

Lecture 26

Dialogue

Elements of Game Narrative

- **Characters**

- Protagonist: player controlled character
- Supporting characters: NPCs

- **Storyline**

- How does the story progress?

- **Dialogue**

- Story vehicle in games and fiction
- Easy way to allow player choice

Storytelling as Gameplay: Dialogue

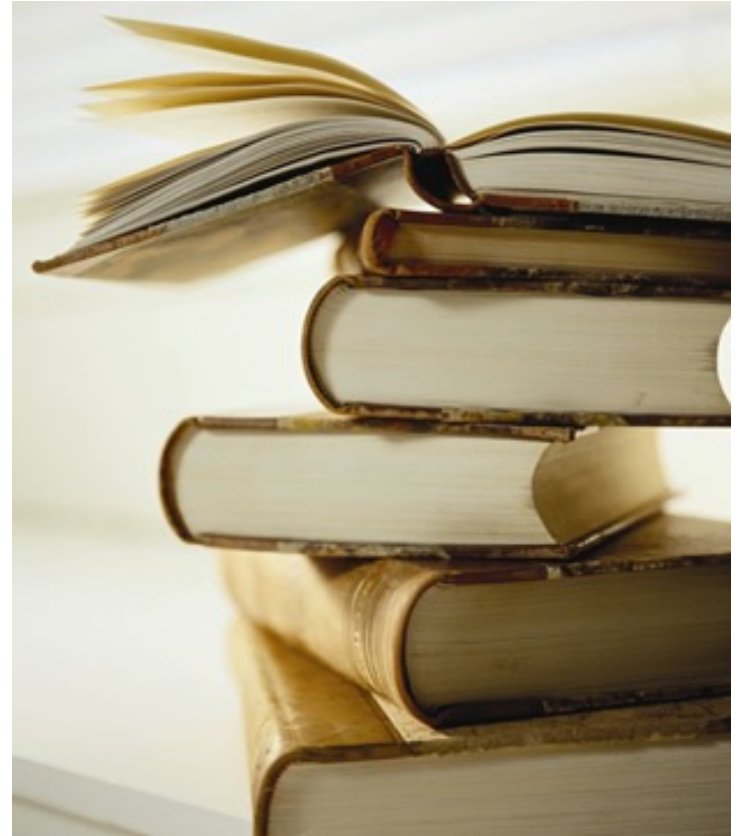
- Primary **interactive** story vehicle
 - Where the player most likely has choice
 - If no choice, might as well be a cut scene
- Non-gameplay interactions reduce to dialogue
 - **Dialogue**: conversation of two or more entities
 - Animated responses are non-textual dialog
 - Interactive cut scenes are a response to player

Dialogue: Real Life

- Greet and make contact
- Fill in time/silence
- Gain information
- Reveal information
- Discuss ideas and opinions
- Express emotion
- Propose a course of action
- Acknowledge comment
- “Hi; my name is Bob.”
- “Nice party, isn’t it?”
- “What do you do, Bob?”
- “I design video games.”
- “Isn’t that a bit juvenile?”
- “You are such an idiot.”
- “Then prove me wrong.”
- “Sure, I can do that”

Dialogue: Fiction

- **Reveal information**
 - “Expository dialog”
 - Do not say the obvious
- **Reveal character**
 - Identify with protagonist
 - Empathy with companions
 - Hatred for enemies
- **Break up the narrative**
 - Description very passive
 - Goal: show, don’t tell



