

## Lecture 27

# Dialogue

# Elements of Game Narrative

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- **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

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- 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

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- 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

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- **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

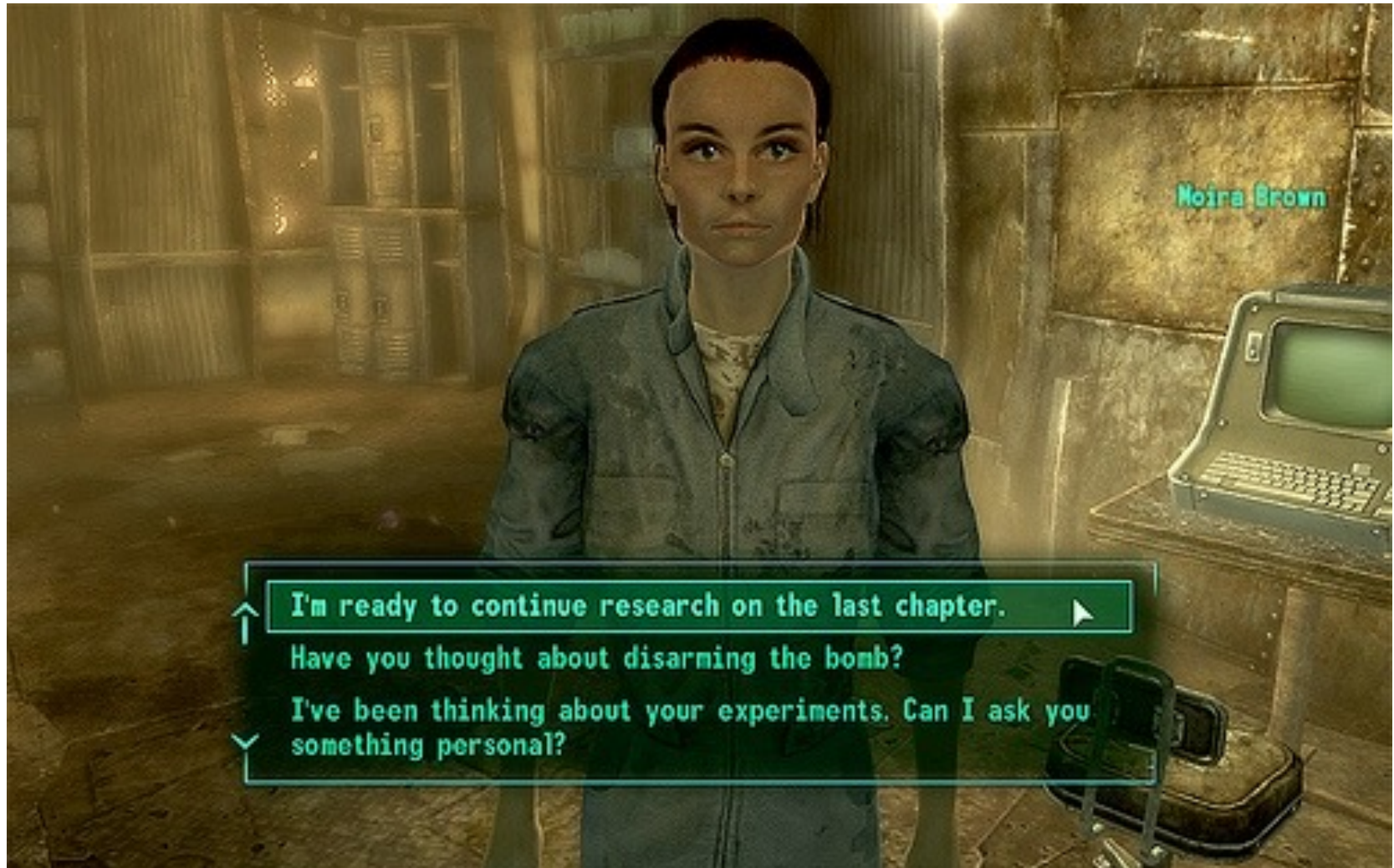
- **Reveal information**
  - Story as investigation
  - Integrate with gameplay
- **Reveal character**
  - Reveal NPC personalities
  - **Define** player personality
  - Heightens sense of risk
- **Break up the monotony**
  - In-game humor
  - “NPC banter”



