Foundations of Interactive Game Design (80K)

week four, lecture one
Today

- Video *Crayon Physics Deluxe*
- Demo, *Splitter* and *Irregular Game of Life*
- Fullerton’s game system topics — focus on emergence
- If time allows: demos of *Adventure* and *Ad Verbum*, Mary-Anne Buckles reading
but first...
Quiz #2

12 minutes, use both sides of paper, closed book, no notes, no collaboration, etc.

If you are a DRC student, keep quiz at end of time, come see me at end of class.
Update on last quiz
Update on last quiz

- Most people did pretty well
- One question most missed: negotiable consequences
- This is why traffic and Russian roulette aren’t games — though you can create games based on them
Crayon Physics Deluxe

http://www.crayonphysics.com/
Crayon Physics Deluxe
Splitter

http://www.king.com/game/splitter
Splitter
Irregular Game of Life

http://www.irregulargames.com/irregulargame-of-life/
Irregular Game of Life
Emergence
What these things have in common
Systems
Fullerton on systems

- Objects
- Properties
- Behaviors
- Relationships
- Dynamics
- Emergence
Fullerton on objects

- Game pieces
- Board/map/terrain spaces
- Game characters
- Even players!
Fullerton on properties

- Checker’s color, location, and whether “kinged”
- RPG character’s stats and equipment
- Tic-tac-toe space is null, X, or O
Fullerton on behaviors

- Chess pieces can make their types of moves, unless blocked
- RPG characters can do many things — can even gain and lose abilities
- Tic-tac-toe spaces have one behavior — getting a property they can’t lose
Fullerton on relationships

- Types of objects (suits/colors in a deck of cards, fulfilling needs in *The Sims*)
- Arrangement of spaces (tic-tac-toe, *Counterstrike* map choke points)
- Unit differentiation (RTS units, ) with outcomes made unpredictable through randomness
System dynamics

- Changes in objects, properties, behaviors, and relationships can have large or small gameplay effects.
- The experience of one element depends on the larger system dynamics (Clue and Mastermind puzzles).
- LeBlanc’s mechanics, dynamics, aesthetics.
- S&Z’s constitutive rules.
Fullerton on emergence

- Relates to Conway’s Game of Life
- Simple systems can have complex, unpredictable results
- Game designers like to create unpredictable, sometimes believable, experiences (from *The Sims* to *Grand Theft Auto*)
Juul on emergent challenges

- Orthogonal unit differentiation (strengths and weaknesses along different axes)
- Individual bases (goals, flags, etc)
- Choke points (geographic features that focus conflict)
- Tend to have many solutions (unlike progression challenges)
Salen & Zimmerman on emergence

• Emergence closely related to complexity

• Types of systems: fixed, periodic, complex, and chaotic

• Can be many elements, or many potential conditions (rules of physics)

• Can be a few elements and few conditions, with the right rules (Game of Life)
Emergence

- Looking for the emergence of complex, unpredictable behavior
- Can be in the form of patterns
- Can be in the form of strategies
- Making things like physics engines the center of gameplay is a strategy for harnessing this — but designer can be surprised
Second-order design

• A game designer designs the rules of the system directly

• The player experience is then designed indirectly through this process

• Understanding systems as producers of experiences is great challenge

• Emergence is an important example
We’ll talk more about systems...
Adventure

http://jerz.setonhill.edu/if/gallery/adventure/index.html
You are standing at the end of a road before a small brick building. Around you is a forest. A small stream flows out of the building and down a gully.

> enter

You are inside a building, a well house for a large spring.

There are some keys on the ground here.
There is a shiny brass lamp nearby.
There is food here.
There is a bottle of water here.

> get lamp

Ok.
Adventure

- Will Crowther (c. 1975) and Don Woods (1976, Stanford U.)
- There were earlier textual games, but very primitive: *Hunt the Wumpus*
- Another set of hugely influential formal structures: navigating simulated world (based on real caves), gathering items, solving puzzles, story/score progression
Adventure

- Technologically, another advance from universities, & inspired MIT/Infocom group
- As media, another form of fiction (fantasy, not science fiction) and a role for language
- Socially, the player as “hacker”
- Together with *Spacewar!*, we see many of the elements of modern gaming in their first form
Ad Verbum

http://nickm.com/if/adverbum.html
Ad Verbum

- Nick Montfort, 2000 — the same “use language to move and gather” mechanics, with puzzles
- A fictional reason why only certain kinds of language work
- Just as Orbient takes the gravity pioneered by Spacewar! in a fresh direction, Ad Verbum does so with control through constrained language
Interactive Fiction: The Computer Storygame “Adventure”
Effectance and Curiosity

• “Why should people enjoy something at which they have to work so hard?” (37)

• White’s “effectance” is “the desire for competence and feeling effective in dealing with the surrounding environment”

• Berlyne studies curiosity, which “depends on novelty, complexity, surprisingness, and incongruity” and may be a driving force
Intrinsically motivating

- Malone’s concept of challenge: a goal whose attainment is uncertain (leads to self esteem)
- Variable difficulty level, multiple level goals, hidden information, randomness
- Malone’s concept of curiosity: aroused when knowledge structures are incomplete (Adventure’s commands, cave, puzzles, magic)
Agency

• Janet Murray, *Hamlet on the Holodeck*, 1997

• “Agency is the satisfying power to take meaningful action and see the results of our decisions and choices” (126)

• Beyond the pleasures of mere participation and activity, “exerting power over enticing and plastic materials” (153)
Agency

Agency is the term I use to distinguish the pleasure of interactivity, which arises from the two properties of the procedural and the participatory. When the world responds expressively and coherently to our engagement with it, then we experience agency. Agency requires that we script the interactor as well as the world, so that we know how to engage the world, and so that we build up the appropriate expectations.

— Murray in *First Person*
How does this relate to design?
... next week
Finally
Upcoming

• Research study ends this weekend — now offers chocolate (along with extra credit)

• Design documents, work breakdowns, and game project schedules due next section

• Don’t delay starting computational prototype — be confident you can make your proposed design work