Dialogue: Games

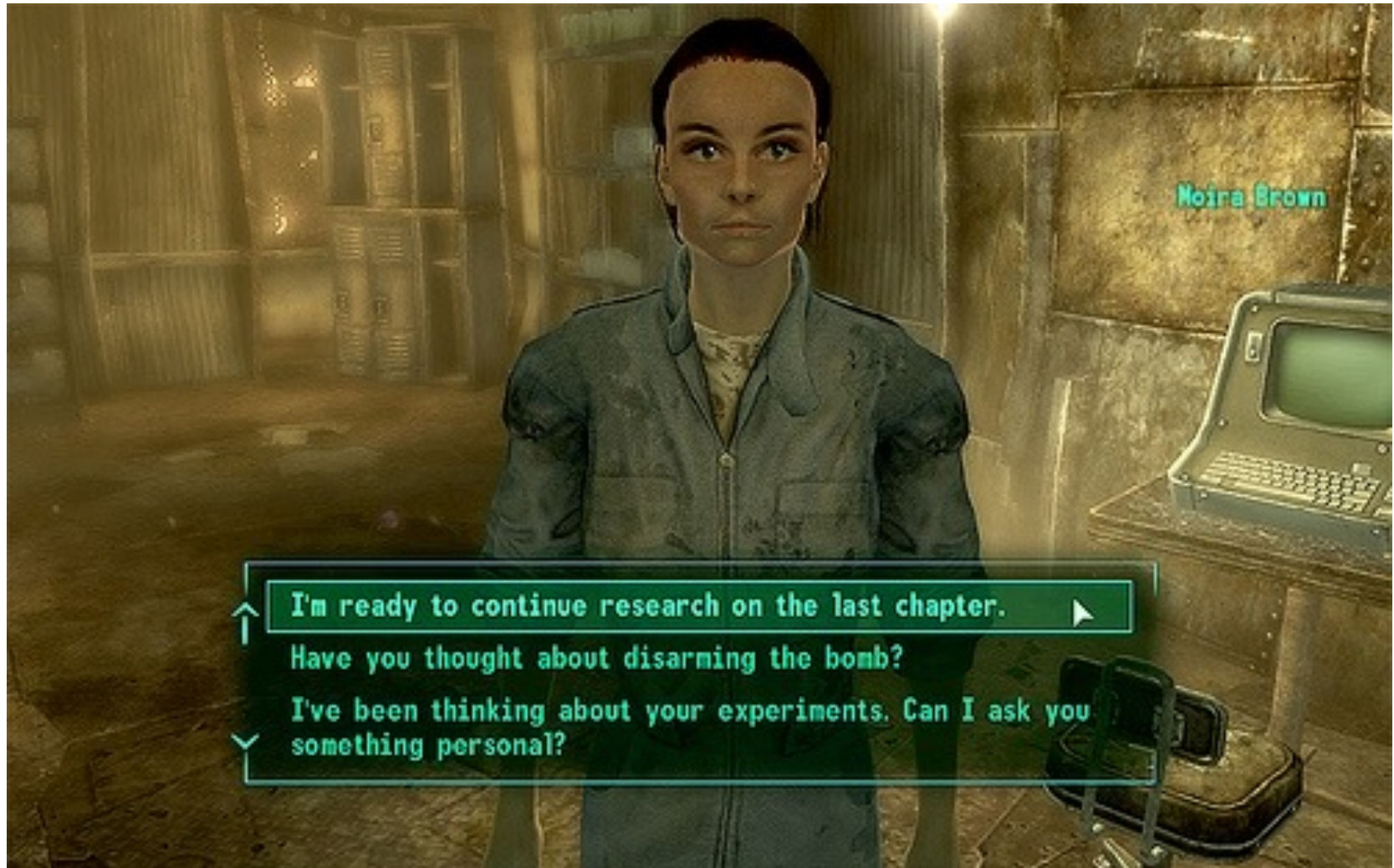
- **Reveal information**
 - Story as investigation
 - Integrate with gameplay
- **Reveal character**
 - Reveal NPC personalities
 - **Define** player personality
 - Heightens sense of risk
- **Break up the monotony**
 - In-game humor
 - “NPC banter”