# NPC Banter: *Dragon Age*

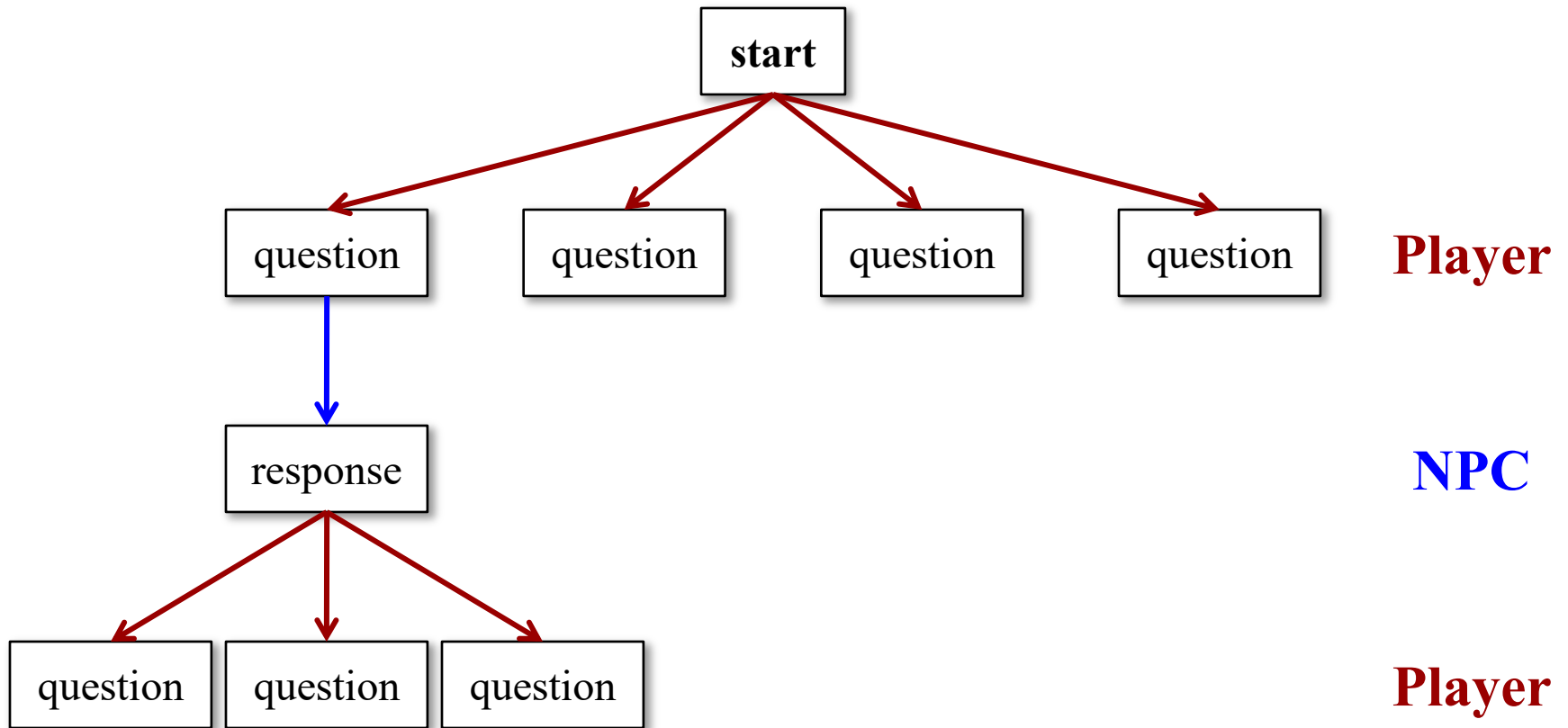


# Standard Approach: Dialogue Trees





# Dialog Trees



# Example: *Avernum* Series



# More than Just Talk

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## Preconditions

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- 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

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- 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

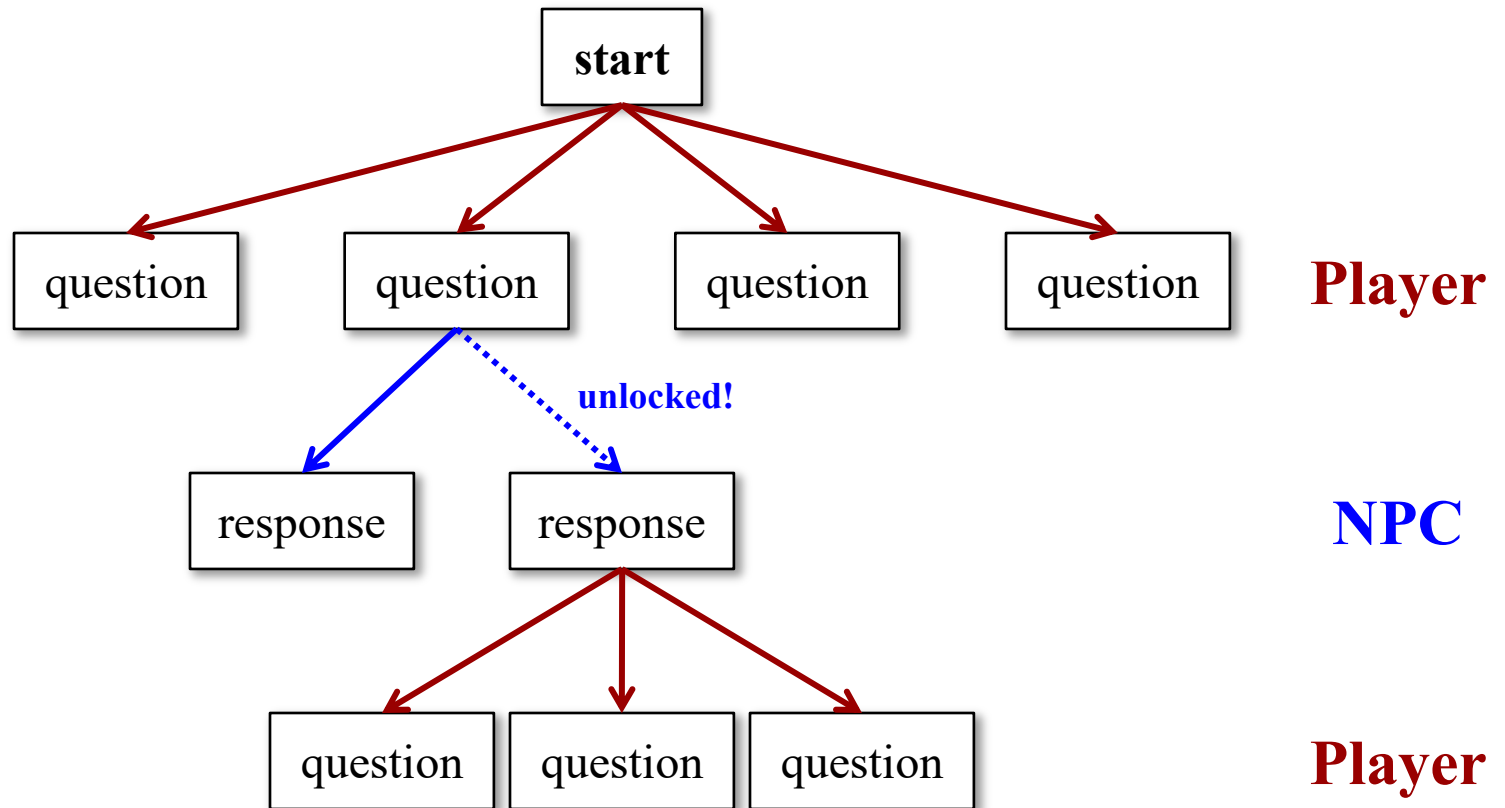
- Not everyone is talkative
  - Test for dialogue option
  - Like rule-based AI
- **Symbolic preconditions**
  - Quest completed
  - Speaking to questing NPC
- **Numeric preconditions**
  - Reputation points
  - Money on hand

## Actions

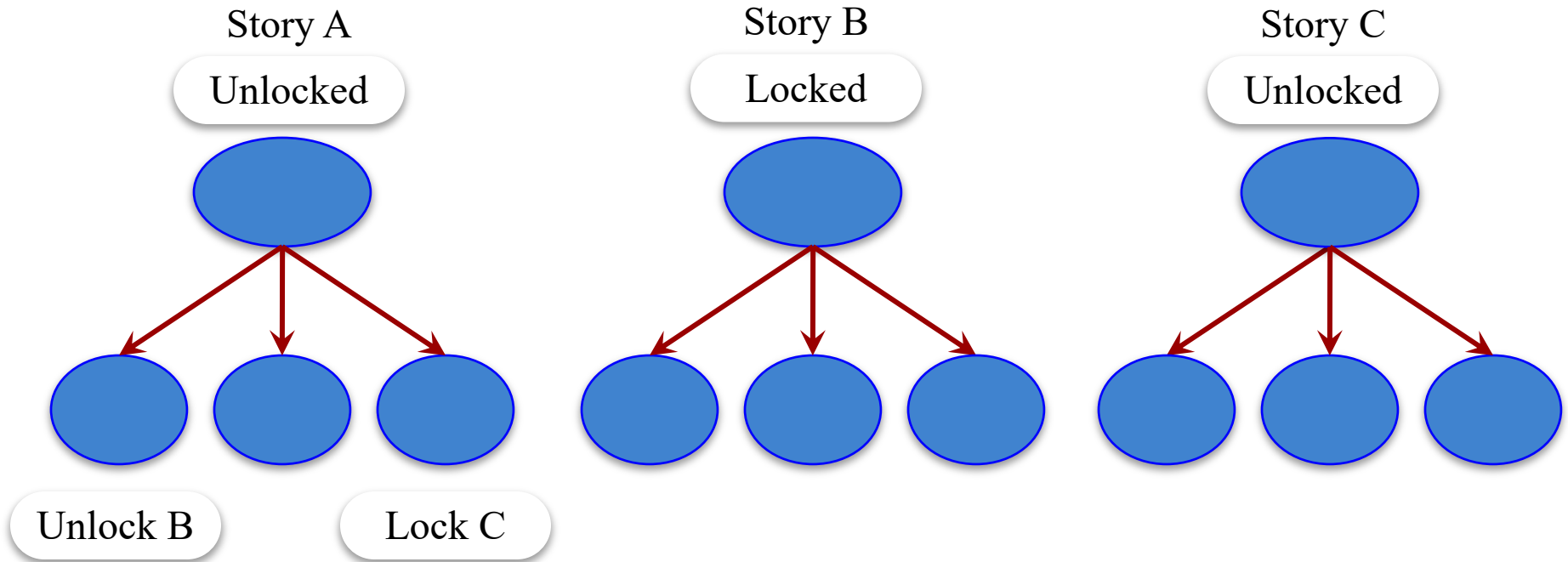
- Talking may alter state
  - State of player character
  - State of non-speaking NPC
- **Numeric actions**
  - Give player money
  - Increase reputation

