I’m here to talk about interactive storytelling, but let me start with combat systems
Some combat systems are simple

Some games have simple combat systems
Some combat systems are complex

Advanced Squad Leader, 1985, image by C. Scott Kippen

Some games have complex combat systems

http://www.boardgamegeek.com/image/357582/advanced-squad-leader?size=original
Economic Systems

The same is true with economic systems
Some economic systems are simple

Super Mario Bros, 1985
Some economic systems are complex.

Puerto Rico, 2002
image by Chris Norwood

And other games have complex economic systems

http://boardgamegeek.com/image/203163/puerto-rico?size=original
Our students understand this

- Combat and economic systems are designed at differing levels of complexity
- They connect to other mechanics in differing ways
- Important to know the possibilities, and make the right choice for your game

Students are doing well at understanding this variety — and some related issues
But what do students think about fiction?
Fiction systems

Many students seem to think in fiction systems we choose between simple and impossible.
Simple can work well...

The fictional structure of Karateka is simple: move forward, fight, move forward, fight, with fiction doled out as a function of moving forward. The fiction unfolds on a basically cinematic model.

This is also the fictional structure of Uncharted 2. It works great!
But how do we make the fiction *playable*?

One of the real pleasures of games is that we take things and make them playable. How do we provide this pleasure for the game fiction?
The naive approach is to simply expand the simple system. The simple system lays out every fictional event in order. To move beyond this people specify every possible fictional event and every connection between possible events. I will call this the “Choose Your Own Adventure” or “CYOA” model, after the popular books.
Why CYOA doesn’t work

If you invest in gold only, turn to page 10.
If you invest in oil only, turn to page 21.
If you invest in Vespene gas only, turn to page 32.
If you invest in Warg farming only, turn to page 43.
If you invest in gold and oil only, turn to page 54.
If you invest in gold and Vespene gas only, turn to...
If you invest in gold and Warg farming only, turn to...
If you invest in gold, oil, and Vespene gas, turn to...

Unfortunately, Choose Your Own Adventure is a pretty bad form if it's not a component of some wider system.

Imagine a CYOA economic system—hard to author, bug prone, and still with too little freedom to be satisfying
Beyond CYOA: a sampler

- Two common computer game models: Role-Playing Games and Interactive Fictions
- A board game model: *Betrayal at the House on the Hill*
- An accessible CS research model: *Universe*
- Final discussion

The key issue for moving students beyond the naive CYOA approach is to help them understand other possibilities. Here are a few that I think can help students think more broadly about the strengths and challenges of different designs for fiction systems.
Beyond CYOA: Four issues

- **Approachable.** How do players start interacting with fiction system?
- **Visible.** How do players perceive system?
- **Playable.** How do players understand and manipulate system?
- **Authorable.** How do designers shape possibility space and avoid brittleness?

I also want to introduce four key issues I think students need to consider when selecting or designing a fiction system.

The first is approachability. How do players know what to do in the context of the fiction system. For combat or economic systems, often they know from prior games. For fiction systems we may need to cue players based on other knowledge sources.

The next is visibility. A great fiction system doesn’t accomplish anything if the player doesn’t know it’s there — for that player, the story might as well be linear.

It is also important to consider how the system is playable. How does the player come to understand the fiction system more deeply through play, and then deliberately begin to take action in its terms.

Finally, students also need to think about authorability. Fiction systems make a creating an interactive fiction more tractable, for the author, than CYOA approaches. But how does the designer shape the possibility space of the fiction, and is the system robust enough to handle situations the designer didn’t explicitly account for?
So let’s talk about the fiction system commonly found in role playing games (which I’ll also call “RPGs”)
Role-Playing Games (RPGs)

The fiction system of a typical role-playing game includes quests, an explorable world, and a developing player character (or party of characters).

The story structure is CYOA. But the node and link structures aren’t all explicitly and directly interconnected.

Instead, the pieces are accessed through the explorable world.

This can make the player feel empowered—starting many story strands, deciding which to pursue, in which order, etc.

There’s also often a lot of combat (and maybe other kinds of gameplay) while moving through the world.
Students and RPGs

Good tools are available, with supportive communities, including *Dragon Age Toolset*

The great strength: CYOA-style authoring without all connections made explicit—and easy ways to include other gameplay

The great weakness: CYOA-style authoring without connections explicit (not *authorable*)

The RPG model is one students should know. It’s also easy for them to try out, because there are good, low-cost tools available.

It has the virtue of using a fiction system that’s almost as easy to understand as CYOA, but players feel much more empowered because, on some level, they are. They have a lot more choices than it would be possible to explicitly encode.

The great weakness is that the RPG model does nothing to manage the complexity introduced by this larger choice landscape. This is why even AAA RPGs ship with bugs that are revealed when players do things in orders other than those expected by the designers.
Interactive Fiction

A different model is that of interactive fiction
Interactive Fiction (IF)

You may know interactive fiction by the name “text adventures”

In early examples, like Zork, there’s a lot of map making, puzzle solving, and so on.

Of course, the biggest distinguishing feature is not that the world is described as text, but that players interact by typing free-form text
Students and IF

- Good tools are available, with supportive communities, including Inform 7
- The great strength: Create gameplay based on novel verbs (e.g., *remember*, magically *link*) without high production demands
- The great weakness: “Guess the verb” (not accessible)

The IF model is one students should know. It’s also easy for them to try out, because there are good, free tools available.

The great strength is that you can use the power of words and invent your own verbs.

This means an author can implement "remember" (it's just a verb, and there's no need to visually show flashbacks in a complicated way) as Dead Reckoning and other games do.