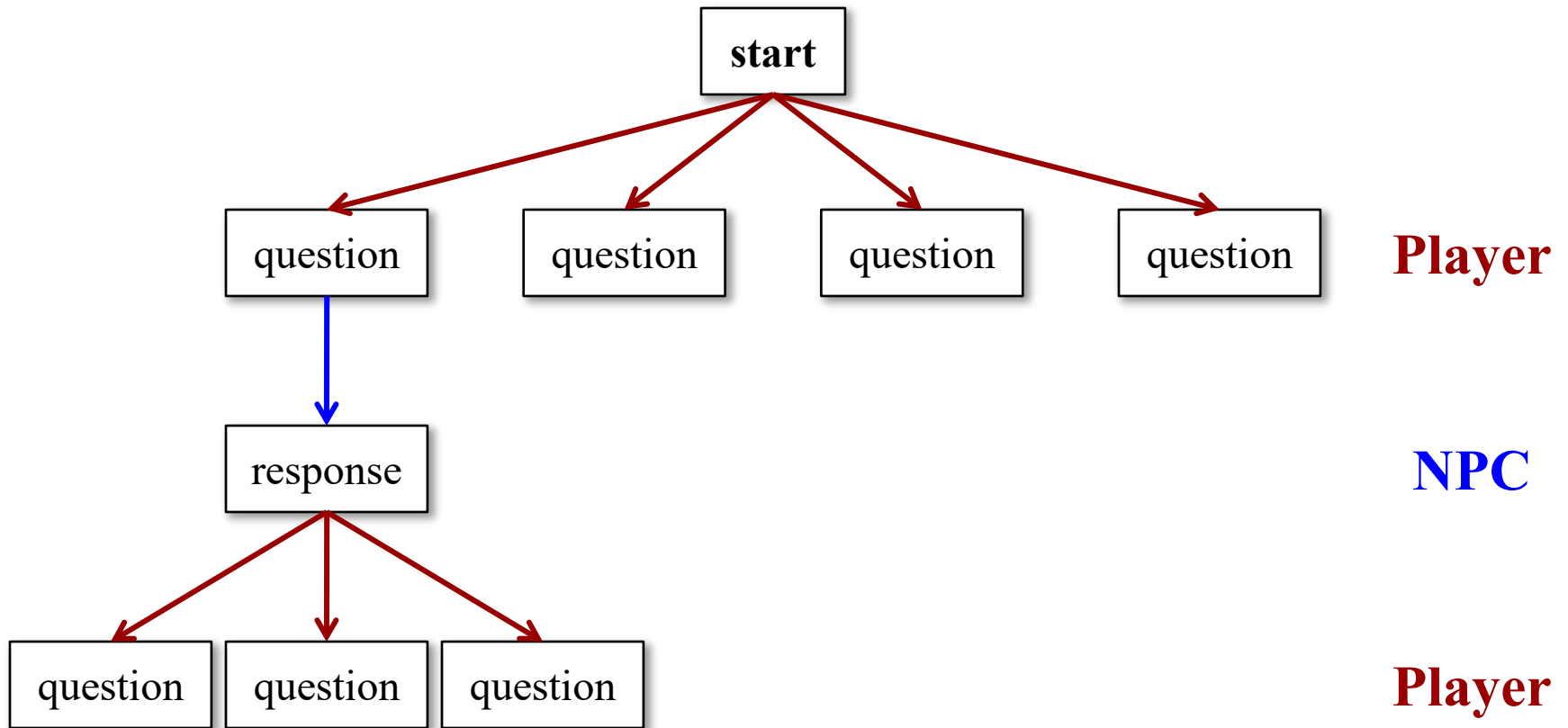
NPC Banter: *Dragon Age*



Standard Approach: Dialogue Trees



Dialog Trees



Example: *Avernum* Series



More than Just Talk

Preconditions

- Not everyone is talkative
 - Test for dialogue option
 - Like rule-based AI
- **Symbolic preconditions**
 - Quest completed
 - Speaking for first time
- **Numeric preconditions**
 - Reputation points
 - Money on hand

Actions

- Talking may alter state
 - State of player character
 - State of participating NPC
- **Symbolic actions**
 - Complete quest
 - Open up new dialogue
- **Numeric actions**
 - Give player money
 - Increase reputation

More than Just Talk

Preconditions

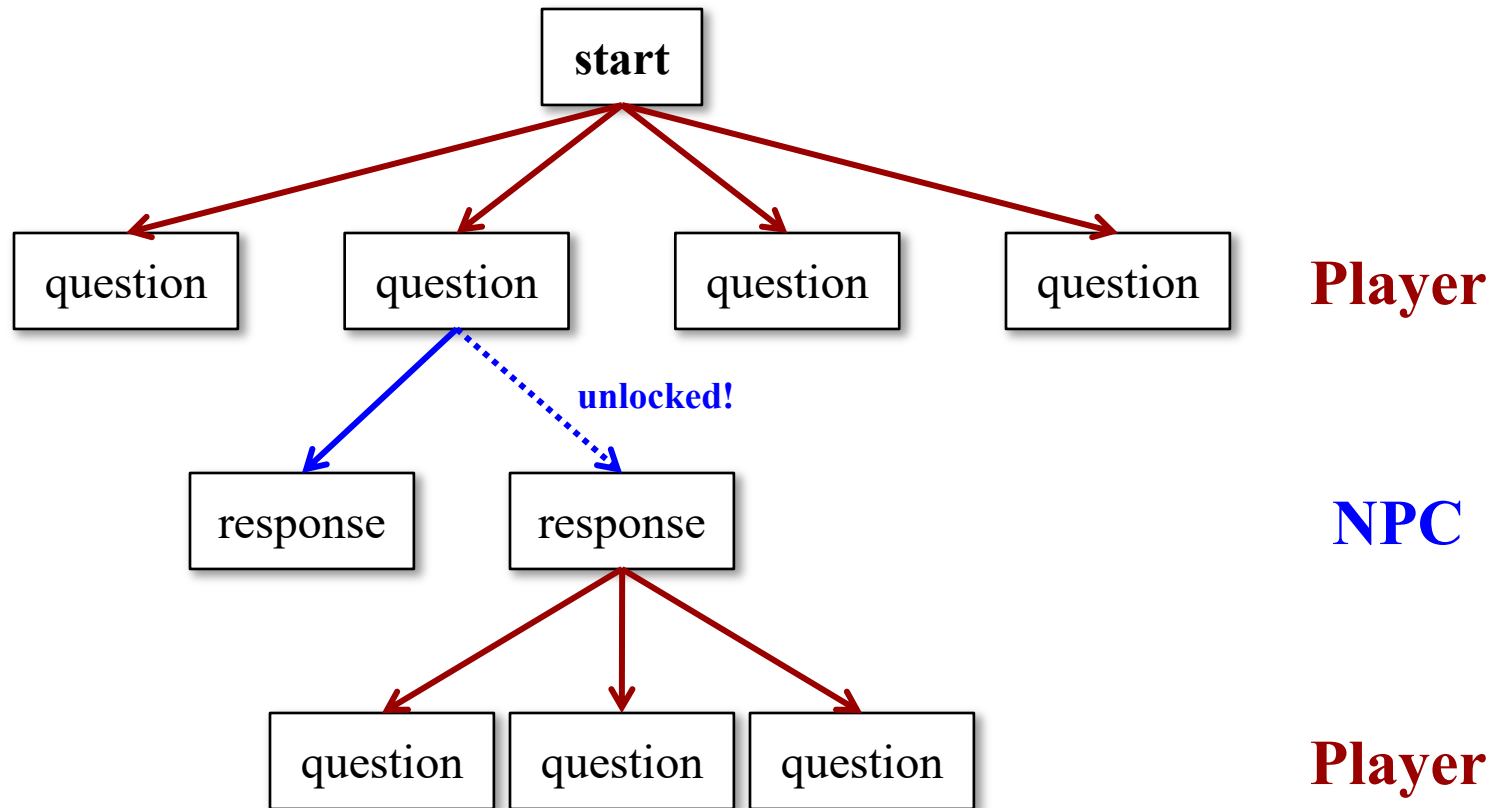
- Not everyone is talkative
 - Test for dialogue option
 - Like rule-based AI
- **Symbolic preconditions**
 - Quest completed
 - Speaking to questing NPC
- **Numeric preconditions**
 - Reputation points
 - Money on hand