This Looks Like Gameplay Design

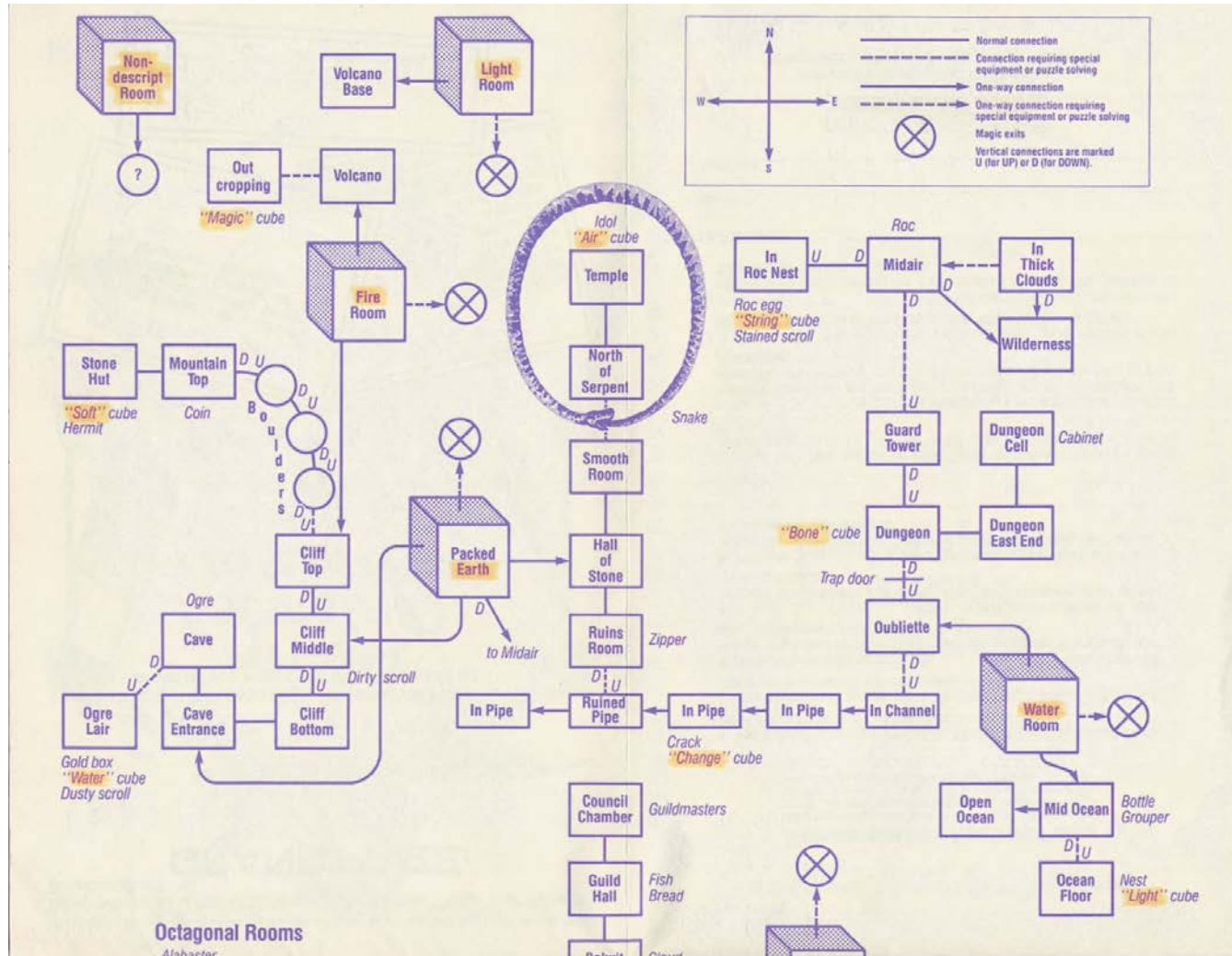
# Dialog Trees: Symbolic Effects



# Symbolic Effects and Faction Based Storylines



# This Looks Familiar...



# Dialogue vs. Interactive Fiction

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## Similarities

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- 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

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- 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;

