Foundations of Interactive Game Design (80K)

week seven, lecture one
Today

- Demo of *E.T.*
- Discussion of agency and intention
- Demos of *Mirror’s Edge* and *Passage*
- Discussion of operational logics
E.T.

- Repeatedly called “the worst video game of all time”
- Blamed for early industry’s crash
- What makes it so very bad?
E.T.’s problems

• Might be development time — five weeks, difficult platform, playtesting unlikely

• Might be fictional world — does E.T. do anything in the movie that we want to do?

• Might be almost anything — let’s try playing
E.T.: The Extra-Terrestrial

- Running in emulator
- Controls: F2 starts, arrow keys move, spacebar is contextual action (icon at top)
- What do you notice?
E.T.’s problems

- There might be fictional world problems — there are no pits in the movie
- There are definitely playability problems — manual includes *three* discussions of levitating out of wells
- Creates *agency* problems

*Raiders* was better
Agency
1997 — Hamlet on the Holodeck

How do we combine what games have . . .

Janet Murray asks . . .

with fiction?
1997 — Hamlet on the Holodeck

• Good games don’t just have *activity*

• Good games don’t just have *participation*

• Good games have “the satisfying power to take meaningful action and see the results of our decisions and choices” — *agency*
1999 — Formal Abstract

Design Tools

What makes *Mario 64* so good?

Doug Church asks . . .

And how can understanding that help us formalize concepts for discussing game design?
1999 — Formal Abstract Design Tools

• *Mario 64* has simple and consistent controls offered for movement, & predictable physics, enabling *intention*

• “A clear reaction from the game world to the action of the player” — *perceived consequence*

• Also relates to story...
Agency and Intention

• Murray’s *agency* is “the satisfying power to take meaningful action and see the results of our decisions and choices” with actions that are chosen and related to the players’ intentions.

• Church’s *intention* and *perceived consequence* encourage a “process of accumulating goals, understanding the world, making a plan and then acting on it” with “a clear reaction from the game world to the action of the player”.

• Let’s talk about them together...
Agency and Drama

- Mateas integrates Murray’s agency into Laurel’s neo-Aristotelian drama
- Agency is not “freedom to do anything,” but rather having the material affordances to take actions suggested by the formal affordances of the dramatic situation

Games like *Quake* balance formal and material affordances (e.g., kill everything that moves) and *Façade* attempts to balance them for gameplay inspired by kitchen sink drama.
Agency and Computational Models

- *Eliza/Doctor* suggests talking about problems (formal) and provides a means (material)

- Starts with expectation, but breaks down:
  
  Can I ask you for help
  DO YOU WANT TO BE ABLE TO ASK I FOR HELP

- The consequences of player action must preserve/build dramatic probabilities

- The consequences come from the system

- Agency requires building a computational model and player understanding of it
Agency and Interfaces

- Dow studied players of AR Façade
- They felt more present, but this created an expectation gap w/ system
- Increased sense of presence and realism can decrease agency — harder to build system model from wrong expectations

Strong dramatic signaling in affinity game — but not in therapy game. Players still believed they could potentially have agency during therapy, as established by affinity.
Agency and Improvisation

• Church’s discussion of intention in terms of goals and plans sounds like dated CogSci/AI. Plans are resources for improvisational action.

• Hocking discussed intention as balancing action’s composition and execution phases.

• In *Far Cry 2*, design to balance these at medium timescales didn’t work out.

• Instead, rapid movement between phases — forced plan failure and low consequence — encourages and supports *improvisational* play.
An integrated view
Integrated view of agency

• We can see agency as a phenomenon involving both game and player.

• Agency occurs when the actions players desire are among those they can take as supported by an underlying computational model.

• Designing for agency is balancing the dramatic probabilities of the world with the actions it supports — enticing players to desires the game can satisfy.
Summarizing agency

• Supporting agency requires employing or crafting a computational model of the play domain suggested by the work’s dramatic probabilities, for intention and consequence

• Can be a simple model, but game must transition audience from initial expectation to (implicit) model understanding

• Interface is key to expectation — and more “natural” interfaces (AR, voice) set it wrong

• Action more improvisational than assumed
Agency and design innovation

- Agency discussion has been driven by those interested in innovation
- But agency’s importance may actually explain design’s conservative tendencies
- Well-developed computational models exist for movement, combat, and resource management — not story, interpersonal dynamics, or political ideology (for example)
- What would a game be like that is about what *E.T.* the movie is about?
Mirror’s Edge
Mirror’s Edge
What do you notice?
Passage
What do you notice?
Operational Logics
There's something similar at the heart of many games
Collision and movement
Collision, movement, physics
Navigation:
Collision and Movement
Navigation ... still with us
How to think about this?

• These games are in different genres — from third person space combat to first person platforming — so that’s not our way in.

• These games have different mechanics — jumping, thrusting, firing, eating, blocking — so that’s not the opening.

• Maybe it’s something “deeper”?

• If so, this brings us to a familiar question...
How to think about digital media’s “inside”?

- Is binary arithmetic central?
- Is uncompiled source code the key?
- An alternative: “operational logics” — sometimes identified using source code, and sometimes higher-level descriptions.
- Operational logics are abstract processes, used by authors to communicate to audiences, that can be implemented many ways.
Implemented “in many ways”?

- When you play Pong on an Atari VCS, the 2D collision detection is implemented in hardware.
- When you build a game using XNA, the 3D collision detection is implemented in software.
- Obviously, implementations differ fundamentally, but the logic — that virtual objects can “touch” — is the same.
Graphical logics

- Graphical logics are the abstract operations associated with movement, collision detection, and physics.