Actions

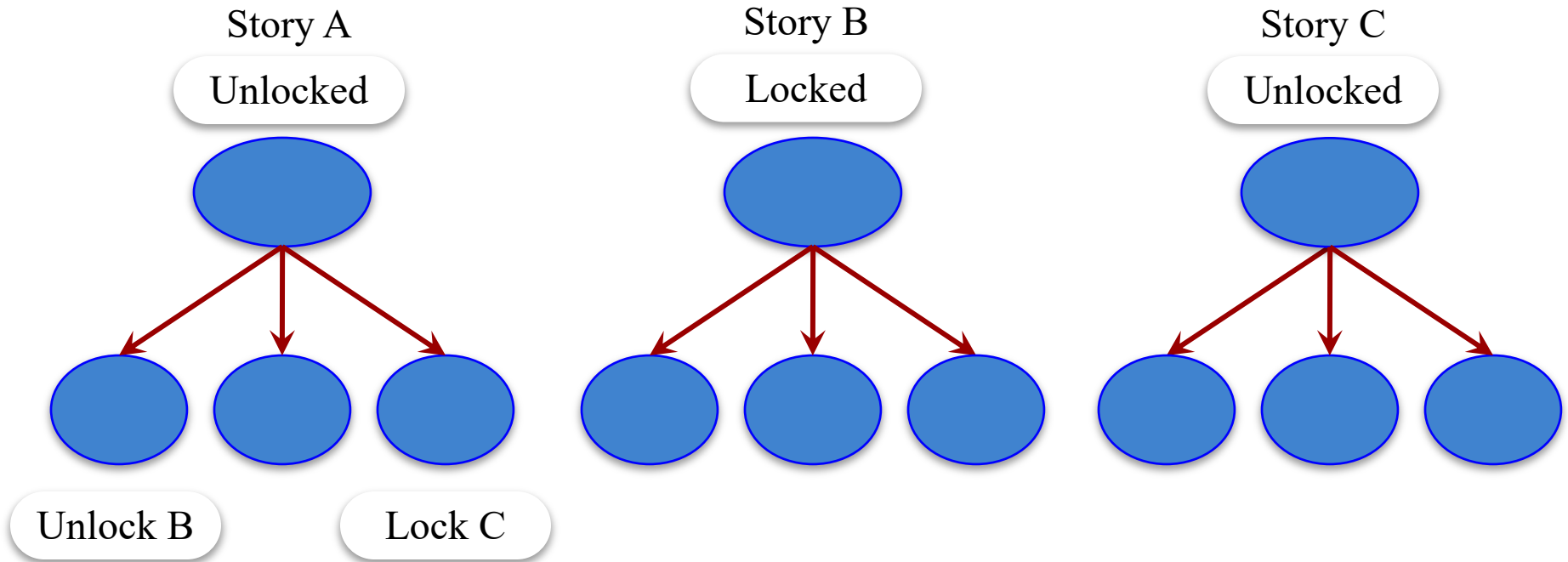
- Talking may alter state
 - State of player character
 - State of non-speaking NPC
- **Numeric actions**
 - Give player money
 - Increase reputation

This Looks Like Gameplay Design

Dialog Trees: Symbolic Effects



Symbolic Effects and Faction Based Storylines



Dialogue vs. Interactive Fiction

Similarities

- Both have **graph** structure
 - Shows flow between text
 - Only have discrete choices
 - Basically a game flowchart
- **Edges** may need **unlocking**
 - Requires resource to access
 - **Example**: have enough gold
 - **Example**: talk to person X
 - “Lock-and-key” puzzles

Differences

- Graph **temporal**, not **spatial**
 - Often visit node only once
 - Limited “back-up” ability
 - “Lock-out” is a big worry
- Not designed as **one graph**
 - A graph for each person
 - Or per person/per act
 - Tie together with resources
- No **text parsing** of dialogue