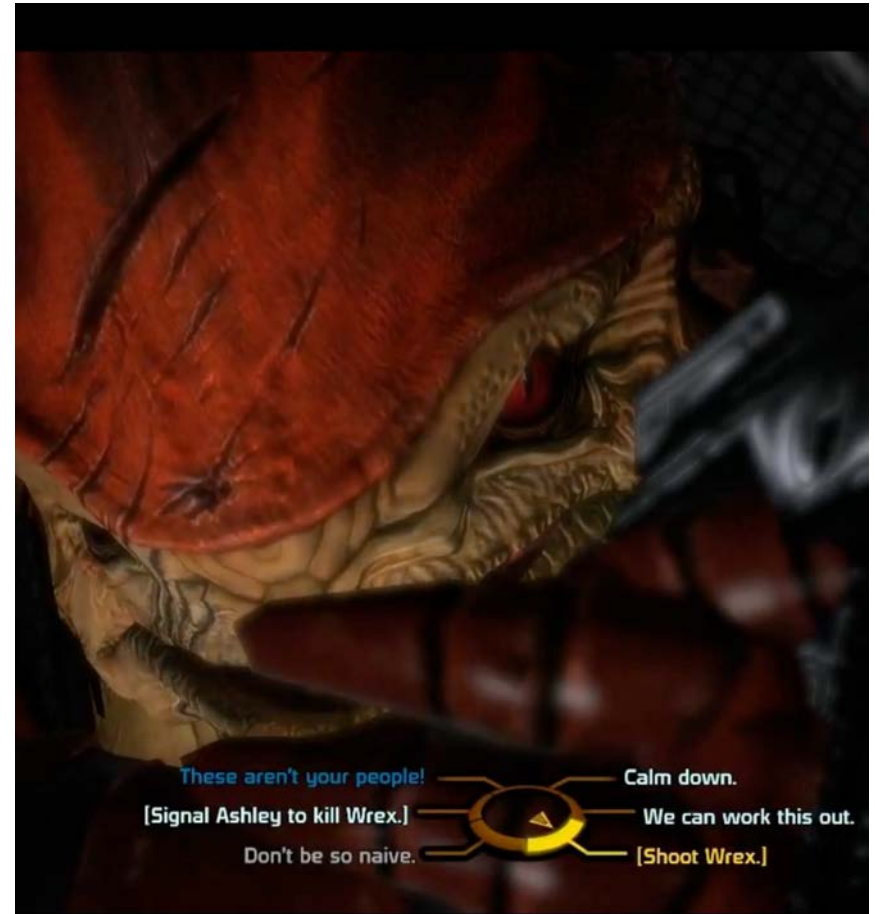
begintalknode 87;
state = 70;
nextstate = -1;
condition = gf(128,15) == 1 && gf(103,1) == 2;
question = "I sent Koepp to you.";
text1 = "Estragon nods. _He got here. I put him in chains and sent him east.
He'll be in a cell somewhere for a while, until things calm down. The people
didn't like that, but 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._";
```

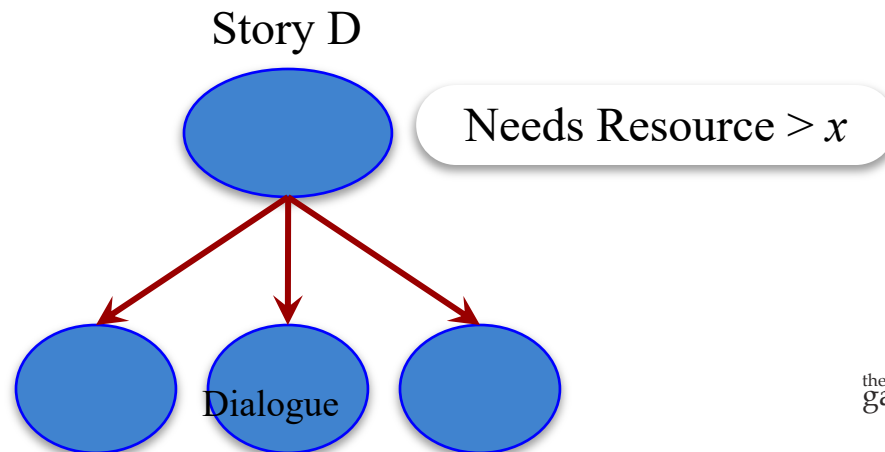
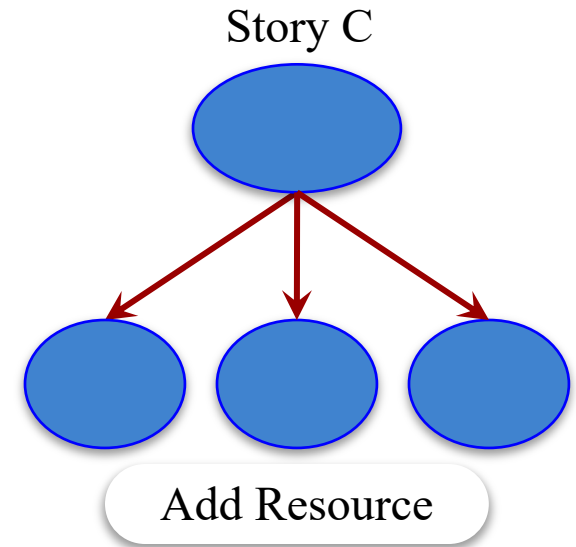
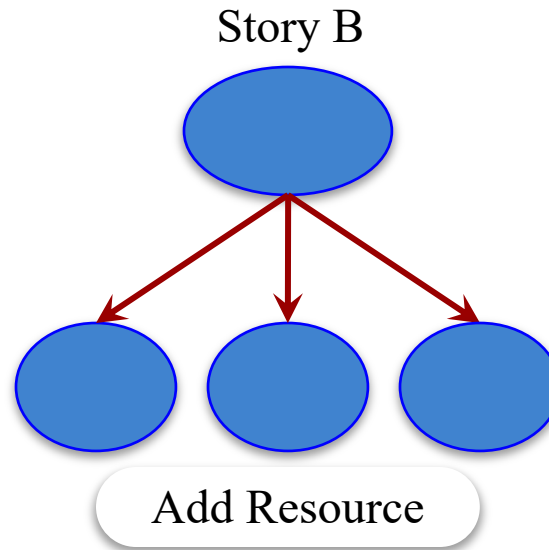
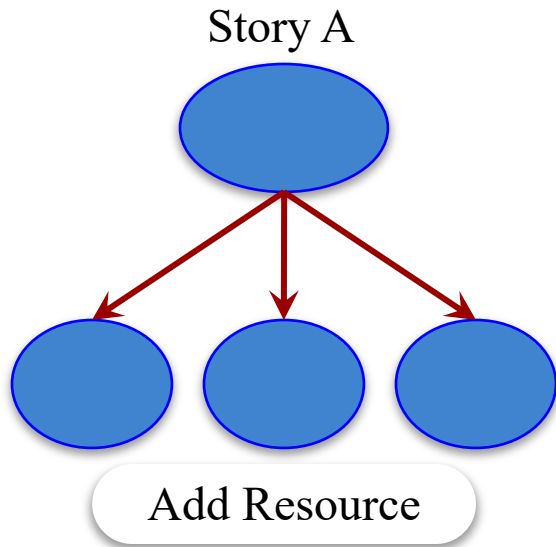
- Node for each player choice
- Including the initial “hello”
- Contains NPC response, but can depend on game state
- Also code that specifies what this does as an action
- Pointers to follow-up dialog
- Data-driven design is simple
- Index nodes by numbers