Similarly, Emily Short’s Savoir-Faire can implement combining qualities of arbitrary things (it's just a verb, and there's no need to dynamically create visuals of these items)

The great weakness is playing "guess the verb" (Ad Verbum makes this the game).
Other related models

- Adventure games (TellTale)
- Exploration/enactment (Tale of Tales)
- Sticks and rubber bands (Quantic Dream)
- Linguistic construction (Storytron)
- User generated CYOA (*Bar Karma* tool)
- Interactive drama (*Façade*) ... and so on

There are many other related models that I don’t have time to discuss here, but that it would be fruitful for students to explore.
Now for a board game. It might seem odd to look at board games, but we see experiments with fiction systems that go beyond what computer games are doing -- and yet don't require human level intelligence to function (the way tabletop RPGs do)
Haunted houses are about the unknown.

Board built of tiles as house is explored

Betrayal’s fiction system is central to play and tightly integrated with other mechanics.

Specifically, the fiction is that of exploring a haunted house, which is all about the unknown.

This comes into play from the beginning, as the house, which is also the game board, is created and revealed during initial exploration.

Even on replay, players don’t know what is behind the next door, or the eventual shape of the board on which the next stage will play out.

http://boardgamegeek.com/image/767248/betrayal-at-house-on-the-hill?size=original
Haunted houses are about the unknown.

At unknown time, switches to asymmetric competition w/ hidden info.

Each time a major event happens in the house, there’s a greater chance that the “haunt” will be revealed, creating rising tension over time.

When the haunt happens one player is turned into the traitor, playing out one of 50 different scenarios of that player against all the others, with two books revealing different scenario information to traitor and other players.

Again, the focus is on a fiction system that supports, even on replay, the crucial element of the unknown for haunted house fictions.
Betrayal and the four issues

_approachable_. Haunted house genre conventions set right expectations

_visible_. It’s a board game!

Playable. No story-only play, but speed of exploration, distribution of resources...

Authorable. Simple, few special cases
Education take-away

- Students can learn novel fiction systems from board games, which expose full system
- Students can create novel fiction systems without computers—as projects/prototypes
Game design take-away

- Procedural level generation isn’t just for novel challenges (*Diablo, Spelunky*) but can produce *uncertainty* (horror, mystery)
- Multiple *endings* have some fictional power, but no gameplay power—multiple *endgames* produce suspense, make early path to victory uncertain, and amplify map impact
More non-digital games to use:

- *Tales of the Arabian Nights*
- *Once Upon a Time*
- *Twilight Struggle*
- *Extraordinary Adventures of Baron Munchausen*

Also CCGs (e.g., *Call of Cthulhu*) and RPGs (e.g., *My Life with Master*)


There are also many other models of fiction systems in board and tabletop games that I don’t have time to discuss here, but encourage everyone to share with students.
If Betrayal represents things we can do without a computer, what can we do if we apply automatic computation in interesting ways?

One example is the Universe model of story generation, which has been around since the 1980s.
Tiles help build an unpredictable house, and restrictions on the tiles help the house make sense.

You wouldn’t want a chasm in the attic -- and you wouldn’t want to keep walking through the crypt to the kitchen.

*Betrayal* tiles constrained by allowed floors (back) and connecting doors (front)
Universe “plot fragments” are story tiles — with many more possible constraints

Only if location is *kitchen* or *picnic*

Only if *murderer* is alive or undefined

Killed with a butter knife

Only if *murderer* has trait *brutal* or *desperate*

Only if *do murder* is active goal

... and so on

http://etc.usf.edu/clipart/19200/19208/knife_19208.htm
Set crime scene to this location

Killed with a butter knife

Add subgoal body discovered

If murderer undefined, set now

Universe plot fragments can also set state and add subgoals

Set dead character to victim

http://etc.usf.edu/clipart/19200/19208/knife_19208.htm
When it’s time for story action, find fragments that satisfy one or more current goals, check which are valid, choose one, producing story actions — and new goals
It’s a tree of possibilities—like CYOA—but not built by hand. More possibilities, easier to maintain and revise, etc.

The system connects the dots — and binds characters to roles, events to places, and so on.

The connections aren’t done by CYOA fixed links or RPG character movement.

So you get many more possible connections and permutations than CYOA would allow, while being able to explicitly invalidate bad situations for events to happen, refer back to how past permutable events took place, re-use characters, and so on.
One master fragment can subgoal a whole story tree
Uses of *Universe*

- Can generate full stories
- But was built for episodic narrative—inspired by *Days of Our Lives!*
- Use current author goals to instantiate a plot fragment every time the PC gets a mission/client, or the party returns to town/base/the ship, or a timer goes off, or...
Universe and the four issues

- **Approachable.** Use audience expectations
- **Visible.** Show off! Respond specifically to player actions, have many valid choices
- **Playable.** Plot fragments and author goals need to be connected to game mechanics
- **Authorable.** Simple model, no flags to track

Actually a set of building blocks, not a fixed fiction system, so it’s all about how you use it
Universe and education

Wide Ruled is a GUI w/ text-output Universe used in education for 3 years

Story Canvas moves to a storyboard author and player interface

http://games.soe.ucsc.edu/project/wide-ruled
Discussion
Fiction systems

- Fiction systems can produce many results—braided quests, horror’s uncertainty, folktale convolution, melodrama, mystery, etc.
- Students should know various approaches, and implement the right fiction system for their games.
- Approachable, visible, playable, authorable!
For more: two sample syllabi

- Michael Mateas, UC Santa Cruz
  Interactive Storytelling
  http://www.soe.ucsc.edu/classes/cmps148/

- Nick Montfort, MIT
  Interactive Narrative
  http://nickm.com/classes/interactive_narrative/2011_spring/
Thanks!

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