Comp 388/488 - Introduction to Game Design and Development

Spring Semester 2017 - Week 14

Dr Nick Hayward

Contents

Final Presentation & Report

- team presentation on Wednesday 26th April @ 2.45pm
- team report due on Wednesday 3rd May by 5.15pm

Final Assessment Outline

- final design of game from DEV Week…
  - *continue to develop your group's game concept*
- working game (as close as possible)
- explain choices made in the design and development
  - *initial choices*
  - *final implementation choices, options, patterns…*
- show and explain implemented differences from DEV Week
  - *where and why did you update the game?*
  - *how did playtesting influence your updates and designs?*
  - *perceived benefits of the updates?*
- how did you respond to feedback from DEV Week and onwards…
- anything else you consider relevant to your game
  - *within reason...*

n.b. 10 minutes maximum per group (11 groups in total)

Final Assessment Report

- report outline - demo and report

Project Status Report

- what is currently working?
  - *what is currently playable?*
- what is left to add or fix?
  - *features, characters, challenges &c.*
- who is working on what?
  - *logic, design, testing, research...*
- any special requirements for demo and presentation?

Teams

- Group 1 - Team Additup
- Group 2 - Team Addventure
- Group 3 - Team Adventure-LN
- Group 4 - Team Burman
- Group 5 - Team Cicale
- Group 6 - Team DBU
- Group 7 - Team Global Citizen Duo
- Group 8 - Team Golfing Trio
- Group 9 - Team Horror
- Group 10 - Team Plastico Sibaq
- Group 11 - Team Prestianni

Game designers

Designer example - Rob Pardo

- Pardo is best known as the lead designer of Blizzard's **World of Warcraft**
- various jobs and titles at Blizzard, including
  - *lead designer and Executive Vice President of Game Design*
  - *before becoming Chief Creative Officer until the middle of 2014*
- his best known games include, for example,
  - *World of Warcraft*
  - *WarCraft*
  - *StarCraft - now free to download*
  - *Diablo*
  - *Mortal Kombat*
- Pardo was instrumental in pushing a different concept for WarCraft
  - *more towards what we now consider traditional RPG games...*
- with the introduction of 3D for WarCraft III
  - *they tested various options for camera usage in this type of game*
- after experimenting with different angles and perspectives
  - *including a lower shooting position*
  - *they settled on the now familiar, traditional isometric view*
- assessment of camera options became a key factor in this game's development
  - *informing many of the early 3D prototypes for this game*
- prototyping also allowed Pardo and his design team

- *to iteratively determine the nature of units and heroes in the game*

- such concepts and designs helped shape the nature of the game
  - *its story, possible objectives, characters, units...*
  - *e.g. the development of WarCraft's races*

Games - Complete and Functional

check initial functionality

- eventually you'll need to allow testers and players to actually play the game
- there may be rough edges to your game
  - *perhaps even broken code in places*
  - *but you should be working towards a functional game...*
- e.g. some form of a test version of your game
  - *that allows an unfamiliar player to experience and play your game*
- a lack of guidance and prior knowledge of the game's design and development
  - *often helps in this determination of functionality*
- test players should be able to interact with your game
  - *interact without your influence or interference*
  - *might include paper prototypes or an early example of the digital game itself*
- how do we determine if a game is functional?
  - *often a matter of subjective judgement*
- a useful heuristic to determine a functional game
  - *consider if a test player can complete a session without a developer's guidance and advice*
- after determining the functional nature of a game
  - *begin a consideration of a game's functionality compared to completeness*
- even if a game is functional, there will still be aspects that are incomplete

- *including unintended loopholes, dead ends, glitches...*
- *some may be useful, others popular with test players &c.*

Games - Complete and Functional

check completeness

- test every aspect of a game to ensure completeness
- checking for incomplete parts of our game
- might include issues with a game's logic, rendering, performance...
  - *or a result of poorly defined rules and procedures*
- for an identified incomplete game section
  - *initially begin by considering the defined rules for the game*
- checking the game's design document and prescribed rules
  - *ensure there are no mistakes, contradictions, or gaping holes in the conceptual logic*
- after fixing an identified issue
  - *also need to check for any knock-on effects with other parts of our game*
- need a few testing sessions and checks
  - *helps ensure completeness has been initially considered and resolved*
  - *often becomes a rolling series of checks, updates, and re-testing*
- also determine issues as play testers become involved in the process
  - *detect issues that are not necessarily a result of ambiguous rules*
  - *perhaps a result of unintentional gaming options*
- well-known example of this unintentional feature or issue is the *spawn camping* problem. e.g.
  - *Camping in Games*
  - *seen in FPS games, such as Call of Duty and Rainbow Six Siege*