- Numbers give tree structure
- Simple scripting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

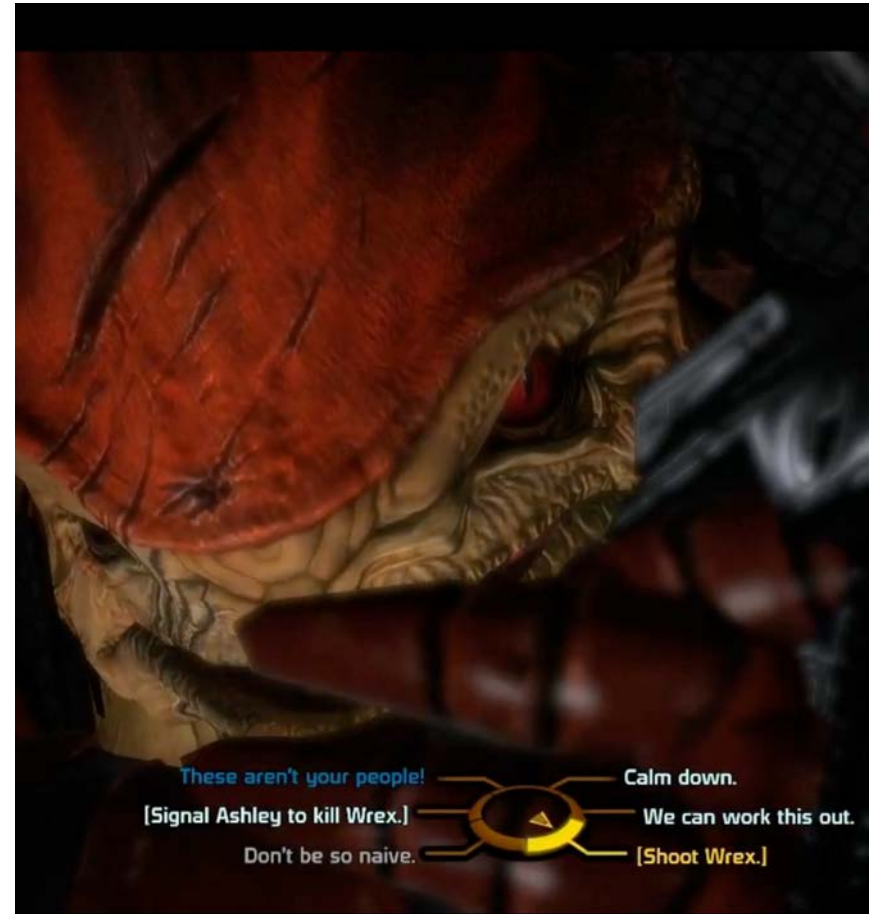


# Reputation: Advantages



# Dialogue and Gameplay

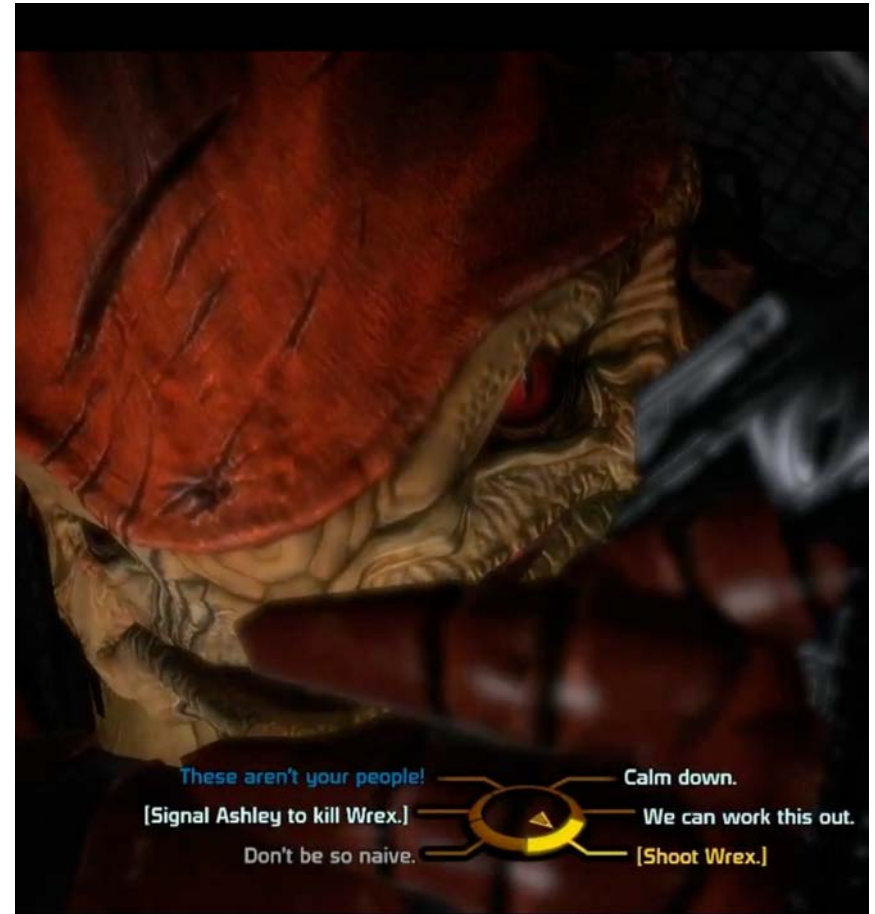
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Feedback Loop



# 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



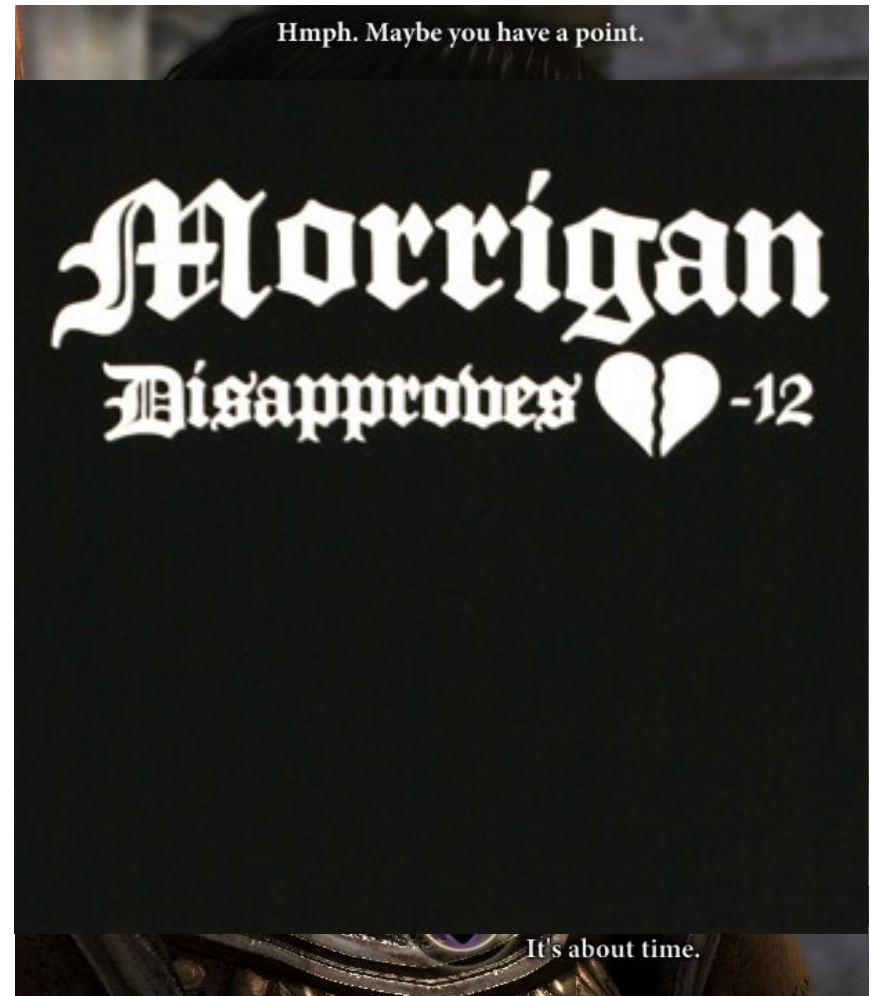
# Other Forms of Reputation

- 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



# Other Forms of Reputation

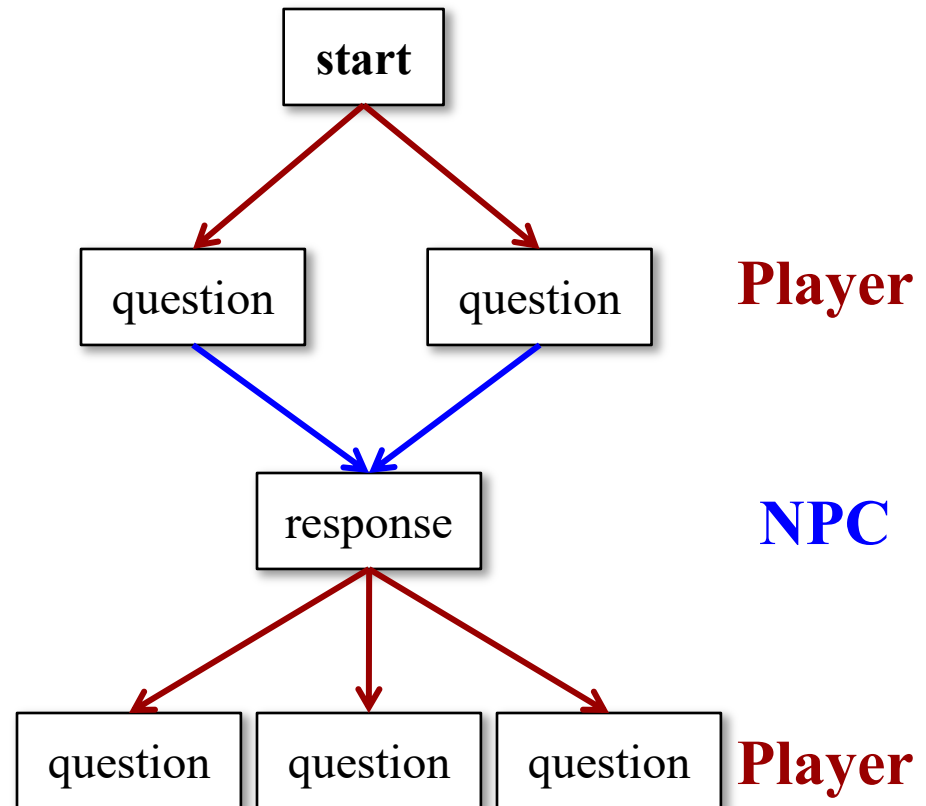
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# Optimization: Dialogue Graphs

- 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
- Generally avoided today
  - Nontrivial chance of failure
  - Any dialogue failure is bad!
