Future Directions in Interactive Fiction

CS 395 Computer Game Design

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Ken Forbus

Overview

- Where is interactive fiction now?
- Where is interactive fiction going?
  - Bates' Oz Project
  - Crawford's Erasmatazz
  - Hayes-Roth's Virtual Theater
  - Perlin's Improv project

Recall our model of game design

- Story: How you want the player to think of the game. Its plot and activities, expressed in terms of the imagined world
- Model: The rules and laws of the imagined world as instantiated in the game. What kinds of things there are in it (*ontology*), its physics and sociology.
- Implementation: The software that implements the model and whose execution provides the player's experience.

Sources of Immersion (aka "Time warp factor")

- Engaging imagined world
  - Exciting/intriguing story line, events
- Engaging modeled world
  - Great descriptions (text or graphics)
  - Charming details (e.g., chain vomiting in Theme Park)
- Avoiding discrepancies between modeled and imagined world
  - Can't do "obvious" action
  - Actions have unrealistic consequences
- Key design issue: Richness/Discrepancy tradeoff

Text-based interactive fiction

- Driving force: Implementation choice of text descriptions and commands as interface
- Minimal model: Discrete locations, actions, time, and events.
  - Inform provides rich modeling language, but doesn't have floating point!
- Richer models are possible but rare
  - e.g., Infocom's Border Zone synched game time to real time
  - Continuous change may be poor match for interface

Evolution in graphics helps drive evolution of interactive fiction

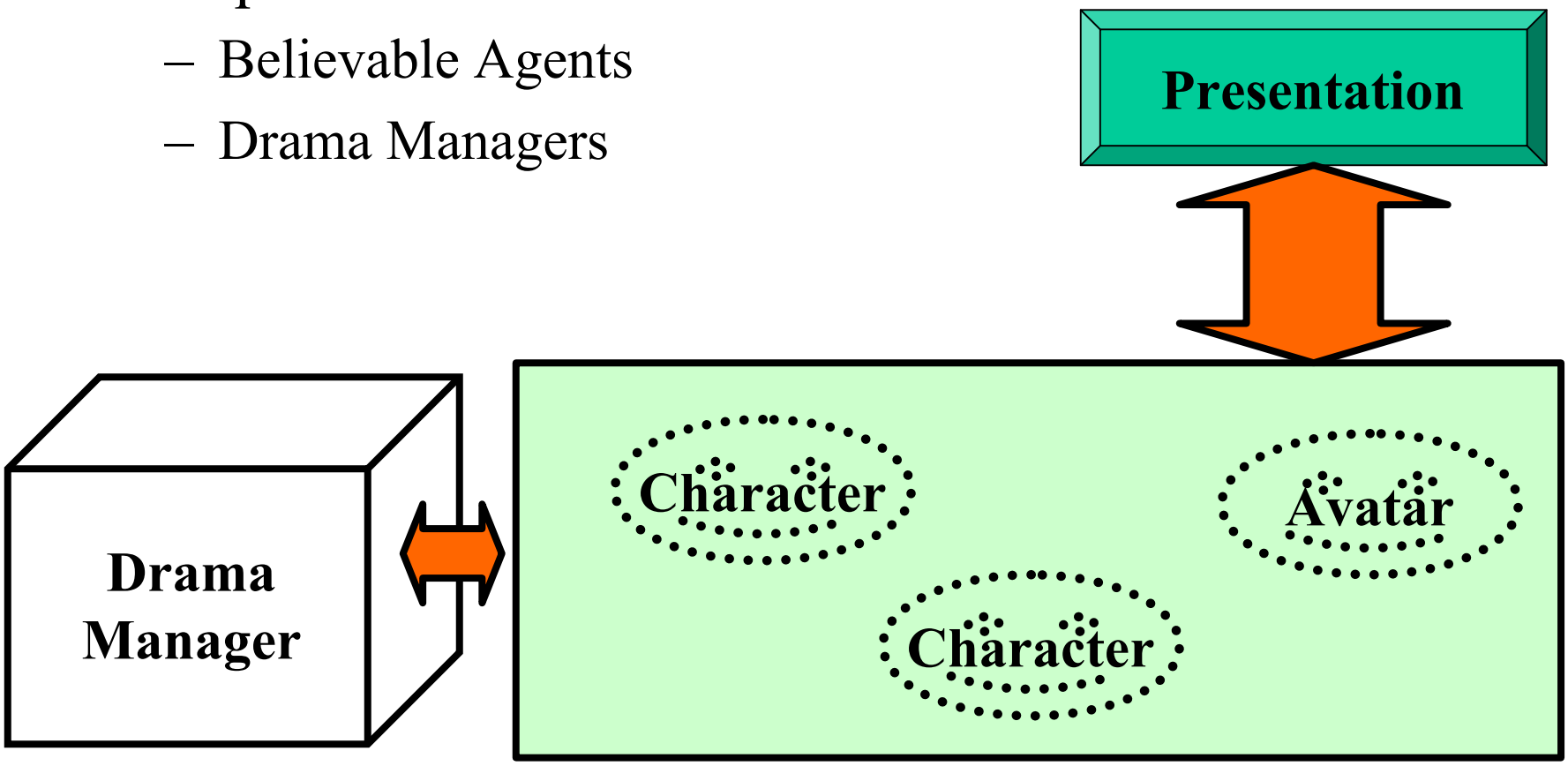
- More 2D graphics
  - Mouse-hunt games
- More video intense
  - More cut scenes
  - Player as steering video stream
- More 3D graphics/animation modeling
  - Exploiting stunning rise in 3D rendering hardware
  - Limitations:
    - Modeling requires substantially more resources
    - NPC actions/movements tightly scripted

