

From Game Design to Prototype Workshop

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Tuesday 12.5.

- *Theme: Basics of Prototyping*
- 10-11.00 Lecture: Game mechanics & Prototyping
- 11-12.00 Group formation
- 13.00-13.30 Group Exercise: ‘Pre-prototyping’: Preparing a paper prototype
- 13.30-14.30 Group Exercise: Brainstorming & specifying a digital prototype + group responsibilities
- break
- 14.45-15.30 Prototyping process for Wed-Fri
- 15.30 Checkup on groups’ status

Theory of game mechanics & dynamics

Theoretical take

- Narrow definition of ‘game mechanic’: verb -> goal -> system response
- Local vs. Global mechanics:
 - Some mechanics are available locally for the players, i.e. temporally or spatially limited
 - Some are available globally, i.e. in every situation
- ‘Core mechanics’ = set of global game mechanics

Mechanics vs. procedures creates dynamics

- Mechanics is what the players use
- The game system instantiates *procedures*: randomness, rhythm, etc.
- The run-time behavior of your game system, it's *dynamics*, is a choreography of both
- So, you are designing system dynamics and giving your player means to produce input to it

**Designing
mechanics for
players
motivations;**

**giving players
means to play
in ways that
become
expressions of
their
motivations**



Analysis template

Availability in the Game as World		Core mechanics, i.e. a set of game mechanics available globally			Local game mechanic, i.e. game mechanic(s) available locally	
Status in relation game state & goal	GLOBAL Goal	Primary mechanic	Submechanic (s)	GLOCAL Goal	Modifier mechanic(s)	LOCAL goal
The above categories explained from the perspective of their relevance to player	The overall, highest order goal of the game.	What the player does in relation to the game state during a standard turn or sequence.	What action(s) the player has available to her as a consequence of the primary mechanic, or as instrumental means to perform the primary game mechanic.	Goal of core mechanics.	What the player does in a specific game state which occurs on some condition (related to location, player role, time, etc) specified in the rules.	Goal related to modifier mechanic which may be instrumental to various order goals.

Game mechanics & goals correlate to various physical, psycho-motoric and cognitive skills

Analysis template

CORE MECHANICS		
Primary game mechanics		Submechanics
Aiming & Shooting	&	Choosing
Arranging	&	Browsing
Arranging	&	Point-to-point Movement
Enclosing	&	Manoeuvring
Manoeuvring	&	Browsing
Manoeuvring	&	Browsing
Placing	&	Browsing
Point-to-point Movement	&	Browsing
Point-to-point Movement	&	Controlling

Library of game mechanics as verbs

Accelerating / Decelerating • Aiming & Shooting • Allocating • Arranging • Attacking / Defending • Bidding • Browsing • Building • Buying / Selling • Catching • Choosing • Composing • Conquering • Contracting • Controlling • Conversing • Discarding • Enclosing • Expressing • Herding • Information-seeking • Jumping • Maneuvering • Motion • Moving • Operating • Performing • Placing • Point-to-point Movement • Powering • Sequencing • Sprinting / Slowing • Storytelling • Submitting • Substituting • Taking • Trading • Transforming • Upgrading / Downgrading • Voting

Design takeaway from theory

- Mechanics put the system dynamics of your game in motion
- Focus on Global game mechanics
- However, adding a local mechanic might give your concept a nice twist
- Think about the *type of fun* your mechanics & dynamics intends to create = that becomes your games *aesthetics*
- Use the library of game mechanics to make new, innovative combinations

game mechanic

trading

what the players do

Players trade components with other players or the game system, or they buy them with game currency. Often combined with a choosing mechanic.

Examples: Buying a real estate or a hotel in *Monopoly*, changing cards from one's hand in *Poker*, buying clothes, weapons, etc. in *Grand Theft Auto* series.

Themes: Commerce, Colonization.

GameGame © Aki Järvinen 2005

game mechanic

building

what the players do

Assembling constructions to the game environment, often with the help of components and their combinations.

Examples: Building a city in *SimCity*, interior design in *The Sims*, planting flowers in *Animal Crossing*.

Themes: Urban planning, geometry, nature.

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game mechanic

choosing

what the players do

The player is presented with making an informed or uninformed choice (e.g. a guess) between a number of options.

Examples: Rock-Paper-Scissors, answering a multiple choice question in a trivia game, choosing where to place next mark or stake in *Tic-Tac-Toe* or *Roulette*.

Themes: Lotteries, Quizzes

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game mechanic

bidding

what the players do

Making an offer on a game component or an area of game environment possessed by the game system or another player.

Examples: Placing a bet, bidding for paintings in *Modern Art* or in other auction games.

Themes: Sports, contests, art, stock market.

GameGame © Aki Järvinen 2005

Prototyping

Before the prototype

- Prototypes do not generate ideas from scratch!
- You need to have **the small (big) idea**
- Prototyping equals setting off to **prove** something right/wrong
- **20-80 principle**: spend 20 percent of time available to build the toy, 80 percent to polish it!