- *not unique to FPS...*

Games - Complete and Functional

check for unintentional features

- another consideration on our way to a game's completeness
  - *the hunt for unintentional features in gameplay and features*
- looking for a flaw in our game
  - *a player may exploit for an unfair or unwarranted advantage*
- player manipulation of a game is crucial to the experience
  - *in essence to simply win a game*
- unintentional features often occur to the detriment of the game itself
  - *often ruins the sense of play in the game*
  - *may prejudice one player over another in certain environments*
- game may not be considered complete whilst such issues persist
- many players enjoy tracking and recording such unintentional features
  - *may become a fun aspect of the gaming experience*
- well-known example arose in the game *Deus Ex*
  - *originally released in 2000*
- *Deus Ex* includes an explosive weapon, a grenade
  - *a player could attach this weapon to a wall*
  - *then use them as a make-shift ladder to climb walls*
  - *also able to climb to unintended places on the game's map*
- as a result, certain levels became considerably easier

- *less challenging and interesting than originally intended*

Video - Gaming Issues

Deus Ex climbing

Games - Complete and Functional

unintentional vs intentional features

- unintentional issues may pose problems for game designers
  - *they may also become intentional features to many players*
- quirks and perceived issues may still become a benefit
  - *perceived as an asset to the underlying gameplay*
- again, consider the *spawn camping* problem
  - *many examples online of gamers who like this type of game feature*
  - *e.g. many Rainbow Six Siege players are in favour of this feature*
- consider MMORPGs and role of players
  - *often such games do not include a clearly defined ending*
  - *create a sense of community*
  - *foster a long term social setting for players.*
- for MMORPGs, many players dislike killing in the game
  - *malicious killing of other players discouraged*
  - *such player killers seen as detrimental to fun, harmony, enjoyment...*
- developers continue to modify such online worlds to discourage **player killers**
  - *various options in games such as Asheron's Call, EverQuest, Ultima Online...*

Games - Complete and Functional

Asheron's Call

- in *Asheron's Call*, which finally finished on 31st January 2017
  - *designers originally created a system of allegiance and fellowship*
  - *new players were given the chance to swear allegiance to another player*
  - *might receive protection, money, weapons &c. in the game*
  - *this relationship became bi-directional with each player gaining...*
- further mods introduced to *Asheron's Call*
  - *e.g. prevented a player from directly attacking another playe*
  - *also modified the underlying story for this game*
  - *provided players with a share of magic and protection of Dereth*
- some players founds this too limiting - they missed being *player killers*
  - *they saw the game as overly boring, lacking in challenge &c.*
- further modification was added by the developers
  - *allowed players to voluntarily convert to player killer status*
- happy medium achieved in this game for many players
  - *through testing and feedback*
  - *by default, players were free from the threat of being killed*
  - *player killers could engage each other*
- a great social community grew up around this game
  - *until its servers were finally closed down earlier this year*

Video - Gaming Issues

Last moments of Asheron's Call

Games and development

quick exercise

Choose at least one of the following games,

- Asheron's Call
- Asteroids
- Deus Ex
- Journey
- Mario Kart

or use your own game idea and concept.

Then consider the following questions:

- as a designer and developer, which aspects of the game would you leave open to change during testing?
- how do you integrate these changes into your game before publication?
- what is the minimum you consider necessary for this game to be functionally complete?
  - *in effect, ready for initial testers and players?*
- can you identify unintentional features and issues that might arise from knowledge of similar games?

Games - Complete and Functional

a dead end

- another type of flaw or issue that may occur in our game
  - *a perceived dead end in gameplay, functionality...*
- a noticeable difference when compared with unintentional features
  - *do not allow players to gain an advantage or possible exploit in the game*
- a *dead end* is something we need to fix as quickly as possible
- developers of adventure games commonly encounter this issue
  - *Zork a bench mark example*
  - *many such as Sierra's King's Quest, Space Quest...*
- for some players, dead ends have become a nostalgic recollection
  - *they became a part of the expected gameplay for original adventure titles*
- we may start to consider a game as complete and functional
  - *internally complete*
  - *player can operate a game without compromising gameplay or functionality*
  - *considered an objective and subjective question*
  - *game is not complete - room for improvement*
  - *lingering issues, flaws, dead ends...*