  - Hard to write NPC reactions



# NLG and Game Dialogue

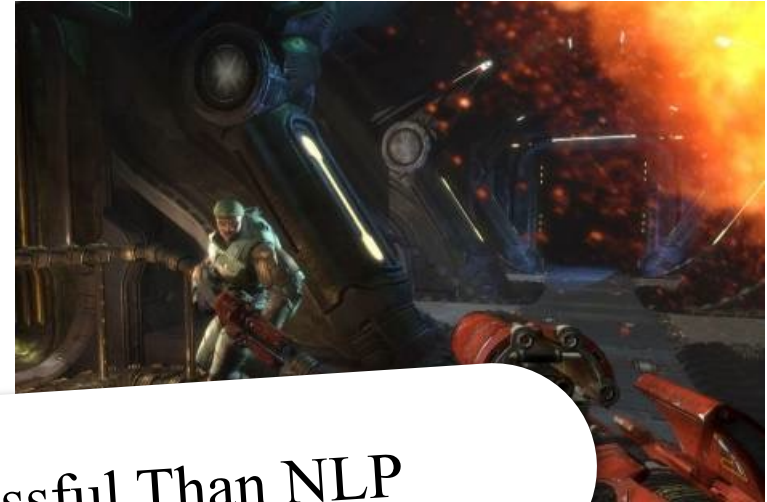
- **N**atural **L**anguage **G**eneration
  - **Given**: complex set of data
  - **Outcome**: comment on data
  - Also an area of CS research
- Comment requirements
  - Must be **simpler** than data
  - Should also be **natural**
- Sample applications
  - Sports commentary
  - Party combat chatter
  - Intelligent townfolk



# NLG and Game Dialogue

- **N**atural **L**anguage **G**eneration

- **Given**: complex set of data
- **Outcome**: comment on data
- Also an area of CS research



- Comment requires

- Must
- Should

Much More Successful Than NLP

- Sample applications

- Sports commentary
- Party combat chatter
- Intelligent townfolk



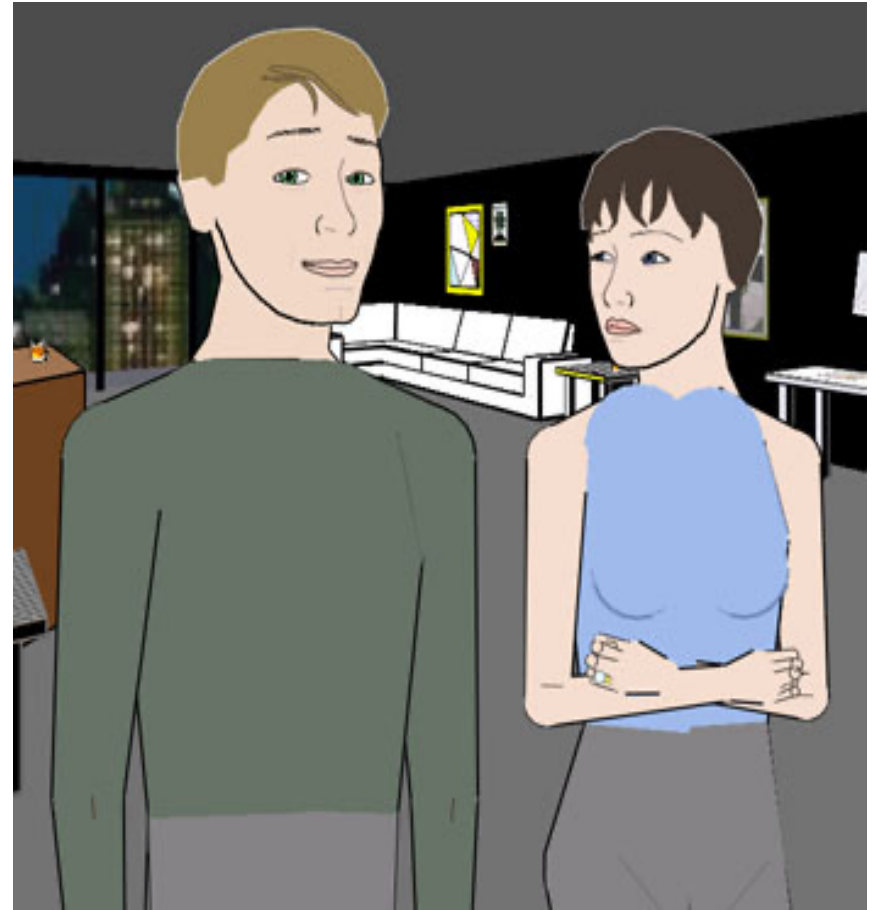
# NLG and Game Dialogue

- Often a set of “canned” text