New direction: Adding Intelligence

- Graphics will continue to evolve
  - Provides richer canvas for the imagined world
  - Richer canvas ⇒rapid increase in complexity of authoring
- Revolutionary changes are coming from AI techology
  - Richer models of characters
  - Richer models of social interactions
  - Ability to embed author's intent into structure of the world
  - Richer world infrastructures ⇒higher immersion experiences

Oz Project (CMU)

- Goal: Creation of interactive drama
- Requires
  - Believable Agents
  - Drama Managers



Believable Agents

- Things (hardware or software) that act alive
- For stories, serve as other characters in plot
- Also finding uses in
  - Educational software (guides, e.g., Lester's work at UNC)
  - Computer interfaces more generally

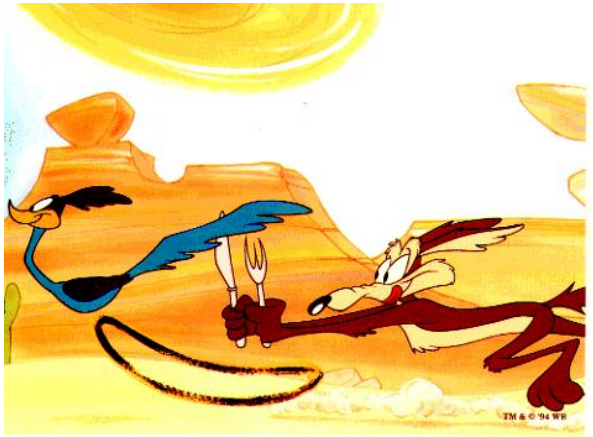
What is needed for storytelling?

- Personality
  - What makes someone unique
- Emotion
  - Exhibiting their own, and responding to others appropriately
- Self-motivation
  - Their own drives and goals help govern their behavior
- Social relationships
  - Consistent and evolving interactions with others over time
- Change
  - They learn and grow, consistent with their personality
- Broadly capable
  - Can carry out a rich variety of behaviors in pursuit of their goals in an interactive environment