Video - Complete and Functional

Dead End Dancer in King's Quest

Games - Systems and Balance

concept of balance

- balance is a concept in game design that is regularly mentioned
  - *but often misunderstood or poorly applied...*
- a common underlying issue with this concept of balance for game design
  - *we may abstract this concept*
  - *but it still needs to be applied in specific cases...each and every time*
- to begin balancing the design and development of a game
  - *begin by ensuring that it meets the specified player experience goals*
- we're checking the breadth and scope of such goals
  - *i.e. have they been met relative to the game's complexity?*
- also checking for any unnecessary or undefined results
- such checks and balances may also be influenced by the players themselves
  - *e.g. single player versus multi-player options*
- for *multi-player* options, we may need to ensure
  - *a game's resources, gameplay, and goals are even as the play begins*
- for *single player* options, we may simply consider
  - *a balance between a player's skill level and the game's challenge*
- issues of balance can become problematic for designers and developers
  - *consider requirements of such goals relative to our own preferences, desires...*

- very nature of trying to balance many divergent elements within a complex system
  - *has potential to create many headaches for designers and developers*

Game designers

Designer example - Rob Pardo on design and balance

- recurrent use of iterative design for each game title and series at Blizzard
  - *key aspects of game design for Pardo...*
- iterative modification of game variables
  - *a key factor to the success of their designs*
  - *helps strike a balance in the way the game performs and plays*
- this process continued for their titles right up to the initial release
  - *new spells in WarCraft III just before public release*
- holes and options still remain open in public beta
  - *allows suggestions from testers, pro gamers to be integrated*
- testing and iterative design continues long after a game's initial release
  - *StarCraft testing and development continued for 2 years after release*
- this included perceived imbalances in the game
  - *patches or updates &c. to reflect loopholes and glitches*
- any of these issues were discovered and shared by the gamers
  - *then required updates to re-balance the game*
- Pardo was also proactive in creating a new role at Blizzard
  - *for analysing and monitoring online player behaviour and usage*
- this so-called *game balance designer*
  - *might check statistics and patterns recorded for a given game*

- *then start to test adjustments for applicable part of the game*

Games - Systems and Balance

symmetry

- initially, symmetry in gaming is a simple concept
- give each player the same resources and conditions as they game begins
  - *along with information about the story, gameplay &c.*
  - *a game should be symmetrical...*
- classical examples of initial symmetry include draughts, chess...
  - *many turn-based examples include initial symmetry*
- symmetry is a particularly useful concept
  - *we may modify as necessary to create interesting and fun games*
- a few changes here and there to such perceptions of symmetry
  - *the nature of a game may be easily changed and updated*
- for symmetrical games such as draughts...
  - *still the potential for loss of symmetry*
  - *e.g. who gets to move first?*
  - *such a game may become asymmetrical quickly*
- may negate any perceived advantage of moving first
  - *e.g. chess limits first move to a pawn or knight*
- such moves are rarely game changing
  - *potential still remains for challenge for an expert player*
- a similar option to maintain and persist symmetry
  - *we may introduce a concept for chance elements in a game*

- benefit of reducing the potential for one player to dominate gameplay
  - *may reduce unintentional effects of starting first in a symmetrical game*
- chance elements may include, e.g.
  - *random options, scaled variants, emergent systems...*
- trying to ensure there is reduced potential for biased gameplay

Games - Systems and Balance

asymmetry

- we may also offer our players asymmetry, e.g.
  - *varying attributes, abilities, resources...*
- also vary a game's rules, and its underlying objectives
  - *to fit different players' roles and requirements*
  - *game has switched to become asymmetrical in nature*
- a perceived fundamental characteristic of such asymmetry in games
  - *need to maintain a balance of fair gameplay for each player*
- racing games, such as Mario Kart, are great examples
  - *e.g. variant attributes, skills, and perfomance for each kart and character*
  - *creates balance for a player relative to skill levels and experience*
- each player should still retain the potential to win the game
  - *regardless of the variant, asymmetrical factors...*
- asymmetry becomes a useful option for us as designers and developers
  - *e.g. creating games that model behaviour, stories, and gameplay on real life examples*
  - *such examples will commonly be asymmetrical*
- vast majority of video games are asymmetrical
  - *e.g. RTS games such as Command & Conquer*