  - React to specific events
  - NPC picks text as appropriate
- Text is *parameterized*
  - “What do we do, <name>?”
  - “Someone killed <monster>!”
  - “That was <numb> days ago.”
- Choosing text to say
  - Favor important events?
  - Favor recent events?
  - Random (pull-toy)?



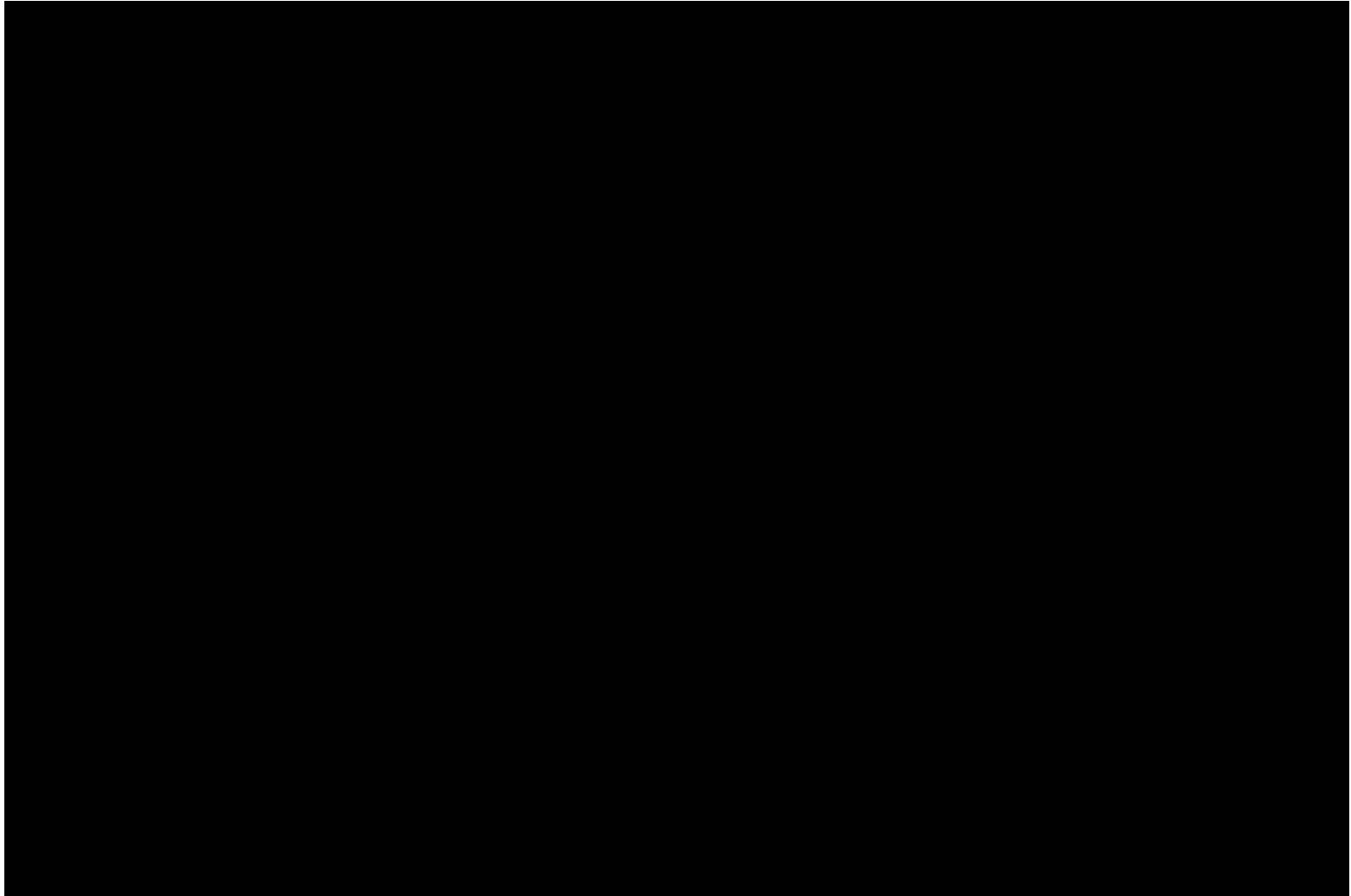
# Drama Managers

- Freeform component design
  - Player can do any action
  - AI matches to component
  - Choice may be contextual
- Built for dramatic tension
  - Tracks the current tension
  - Picks storyline options most consistent with tension
- Guide player through hints
  - Help understand context
  - “You need a drink.”



# Example: *Façade*

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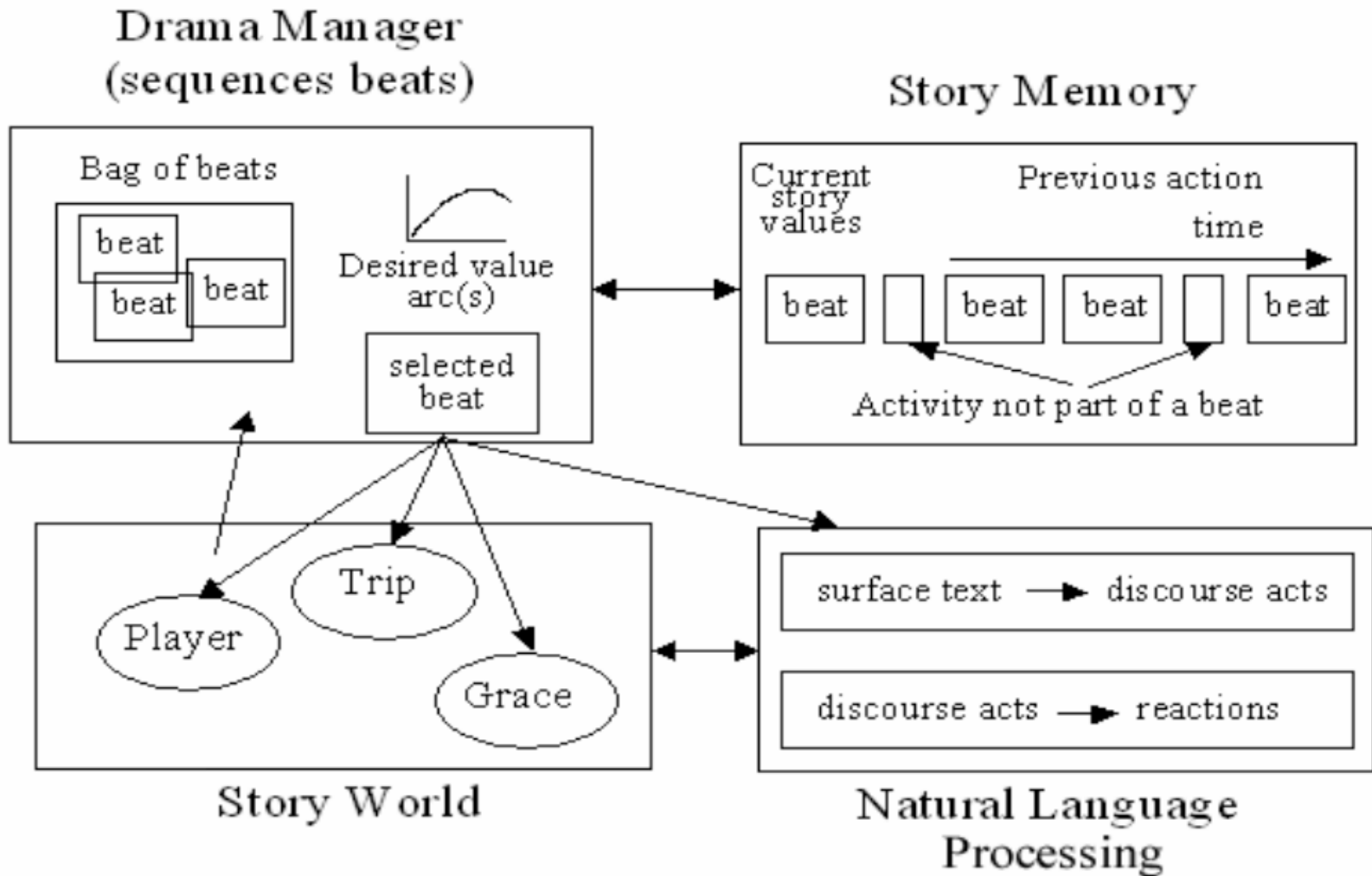