Iterative design & development

- By prototyping, you can prove good ideas good, and bad ideas bad
- This means focusing on specific solutions and implementing them in the prototype
- Make a claim about the prototype - what does it set out to prove?
 - That you can make it?
 - That it is fun?
 - That with the right mouse button, this mechanic works?
- **Prototypes need to be Falsifiable!**

Rapid prototyping as iterative development

- Talk, Build, Talk Again, Build More!



Programming prototypes

- What's important:
 - Agility
 - Velocity
- What's not important:
 - Robustness
 - Elegance
 - Optimal code
- Prototypes are fragile by nature, meant to be redone

Designers / Programmers

Shigeru Miyamoto:

programmers should understand the goal, and help find the answer. The designer's job should be to set the problem, and work with the programmer to try and solve it.

- Designers tend to over-specify, programmers don't since they are working with the details
- Programmers should elicit questions about requirements from the rest of the team, which helps to discuss **the shared vision**

Build the Toy First!

- ‘Start with the core mechanic. Whether spring systems, swarm behavior, gravity, etc, it never took more than a few hours to get the basic theme up and running.

This “toy” should be the core mechanic of the game minus any goals or decisions. There is no win or lose state, just a fun thing to play with.’

Play around with the Toy

- Is it 'juicy'??
- You need to get fresh eyes & hands on your toy!
- On Thursday afternoon, we will do an across-the-groups playtesting session

Building on the Toy's fun

- Observe players and try to identify what they do with the toy
- = 'primitive play strategies'
- Then, try to create risk / reward sequences around them
- Example: If popping bubbles is fun, perhaps popping three in a row gives you points.
- ... Or, perhaps popping too fast takes the pin away for a while

Group formation

Group get-together

- Discuss your roles, what is it that you are able to contribute
- Discuss the languages/tools the team will use
- Establish one contact person per group as /Project Manager:
 - s/he will be Aki's main contact AND keeps track of the overall process & distribution of tasks

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Design constraints & Paper prototyping

Design constraints for your final concept

- Theme: *Transformation*
- 2D, playable on PC
- Keep it simple: Max. two (2) mechanics & goals
- Max. two (2) of these control schema:
 - Space bar
 - Mouse
 - Arrow keys

Sketch!

**‘Gather
Concept Art
and Music to
Create an
Emotional
Target‘**

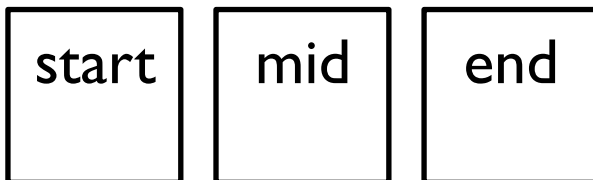
- Visualize your game mechanic as a sequence of game states:
 - Start state
 - Run state
 - End state
 - System response
- Aim for a **shared vision** to which everyone can commit, and feel passionate about
- But don't fall in love with your own ideas
- or if you do, fail early

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Concept template

Concept Template, pt 1



- *Working title for game*
- *Group name & students*
- Specifications according to constraints:
 - *Description of how the game displays the theme of Transformation*
 - *Storyboard, i.e. visualization, of core mechanics including the 'core' states: start state - run state - end state - system response*
 - *Specify the control schema*

Concept Template, pt 2

- Roles & responsibilities:
 - *Specify the first tasks for each group member, starting from Wednesday morning*

Work process & Prototype criteria

Prototyping process: The pipeline

- Idea
- Visualization
- Programming
- Animation
- Establish light procedures for file exchange, version control - **talk** them through!

Prototyping process: identifying needs & resources

- Do you need to develop an engine?
 - Sprite engine?
 - Physics engine?
 - Collision detection?
 - AI?
 - Etc...
- Graphics & sound:
 - What are the assets needed? When are they needed?
 - in what format?

Working process

- Establish max 2 hour working cycles where everyone will have specific tasks
- Evaluate results together, decide on new tasks - keep track of unfinished/unsolved tasks in a backlog
- At the start of each day, and before the end of Wed/Thu, around 15:30, Aki will go across the groups to get a status report of overall progress

Prototype criteria for Thursday

- No menu screen required
- + Yet, simple instructions - text and/or visual - have to be in place
- ‘Avoid missing ball for higher score’ (Pong)*
- + ‘This “toy” should be the core mechanic of the game minus any goals or decisions. There is no win or lose state, just a fun thing to play with.’

Prototype criteria for Friday

- + goal
- + end / victory condition
- + compiled into deliverable for group presentation
- You are allowed to fail - but fail gloriously!!
- Inglorious epic fail = insisting on your ideas & idiosyncrasies, not making others' lives easier, staying in your comfort zone
- Think positively, try to find an angle to your tasks that motivates you

Status updates

- Aki will conduct checkups (teams need to be in session in the same place):
- Thursday:
 - 9.30-10.00
 - 13.00-13.30
 - 15.30-16
- Friday
 - 10-10.30
 - 12-12.30

Wednesday 13.5.

- *Theme: Implementing game mechanics*
- 10.15- 10.45 Concept template debrief per group
- 11-12.00 Start working in parallel on your tasks
- 13-15.30 Working in groups: Implementing the game mechanic: 'Build the toy first!'
- 15.30-16 Day debrief, presentation guidelines for Friday

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