Games - Systems and Balance

create a balance

- for most games we create and complete
  - *aiming for a balance between challenge and player's skill level*
- naturally vary from player to player
  - *for most instances we're clearly aiming at a middle ground*
  - *creating a median skill level*
- already seen examples of *classes* in **Diablo**
  - *different players may assume varied roles in this game*
- consideration of player skill levels in **Civilization**
  - *uses varied levels of difficulty*
  - *includes certain defaults for properties and values*
  - *e.g. cash reserves vary from chieftain to emperor*
- **Civilization** uses varying skill levels
  - *helps to customise properties and attributes in the game*
- balancing a game for *median* skill level requires extensive testing
- testing each game to see where the balance lies for such properties and attributes
  - *customary to start with more experienced, hard-core players*
  - *start at perceived highest skill level*
  - *helps set high mark for the game's skill levels*
  - *then test and set beginner, lowest skill level*
- use high and low boundaries for skill levels
  - *becomes easier to test varied properties and attributes*

- *keep testing until median is established and set*

- skill levels need to be considered relative to a game's varied stages
  - *customary to incrementally increase difficulty*
  - *whilst reducing difference between skill levels for players*
  - *scale for skill levels starts to shrink...*

Games - Systems and Balance

balance options

- possible to consider balance in a game as a constituent part of the underlying logic
- as a game progresses, we may establish certain conditions
  - *to allow the game to incrementally modify player skill levels*
  - *adapt a game to match a player's skill level*
  - *e.g. as they improve and advance through various challenges modify game*
- examples include *Tetris*, *Gran Turismo*, *Mario Kart*...
  - *Tetris modifies speed of block falling to match a player skill level*
  - *speed becomes a coefficient of difficulty and challenge*
- racing games show subtle modifications to such skill levels and perceived difficulty
  - *Mario Kart introduces a semblance of self-balancing to the racing system*
  - *helps create a fair sense of challenge relative a player's skill level*
  - *a proportional representation between speed and skill for the player and the computer*
  - *e.g. as a player gets faster, computer controlled cars will speed up*
  - *if a player crashes or slows dowm, other cars may slow down*
  - *ensures there is some gameplay left for a particular level or track...*
- balancing creates a sense of challenge
  - *whilst maintaing a semblance of fun and achievement...*

Games - Systems and Balance

modular options for balance

- to help us develop a balanced game consider various parts that constitute the game itself
  - *sub-components that combine to form the game*
  - *rare to design a game as a single, monolithic unit*
- we can start to consider balance in smaller units
  - *customarily relate to smaller, inter-related subsystems*
  - *subsystems that coalesce to form our game*
- we may consider our game as a series of discrete functional units
- by clearly defining each unit
  - *helps us identify its functionality and requirements*
  - *its relations to other units in the game*
- consider a common RPG (role-playing) game as a group of subsystems
  - *e.g. as combat, movement, resources...*
- each subsystem forms a part of the overall game system
  - *may also present obvious issues as we try to balance the system*
  - *e.g. one module or subsystem that is interconnected with another*
  - *changes to one may precipitate an unexpected cascade in another*
- we may start by isolating each subsystem
  - *abstracting their usage and implementation from the whole*
- testing and configuring each subsystem
  - *trying to ensure functional independence from the overall game*

- *crucial for developing a large scale game...*

- we're following many standard practices for object-oriented programming
- by clearly defining the I/O for each functional unit
  - *able to more effectively analyse and monitor each unit*
  - *i.e. as we balance and maintain the overall game system*

Games - Systems and Balance

balance and focus

- balance may also be derived from a clearly defined sense of purpose
- a game's focus and goals helps set clear requirements and parameters for I/O
  - *whilst helping to define the modular components for the development*
- identification of purpose helps assign a clear usage and structure
  - *to a game's development of underlying modular components*
- consider why you have certain components in your game system
  - *what is a component's purpose?*
  - *is this purpose unique to the component?*
  - *will the game work without this component?*
  - *...*
- a component's purpose needs to be
  - *clear, well-defined, and logical*
  - *suitable for the type of game being developed*
- each component in a game should have a purpose
  - *where possible no component should have more than one primary function*
- e.g. start by considering a game's mechanics
  - *how to dissect them into fundamental parts for the game's requirements*
  - *what is the purpose of such mechanics?*

- by clearly defining such constituent parts we're trying to avoid
  - *a development scenario with a mix of rules and subsystems*
  - *a mess of tangled rules, ideas, options &c.*
  - *e.g. different conflicting ideas, concepts &c.*
- if we then need to modify an aspect of the mechanics
  - *perhaps update or remove an element*
  - *we only need to modify one aspect of the gameplay*
- balancing a game's mechanics, and gameplay by association
  - *becomes more systematic and methodical rather than trial and error*
- this pattern of balance and focus also helps promote
  - *incremental development, modification, and testing*