Implementing Dialog Trees

```
begintalknode 85;
state = 76;
nextstate = -1;
condition = 1;
question = "Gnass is offering a bounty?";
text1 = "_They claim justice isn't being done. But look around! There's
famine and war! We don't have time for justice! I'd be happy to keep things
calm._";

begintalknode 86;
state = 70;
nextstate = -1;
condition = gf(128,15) == 1 && gf(103,1) == 1;
question = "I had to kill Koepp.";
text1 = "_What? You do know he has friends here, don't you. Hope they don't
find out you did it. I won't tell them, but ..._ He shakes his head.";
text2 = "_Those fools in Gnass. They don't know how hard it is to keep a mob
from crossing their bridges. And now I have just that much more work to do._
He shakes his head.";
code =
    set_flag(128,15,2);
    toggle_quest(77,3);
break;

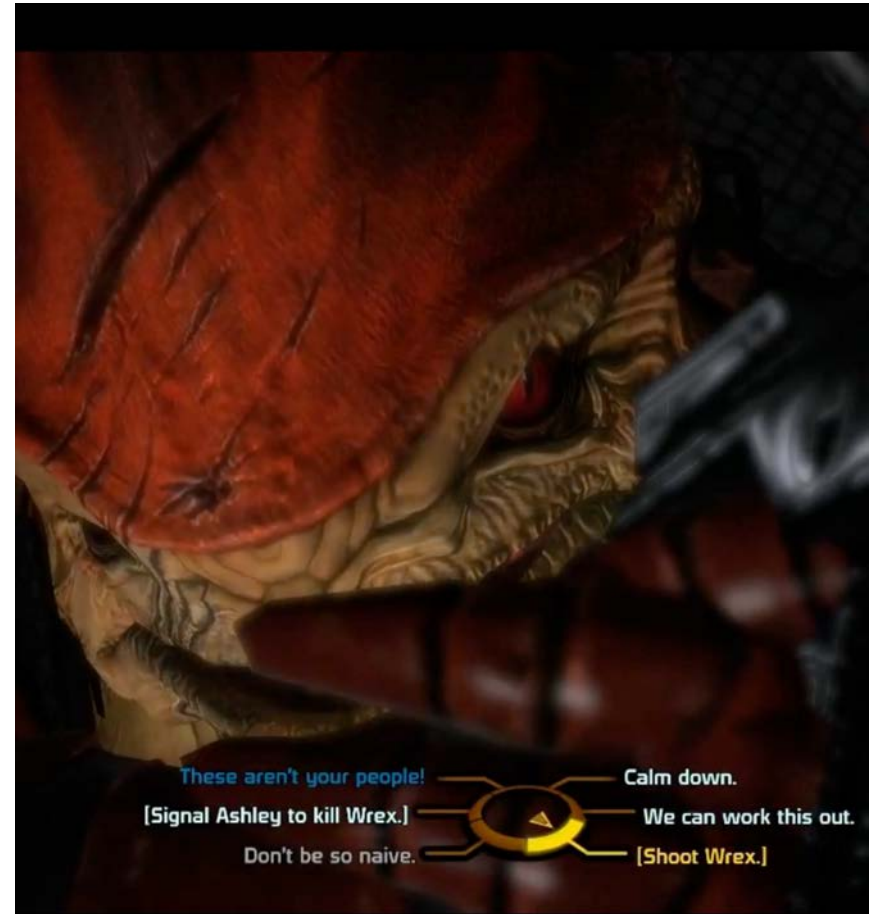
begintalknode 87;
state = 70;
nextstate = -1;
condition = gf(128,15) == 1 && gf(103,1) == 2;
question = "I sent Koepp to you.";
text1 = "Estragon nods. _He got here. I put him in chains and sent him east.
He'll be in a cell somewhere for a while, until things calm down. The people
didn't like that, but nothing I can't handle._";
text2 = "_Thanks for your help. Now everyone will be angry, but not angry
enough to start killing. Here's a little something for your troubles._ He
gives you a beautiful, polished cawewood bow and a pouch of coins.";
code =
    set_flag(128,15,2);
    toggle_quest(77,3);
    reward_give(93);
    change_coins(300);
break;

begintalknode 88;
state = 78;
nextstate = -1;
condition = gf(128,16) == 0;
question = "It is very important.";
text1 = "_Oh, I am sure it is. And, as I said, I'll let him know you were
by. I'd let you through the gate, but, you know, regulations. I'm not
allowed to let just anyone in without orders. Sorry._";
```

