

Emergence and Interesting Choices

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Questions/Material That Might Appear on the Exam

- As Univ. of California students, you are expected to be able to assess complex material and make judgements concerning its relative importance.
- That said, it can be helpful to have some input from the Professor to help focus studying activity.
- The following are questions/material that are likely, but not guaranteed to appear on the exam.
- Anything covered in class or in the assigned readings may appear, even if not explicitly mentioned today.

Potential Exam Topics/Questions

- All six elements of Juul's classic game definition, and be able to assess a game with respect to this definition.
 - Make sure you understand valorization and negotiable consequences
 - Be able to discuss borderline games and whether they are, or are not, a game
- Other authors' game definitions (on page 30 of Half-Real)
- The seven qualities of rules on page 55-56 of Juul
- Understand how a state machine works, and be able to determine the current state of a state machine given a specification of the machine, and a set of inputs (see class notes)

Potential Exam Topics/Questions

- Understand the dichotomy of rules as limitations vs. rules as affordances
 - Know what an affordance is (p. 57-58 of Half-Real)
- Be able to describe the difference between rules and strategy (p. 59)
- Know the 5 features of an algorithm (p. 62)
- Understand the need for unambiguous rules
- Describe the difference between games of emergence and games of progression
 - Be able to place a game in one or the other category
 - Know the game guide test of progression and emergence (p. 71)
 - Understand why Conway's Game of Life exhibits emergence (p. 79)

Potential Exam Topics/Questions

- Know what a layer is in Photoshop, and what it is used for.
 - What is a transparency color? How do you pick the transparency color?
- Basic history facts
 - http://en.wikipedia.org/wiki/History_of_computer_and_video_games
 - First commercially successful arcade video game (Pong, Nov. 29, 1972)
 - And who made it (Nolan Bushnell was designer, Al Alcorn was electrical engineer)
 - First console (Magnavox Odyssey, 1972, original research & development by Ralph Baer)
 - First cartridge-based console (Fairchild F, 1976)
 - First ROM-based console (Atari 2600, 1977)
 - Video game crash of 1983 (sudden collapse of console video game industry in US and Canada)
 - What did Atari do with extra E.T. cartridges?

Potential Exam Topics/Questions

- Know the variations of emergence (p. 80-81 of Half-Real)
- Understand and be able to discuss the quote by Sid Meier, “A game is a series of interesting choices” (p. 92)
 - Know the three qualities of an interesting choice
- Know the difference between puzzles solved using reckoning or insight thinking (p. 93)
- Note that we only cover up to page 95 of Half-Real

Types of Emergence

- Emergence as variation
 - The variety of possible states and game sessions a game's rules allow
 - Example: Pong, with a wide variety of gameplay stemming from the interaction of a few very simple rules
 - No surprise here, it is clear that the simple rules will lead to a wide range of gameplay
- Emergence as patterns
 - Patterns in gameplay that are not immediately deducible from the rules of the game
 - Strategies (strategies require regularity to work, and hence require a pattern in the gameplay)
 - Teamplay in Counter-Strike (a pattern of working together to win the game)

Types of Emergence

- Emergence as irreducibility (quotes from p. 80-81 of Half-Real)
 - Stephan Wolfram, on the complexity of cellular automata:

“This complexity implies limitations of principle on analyses which can be made of such systems... The behavior of the system can thus be found effectively by explicit simulation. No computational short cut is possible. The system must be considered ‘computationally irreducible’.”
 - Bruce Shelley on play-testing in game development:

“Prototyping is not only useful from a technology standpoint, but is also critical for testing gameplay. Designers are usually left guessing until their games can be played. There are always surprises when a game is first played, some good and some bad.”
 - Captures the notion that the way a set of rules plays out can sometimes only be determined by observing actual game play
 - The complexity of interactions makes it effectively impossible to analytically determine what is going to happen

Types of Emergence

- Emergence as novelty or surprise
 - When several rules or objects in a game are combined together in an previously unforeseen way
 - Rocket-jumping in Quake III arena
 - Roving bands of cabinet makers in Everquest
 - UFO abductions, Tingo in SecondLife
 - Large numbers of connections between different objects and rules increases likelihood of this

Gameplay

- Rouse on gameplay (from p. 87 of Half-Real):
 - “A game’s gameplay is the degree and nature of the interactivity that the game includes, i.e., how the player is able to interact with the game world and how that game world reacts to the choices the player makes.”
- Juul (p. 88):
 - “I believe that gameplay is not a mirror of the rules of a game, but a consequence of the game rules and the dispositions of the game players.”
 - Example: Quake III Arena and Counter-Strike have mostly similar rules, but have different gameplay experiences
 - For emergent systems, small changes to rules can have large effects on gameplay
 - Consider changing the behavior of just a single chess piece

Gameplay

- Gameplay results from the interaction between three different things (p. 91 of Half-Real):
 - The rules of the game.
 - The player(s)' pursuit of the goal. The player seeks strategies that work due to the emergent properties of the game.
 - The player's competence and repertoire of strategies and playing methods.
- The rules, player's skills, and resulting gameplay can encourage community-building around a given game.

Interesting Choices

- What is the essence of quality gameplay?
 - Several perspectives:
 - Interesting choices
 - Puzzles (aesthetics of the mind)
- Sid Meier:

“A game is a series of interesting choices.”
- Ok, but what is an interesting choice?
 1. No single option should be the best
 2. The options should not be equally good
 3. The player must be able to make an informed choice

Interesting Choices

- Rock-paper-scissors
 - No single option should be the best
 - Passes: rock beats scissors, scissors beats paper, paper beat rock
 - The options should not be equally good
 - Fails: each option is equally good, and it does not really matter which one we choose
 - The player must be able to make an informed choice
 - Partial-pass: experienced players can sometimes see patterns to the choices of the other player

Puzzles

- Puzzles can also provide quality gameplay
- Danesi (p. 93 of Half-Real):
 - “The peculiar kind of pleasure that puzzles produce can be called an *aesthetics of mind*... The *aesthetic index* of a puzzle, as it may be called, seems to be inversely proportional to the complexity of its solution, or the obviousness of the pattern, trap, or trick it hides.”

Kinds of Puzzles

- Puzzles solved using straightforward reckoning
 - Solving a puzzle using a simple routine, not requiring any ingenuity
- Puzzles that require insight thinking
 - Requires some thinking “outside the box”
- But, a given task will not be equally challenging to all people
 - People bring different skills to the puzzle, and what may seem straightforward to one person (due to their training) may be very difficult for another