Games - Systems and Fun

choices

- *fun* balanced against a game's sense of challenge or conflict
  - *helps provide required hooks in a game*
  - *often simply emotional attachment to a game*
- strive to captivate players
  - *helps promote a sense of connection and interest in a game's outcome*
- Sid Meier famously noted,

> *Games are a series of interesting choices (decisions)...*

- often derided as overly simplistic
  - *still a semblance of truth to this sentiment...*
- as a player progresses through a game, they are constantly making choices
  - *some big, others small*
  - *together they help a player make sense of the gaming world*
- as game designers and developers
  - *strive to provide a sense of consequence and meaning to these choices*
- real world experiences also help shape our perception of such choices
- if there is little sense of consequence or feedback to a choice or decision
  - *we start to question its validity and merit*
- such examples start to become a distraction

- *definitely something we want to avoid in most games*

- start by trying to inform a player
  - *an awareness of potential consequences of decisions and actions*
- e.g. consider introducing a simple dilemma that challenges the player
  - *helps them consider certain choices more carefully*
- calculation of a choice relative to its potential outcome
  - *useful way to challenge our players throughout a game*
- often subtle in nature
  - *it's still a useful option for maintaining interest in gameplay*

Games and development

quick exercise

Choose at least one of the following games,

- Asheron's Call
- Asteroids
- Deus Ex
- Journey
- Mario Kart

or use your own game idea and concept.

Then consider the following questions:

- what are the various opportunities for challenge and play present in your chosen game?
- what are examples of individual challenges in this game?
- are there any repeating challenges or dilemmas in this game?
- how do these choices or challenges help create a sense of fun in the game?
  - *and, as a consequence, act as a hook for the player*

Games - Systems and Fun

considering choice

- adding choice to a game will often improve competition, challenge...
  - *may also present a hook for our players*
- adding choice to general gameplay without the potential for consequence
  - *may simply remove any chance of player engagement*
- to increase the potential for this player engagement
  - *choice should present opportunity to change or modify a game's direction*
- each choice should present the player with a possibility
  - *a positive or negative outcome*
  - *e.g. to advance player to the end of the game...*
- this becomes the common *risk and reward* strategy
- Meier's comment on *interesting choices or decisions*
  - *encapsulated this concept of a series of choices*
  - *choices that flowed throughout a game*
- in contrast to decision making in books and movies
  - *a player may interactively experience such choices for themselves*
- need to ensure that we provide the right game environment
  - *one that permits such choices and decisions by the player*
- start by simply deciding types of player decisions
  - *e.g. decisions a player must make in a particular game*

- *perhaps based on puzzles, motor kills, perception...*

Games - Systems and Fun

meaningful decisions

- regardless of the choices offered in a game
  - *need to ensure decisions are meaningful and relevant*
- focus initially on the main objective of the game
  - *then structure your game to help your player achieve this end goal*
- review your game and its choices
  - *check for minor or tangential decisions*
  - *if present, revise game and choices*
- may need to reconsider these decisions and choices
  - *so that they matter to the context of the game*
- a balance should also be struck between the types of choices offered
  - *with the simple intention of creating balance in your game*
  - *e.g. recurring action based choices may get tiresome and annoying*
- consider the narrative structure with its abyss and summit
  - *acts as a good indication of variation in story and gameplay*
- decisions and choices may often follow a similar pattern

Video - Meaningful Decisions

three questions

Games

- Asheron's Call - Wikipedia
  - *Witness the last moments of Asheron's Call...*
- Call of Duty
- Command & Conquer
- Deus Ex Wiki
- King's Quest
- Rainbow Six Siege
- Space Quest
- StarCraft
  - *free download*
- World of Warcraft

References

- Bogost, I. *Persuasive Games: The Expressive Power of Videogames*. MIT Press. Cambridge, MA. 2007.
- Huizinga, J. *Homo Ludens: A Study of the Play-Element in Culture*. Angelico Press. 2016.
- Poundstone, W. *Prisoner's Dilemma*. Touchstone. New York. 2002.

Videos

- King's Quest, Dead End Dancer - YouTube
- The last moments of Asheron's Call - YouTube
- Three Questions - Monty Python and the Holy Grail - YouTube