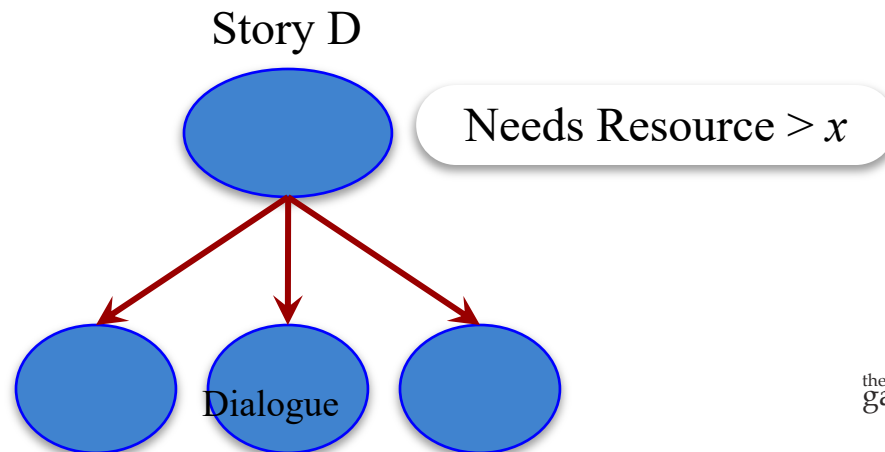
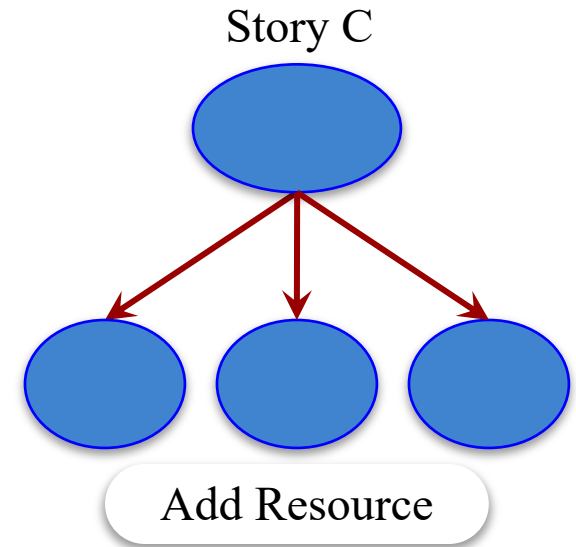
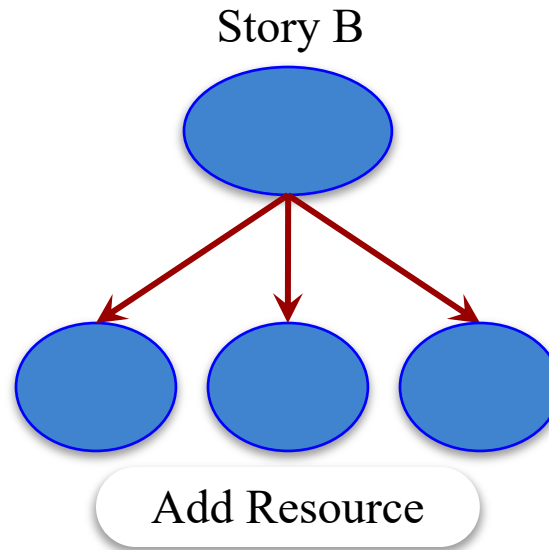
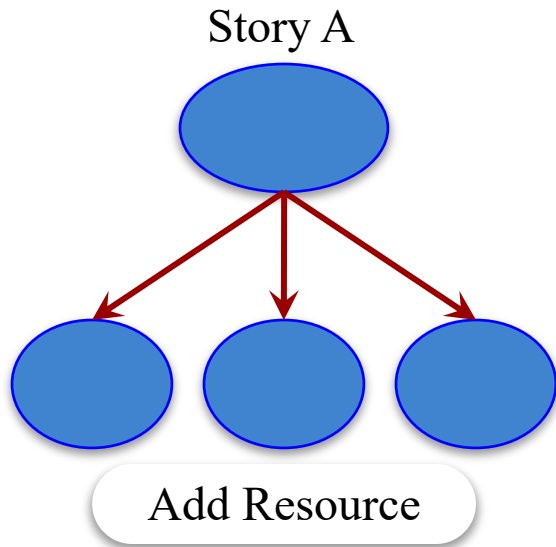
- Node for each player choice
- Including the initial “hello”
- Contains NPC response, but can depend on game state
- Also code that specifies what this does as an action
- Pointers to follow-up dialog
- Data-driven design is simple
- Index nodes by numbers
- Numbers give tree structure
- Simple scripting for actions

Dialogue and Gameplay

- Often easy to combine them
 - Resources affect gameplay
 - Dialogue **needs** resources
 - Dialogue **alters** resources
- When is dialogue a game?
 - Dialogue has **own** resources
 - No usage **outside** dialogue
- **Reputation systems**
 - Points measuring good/evil
 - Gain points from dialogue
 - Unlocks more dialogue

