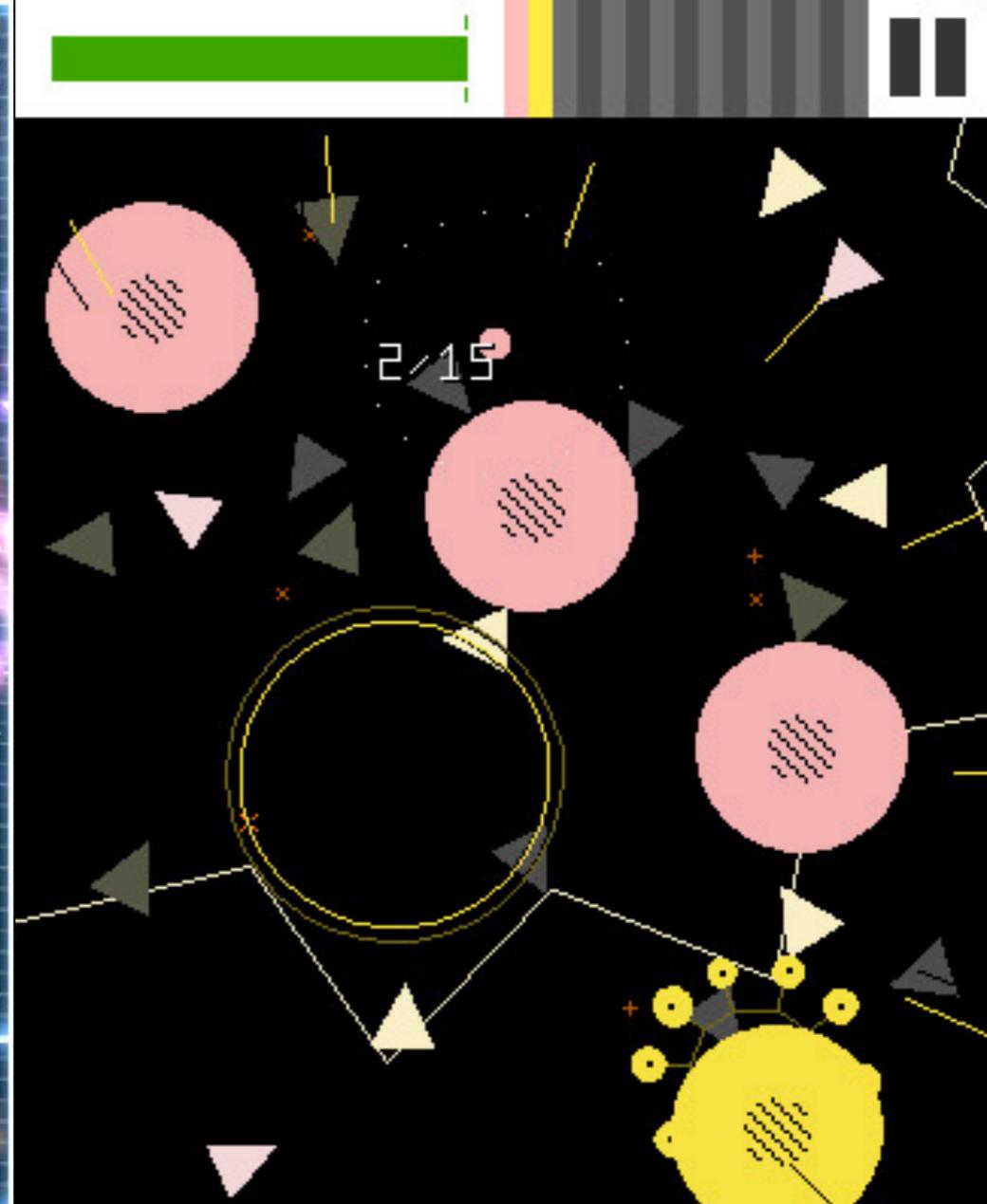
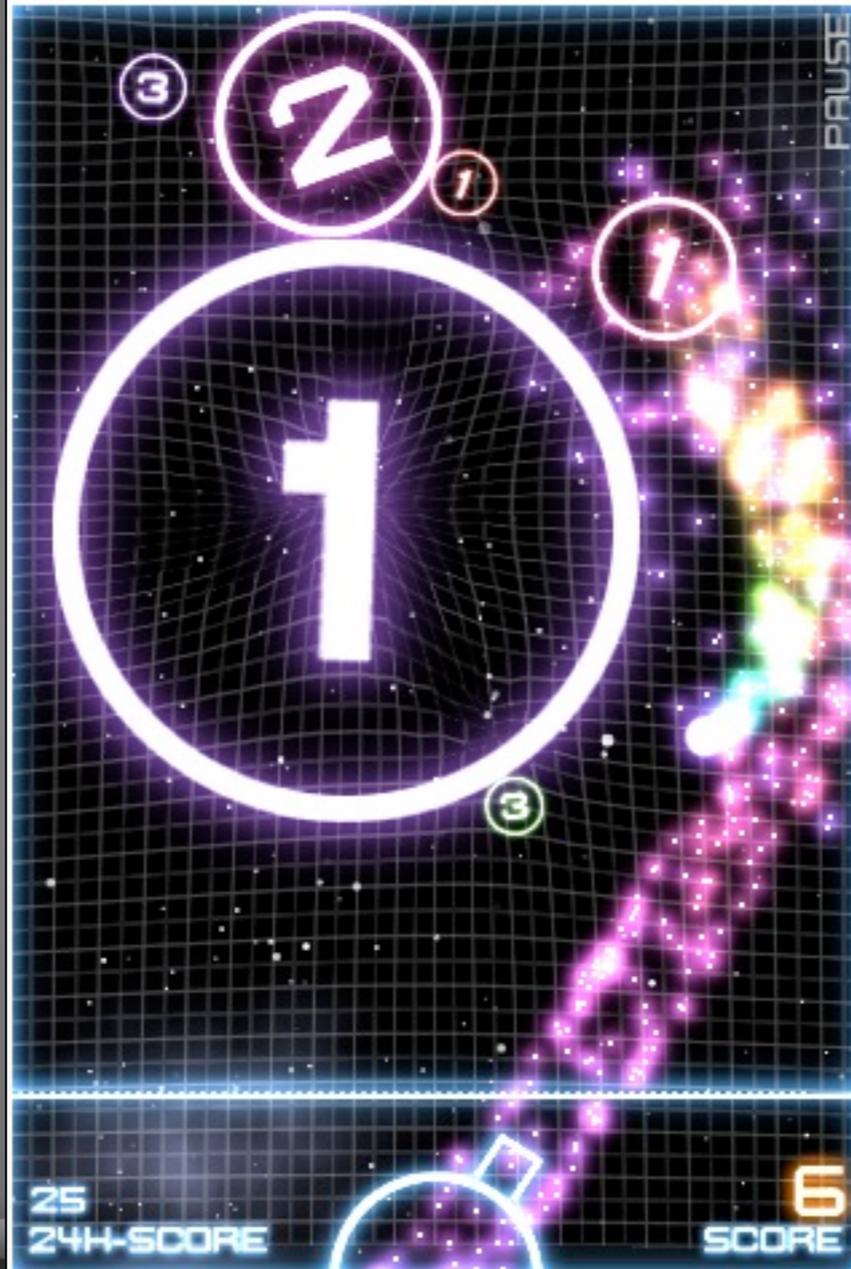
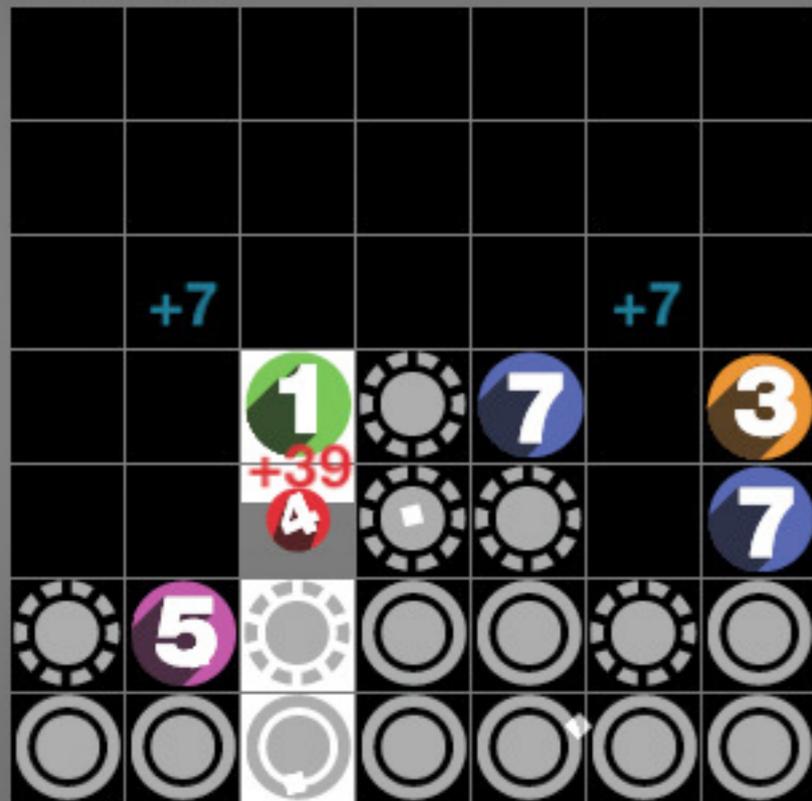
6

Maybe tightly coupled systems



191,177

CHAIN x2



Conclusions

1

Process is key

2

Context is palette

3

Perception is fascinating

Thanks

for your attention