# Façade Story Structure

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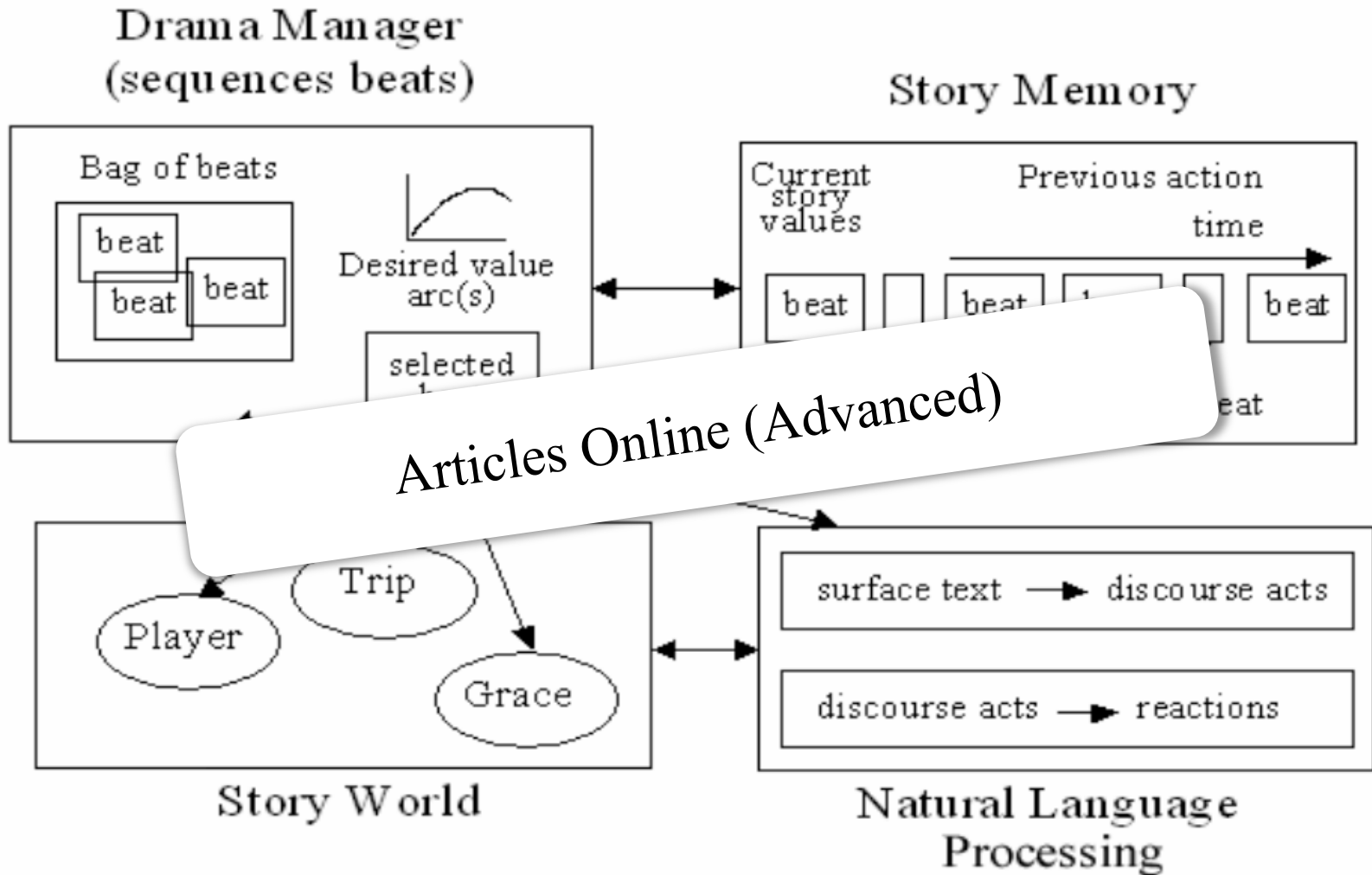
- Story broken into **beats** and **joint dialogue behaviors**
  - JDBs are 1-5 lines between Trip & Grace (banter)
  - Beat is 10-100 JDBs resolving single plotline
- Storyline designed with goals and mix-ins
  - Goals specify how story proceeds if no interaction
  - Mix-ins give the player opportunities to join in
- AI planning algorithms used for **dramatic tension**
  - Each JDB is an operator that affects on dramatic tension
  - Pick JDBs consistent with story, that best build tension



# Drama Manager in *Façade*



# Drama Manager in *Façade*



# Summary

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- 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
  - Drama managers lead to more open-ended play