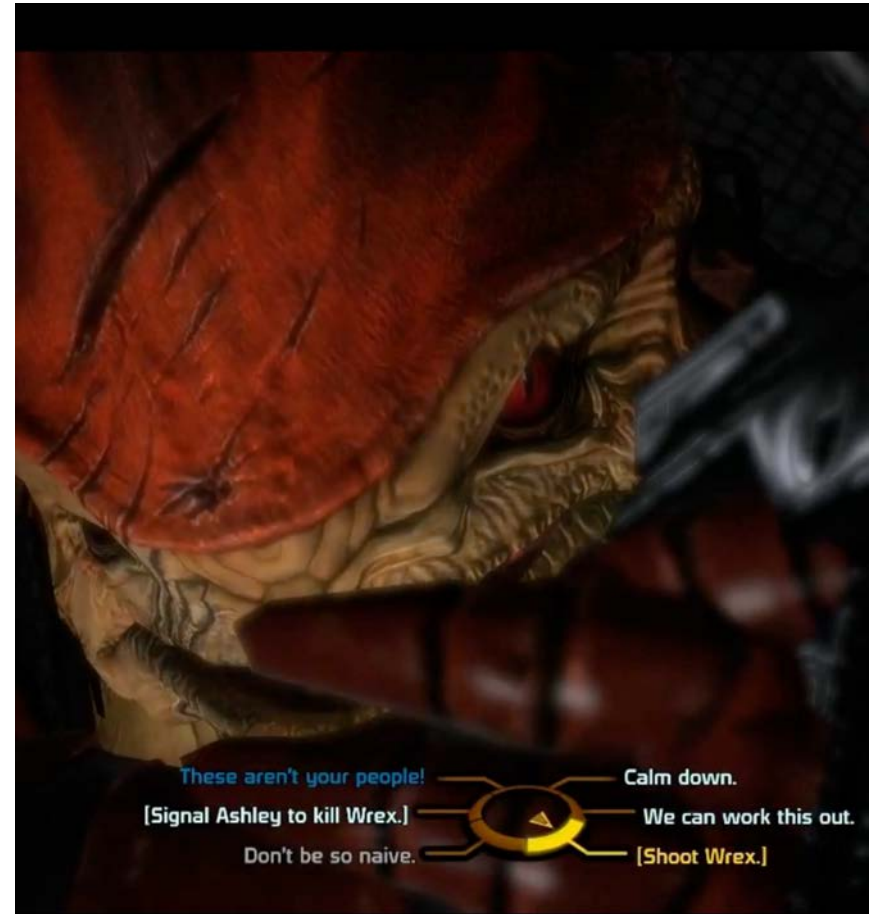


Reputation: Advantages



Dialogue and Gameplay

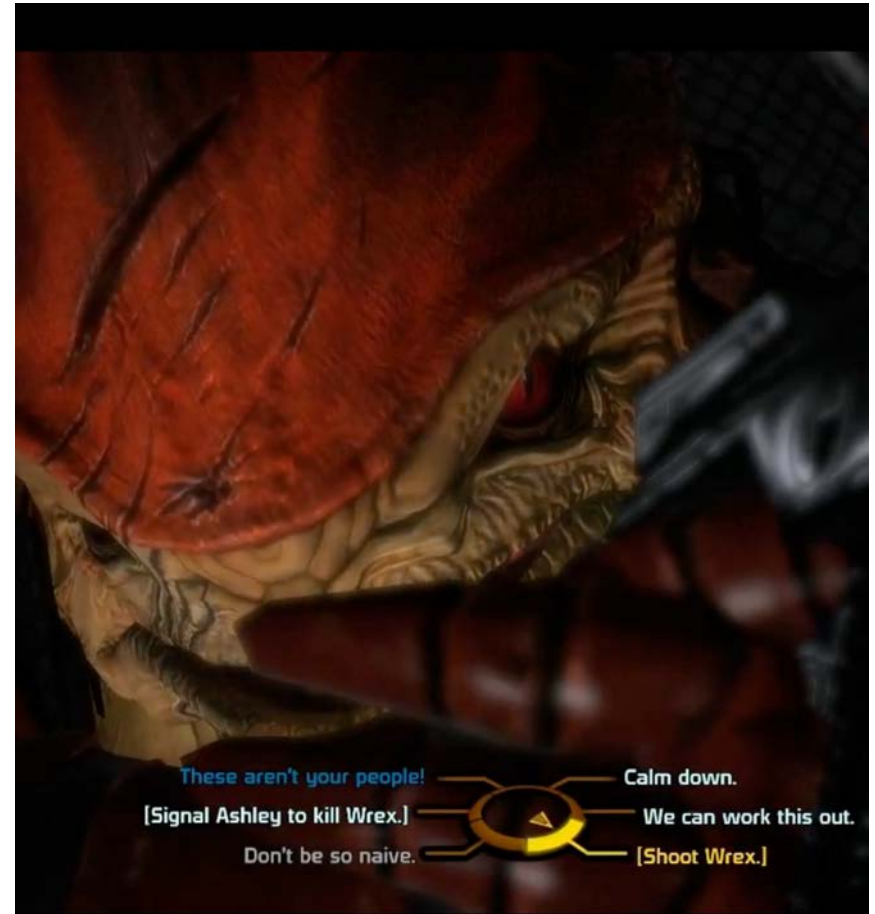
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Feedback Loop



Reputation: Feedback Loops

- Reputation ever increasing
 - Good points for Good acts
 - Good points unlock Good acts
- Need to use them somehow
 - Otherwise, why get them?
 - Raise requirements over time
 - Escalating “lock-and-key”
- Creates black/white morality
 - Stop good acts; no good points
 - Too few Bad points to change
 - Stay good/bad all the way



Other Forms of Reputation

- Nonexclusive morality
 - Can anywhere in spectrum
 - **Example:** Mass Effect 3
 - But meaningful choice?
- Character by character
 - Each character has an approval/friendship rating
 - Affected by actions, as well as *tone* of your dialogue
 - Inter-NPC rivalries affect your relationships with each