- Movement – objects move in space.

- Collision – object overlap triggers events.

- Physics – movement governed by laws.
Isn’t this just graphics?
Fiction logics

• *Quest flag* logic for quests / missions (milestone-based progression).

• *Dialogue tree* logic for NPC interactions — discussion, provocation, quest acceptance/completion, etc (directed graph).

• The interfaces change, the underlying logics remain.
Resource management

• As Michael Mateas observes, resource management logics are the abstract operations associated with acquiring, using, and transforming resources (e.g. food, money).

• Allocation – selecting sources, sinks, and transformations to apply to a resource.

• Random events – events within the fictional world that modify quantities or rate constants.
Resource acquisition, allocation, transformation

HAMURABI
CREATIVE COMPUTING MORRISTOWN, NEW JERSEY 1978
EXHUMED BY LEO MICHELS 1999

TRY YOUR HAND AT GOVERNING ANCIENT SUMERIA
FOR A TEN-YEAR TERM OF OFFICE.

HAMURABI: I REG TO REPORT TO YOU.
IN YEAR 1, 8 PEOPLE STARVED. 5 CAME TO THE CITY.
POPULATION IS NOW 100
THE CITY NOW OWE 1000 ACRES.
YOU HARVESTED 3 BUSHELS PER ACRE.
RATS ATE 200 BUSHELS.
YOU NOW HAVE 2000 BUSHELS IN STORE.
LAND IS TRADING AT 26 BUSHELS PER ACRE.
HOW MANY ACRES DO YOU WISH TO BUY?
Resource allocation and random events
Time as resource, random events (burglar)
Formal model of resource logics

Machinations:
Joris Dormans
Where can games go from here?
Mechanics innovation – Katamari Damacy
Metaphor innovation – Passage
New strategies – *Regime Change*

Oswald in the Soviet Union

The same time Agent Kellerman was in the front of the neck which had been enlarged by the Parkland doctors when they performed the tracheotomy. Both of those wounds were described in the autopsy report as being “prematurely of exit.” In addition the autopsy revealed a small wound of entry near the base of the neck. The autopsy report stated the cause of death as “homicide.”

Oswald’s Trip to Mexico City

President Richard Cheney, Rumsfeld, Joint Chiefs Chairman Air Force Gen. Richard Myers, Director of Central Intelligence George Tenet, White House Chief of Staff Andrew Card and National Security Adviser Condoleezza Rice – assembled, CIA and CENTCOM officials laid out intelligence from a trip to Oman. He described his actions and reactions of March 19, the day of the first air strike.

Bush said Saddam may have died in air strikes that opened Operation Iraqi Freedom. President Bush said Saddam may have died in air strikes that opened Operation Iraqi Freedom. Earlier that day, Bush had spoken to Army Gen. Tommy Franks, the commander of all forces in the Persian Gulf.

“May not look like America,” Bush said. “You know, President Bush said Saddam may have destroyed or ‘disemboweled’ women’s breasts of mass.

Removal of the President’s Body

Central Intelligence Agency. On occasion the Commission has not undertaken a comprehensive examination of all facets of this subject; rather, it has devoted its time and recommended that the case be placed in a city which he had visited in the Texas School Book Depository Building as the 39th President of the Commission to investigate the assassination and the murder.

Central Intelligence Agency, and the Department of State. Initially the Commission has reviewed the files in person. Finally, the responsible officials of those 2 days were witnessed with shock and disbelief by a former landlord of the President’s activities. To promote the nationwide attention of his life. The attack on Jackson did not inspire any action to provide protection for the Presidency, which

Central Intelligence Agency, and the wound in the basement of the building reported that they saw a rifle being fired from the man since he had worn a slender man, about 5 feet 10 inches, in his lap, and then caused a wound to his right, and Mrs. Johnson and Senator Ralph W. Yarborough. Next were a Vice Presidential car carrying the Vice President Lyndon B. Johnson, by Executive Order No. 11145 dated November 1963, created this

Saddam Hussein ‘May’ Be Dead or Severely Injured, Bush Says

WASHINGTON – “Some evidence” suggests Saddam Hussein may have died in air strikes that opened Operation Iraqi Freedom, President Bush said April 23.

In an interview with NBC News anchor Tom Brokaw, Bush revealed that the same source who told U.S. Central Command leaders Hussein has been killed or severely injured.

“I say ‘may’ because we don’t have the DNA in hand to prove” Hussein is dead, Bush said. “According to this one eyewitness, he’s not going to show up anywhere.”

In the wide-ranging interview aboard Air Force One as the president was returning from a trip to Ohio, he described his actions and reactions of March 19, the day of the first air strike in Operation Iraqi Freedom.

Earlier that day, Bush had spoken to Army Gen. Tommy Franks, the commander of all forces in the Persian Gulf, to give him his marching orders. He had told Franks and Defense Secretary Donald Rumsfeld that Franks “had the con,” so to speak. The war was to begin when, in Franks’ best judgment, the time was right.
New processes and strategies – Façade

no, I think it looks fine!
Where can analysis go?
Operational logics and game studies

• Operational logics provide a unit of procedural analysis that may often be more fruitful than close readings of code or algorithm details.

• Operational logics underlie mechanics and rules — they define the fundamental possibility space.

• Operational logics are useful for differentiating different modes of design innovation, for comparing game systems, and for analyzing the functioning of individual works.
This week
This week

- Turning in first progress update on game
- Finishing up multi-game analysis essay
- Henry Lowood (Stanford University) guest speaker Thu — open to campus