Intelligence and believability

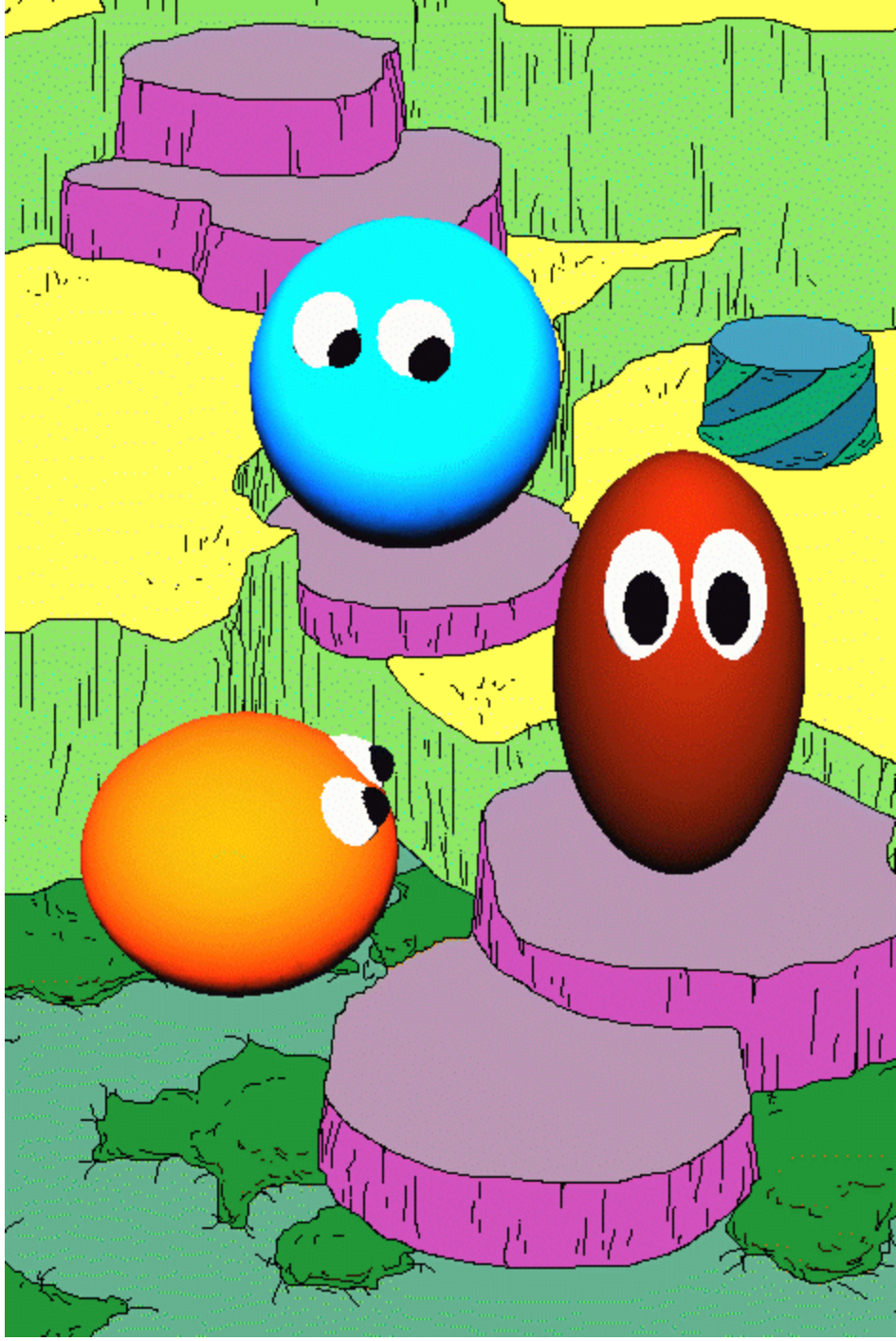
- Must be smarter than today's NPCs
  - avoid brittleness
- Don't have to be brilliant
- Don't even have to be human-level intelligence
  - Space of interactions only has to support needs of the story

versus



Example:
Edge of Intention

- Simple, 3D animated world
- The Woggles
  - move by bouncing from place to place.
  - have “body language”, expressing emotions by changing shape
  - have social relationships
  - engage in social behavior



Interaction

- The player's avatar is also a woggle
- By interacting with woggles, you find out about their social structure.

  No plot, but very engaging behaviors
  - Personalities of woggles become quickly clear
  - Threaten one, its friend intervenes to try and scare you off
  - Join or start games of follow the leader