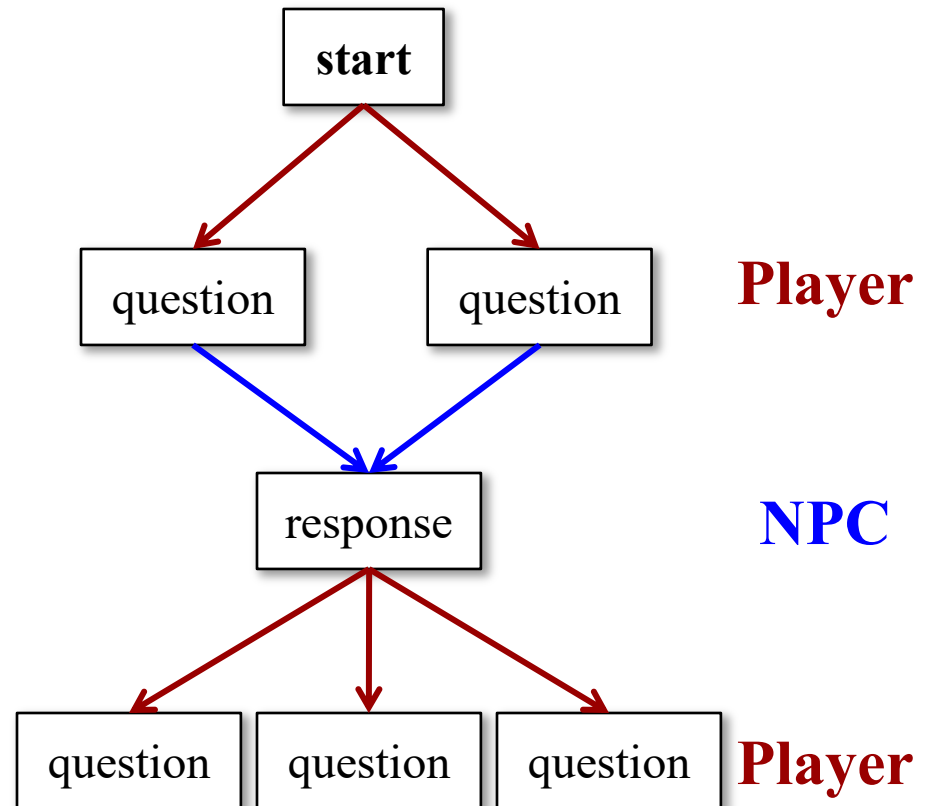
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Optimization: Dialogue Graphs

- 2+ questions, 1 response
 - More compact than tree
 - No redundant information
- Why so many questions?
 - Actions, not speech
 - “I don’t know”
- **Example:** Reputation
 - Evil option (-repute)
 - Good option (+repute)
 - Tone of voice



NLP and Game Dialogue

- **N**atural **L**anguage **P**rocessing
 - Understand *any* sentence
 - Major area of CS research
- NLP in games?
 - Type in arbitrary sentence
 - NPCs react appropriately
 - Several experiments in 90s
- Was avoided for many years
 - Nontrivial chance of failure
 - Any dialogue failure is bad!
 - Hard to write NPC reactions



Generative AI Has Promise Here

- Converse of NLP: **N**atural **L**anguage **G**eneration
 - **Given**: complex set of data
 - **Outcome**: commentary on that data
 - *Exactly* the problem LLMs are designed for

- **Examples**

- Sports commentary
- Party combat chatter
- Intelligent townsfolk



- Major topic of research in game studios

How Far Can We Take It?

Leaked Internal Sony Video Uses Horizon's Aloy to Show AI-Powered PlayStation Character Prototype

"This is just a glimpse of what is possible..."

A leaked internal video has revealed Sony is experimenting with AI-powered PlayStation characters.

[The Verge](#) reported on the emergence of an internal video allegedly created by PlayStation Studios' advanced technology group that uses Aloy from the Horizon games to demonstrate AI-powered game characters.

The video was subsequently pulled from YouTube following a copyright claim from Muso, an internet enforcement company The Verge said lists Sony Interactive Entertainment as a client. This suggests the video is legitimate. IGN has asked Sony for comment.

In the video, as reported by The Verge, Sony Interactive Entertainment director of software engineering, Sharwin Raghoebardajal, has a conversation with an AI-powered Aloy via voice prompts and AI-generated speech and facial animations.

But We Need to Constrain This

- Conversations in games have **purpose**
 - Start/end a quest
 - Inform us about a location/challenge
 - Define our character
 - Elicit reactions to our behavior
- We want this dialog to be **economical**
 - The NPC should not ramble
 - The information should be pertinent
 - The delivery should be dramatic
- But these are constraints LLMs can handle

Summary

- Interactive storytelling reduces to **dialogue**
 - Primary area where character has choice in story
 - Other options abstract to “dialogue with the game”
- Dialogue is often constructed as **graphs**
 - Edges represent dialogue flow
 - Some edges may need to be unlocked
- This is an area of very **active research**
 - Personalization requires natural language generation
 - Active area of research with LLMs