Drama management

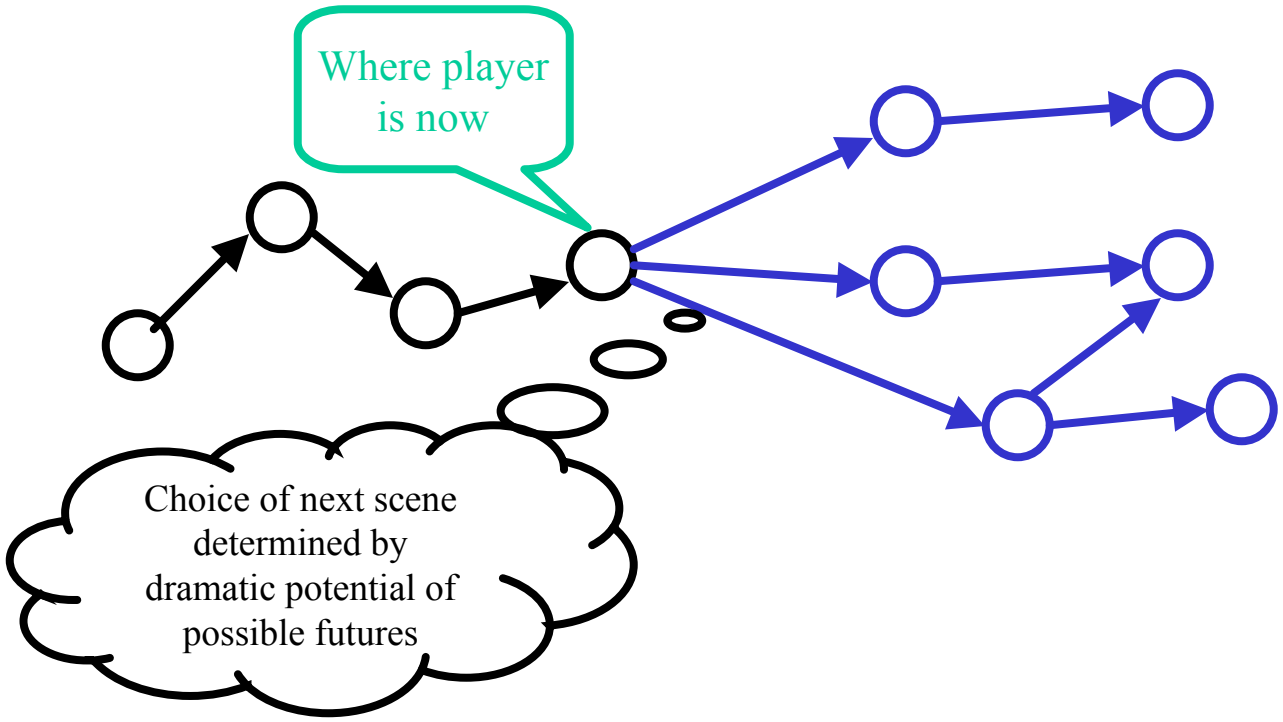
- Authoring involves creating a dramatic arc
  - Fixed in traditional fiction
  - Various branching structures possible in interactive fiction
- Problem: How to tell a great story while giving player freedom?
  - Complexity of possible branching in rich worlds quickly makes authoring unmanageable
  - Usual solutions of sharply limiting world or player restrictive

Storytelling as Search

- Consider a story as a sequence of scenes
  - Scene = significant event/turning in the plot
  - Lots of variability in how a scene plays out
- Scenes and relationships between them form a space of possible plots
  - Relationships that must hold between scenes structure the space
  - Some relationships inviolable
    - e.g., establishing prerequisite
  - Some can be varied
    - e.g., establishing motivation for an action before or after the action itself

Drama Manager

- Given:
  - Evaluation function that rates sequences of scenes
  - Methods for affecting the game
- Ensure:
  - The sequence of scenes a player experiences corresponds to a good story



Drama management as metagaming

- Drama Manager in effect is playing a game
  - Presumably non-adversarial
  - Ideally, the player doesn't know that it is there
- "Moves" for the Drama Manager
  - Changing behavior of NPCs
  - Random events in the world
  - Acts of God

Crawford's Erasmatazz

- Interactive storytelling = you interact with characters in an authored world
  - Menu-based interaction
- Player focus is on interacting with NPCs rather than physical actions
- Overall story scripted by author, but no drama manager
- Interesting part is modeling
  - Moods: Anger, arousal, joy, fear
  - 21 personality traits (e.g., integrity, timidity, …)

Hayes-Roth's Virtual Theater Project

- Uses AI blackboard technology as implementation for characters
- Simple numerical personality models
- Examples
  - Kids tell stories by giving puppets high-level instructions
  - Agents as social facilitators in shared enviornments (Erin the bartender)

Perlin's Improv project

- Uses layered architecture inspired by robotics, animal research to provide high-level animation capabilities
- Animator specifies high-level actions and moods, the model of the character does the rest

Ken Perlin's Responsive Face demo