

Applications of AI Planning: Story Telling

Preface

- Application areas: structural similarity
- Story: sequence of character actions
- Benefit?

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- Story: sequence of character actions
- Benefit?
 - when creating something new

Outline

- Story world modeling
- Differences to classical planning
- Concrete Approaches
 - Fabula
 - Discourse
- Conclusion

Story world modeling

- On a basic level

Attributes of main characters → Predicates

Actions of main characters → Operators

Story world modeling

- On a basic level

“In a fictional world with a continent named Westeros, the highborn refugee Viserys sold his younger sister Daenerys to a warlord in exchange for the warlord’s army. He used the army to conquer Westeros and become its king.”

Story world modeling

- On a basic level

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Story world modeling

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Story world modeling

- $A = \{ V\text{-army} , V\text{-king} , D\text{-sold} \}$
- $O = \{ V\text{-sell-D} , V\text{-conquer-W} \}$
 - $V\text{-sell-D} = \langle \neg V\text{-army} \wedge \neg D\text{-sold} , V\text{-army} \wedge D\text{-sold} \rangle$
 - $V\text{-conquer-W} = \langle V\text{-army} \wedge \neg V\text{-king} , V\text{-king} \rangle$
- $I = \neg V\text{-army} \wedge \neg V\text{-king} \wedge \neg D\text{-sold}$
- $\gamma = V\text{-king}$

Story world modeling

- On a basic level

Story world modeling

- More sophisticated

Story world modeling

- More sophisticated
 - Story variations
 - Interactivity
 - Planning of story structures based on world rules

Differences to classical planning

- Similar on basic level
- Different in nature
 - Purpose
 - Key Properties
 - More sophistication → challenges
- Specialized planners (IPOCL)
- Interactivity

Concrete approaches

- Fabula
 - Haslum
Narrative planning: Compilations to classical planning
- Discourse
 - Porteous, Cavazza, Charles
Applying planning to interactive storytelling: Narrative control using state constraints

Concrete approaches

“In simple terms, the [fabula] is the *what* in a narrative that is depicted, discourse is the *how*.” — Chatman

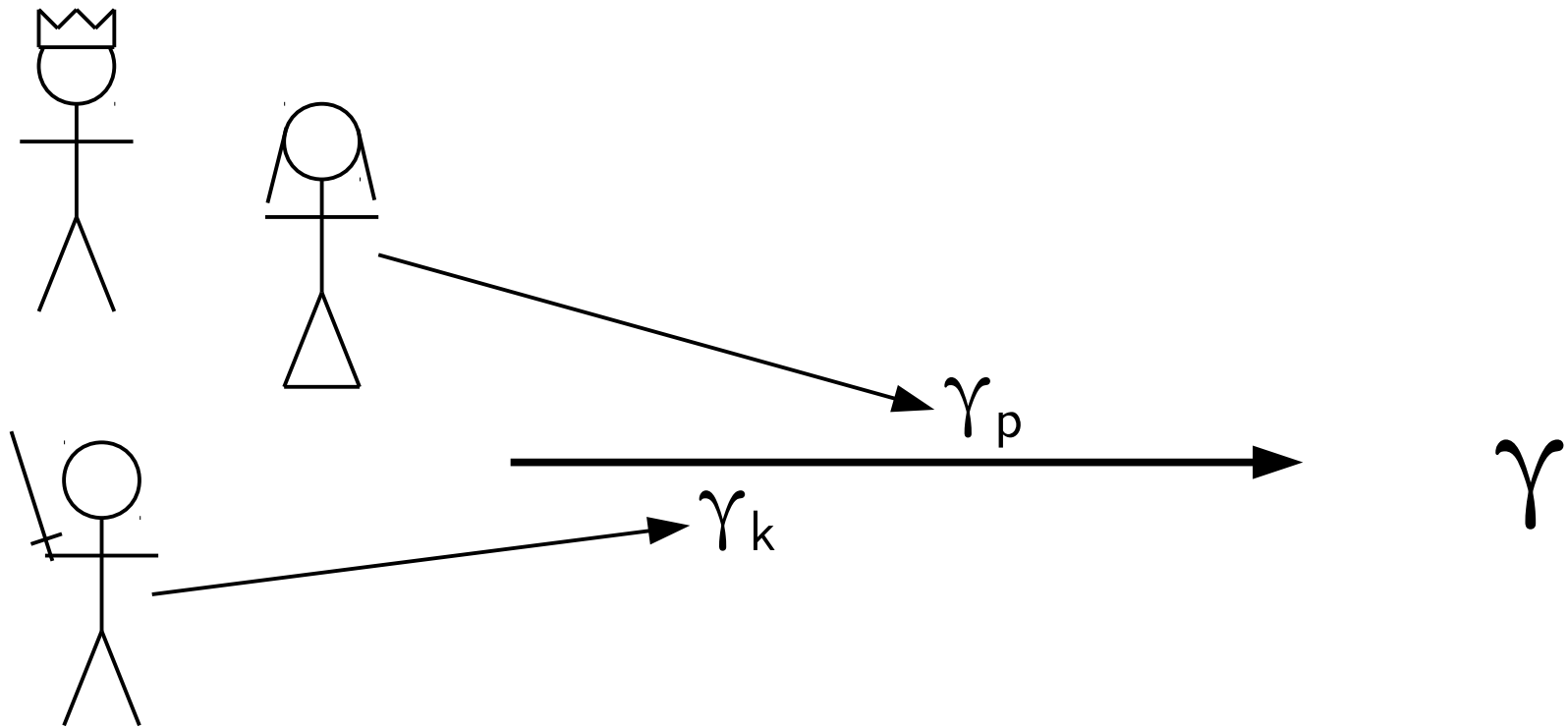
Concrete approaches: fabula

- Based in IPOCL approach
- Focus on intentionality
 - Character goals
 - Delegation
 - Intentional plans, frames of commitment

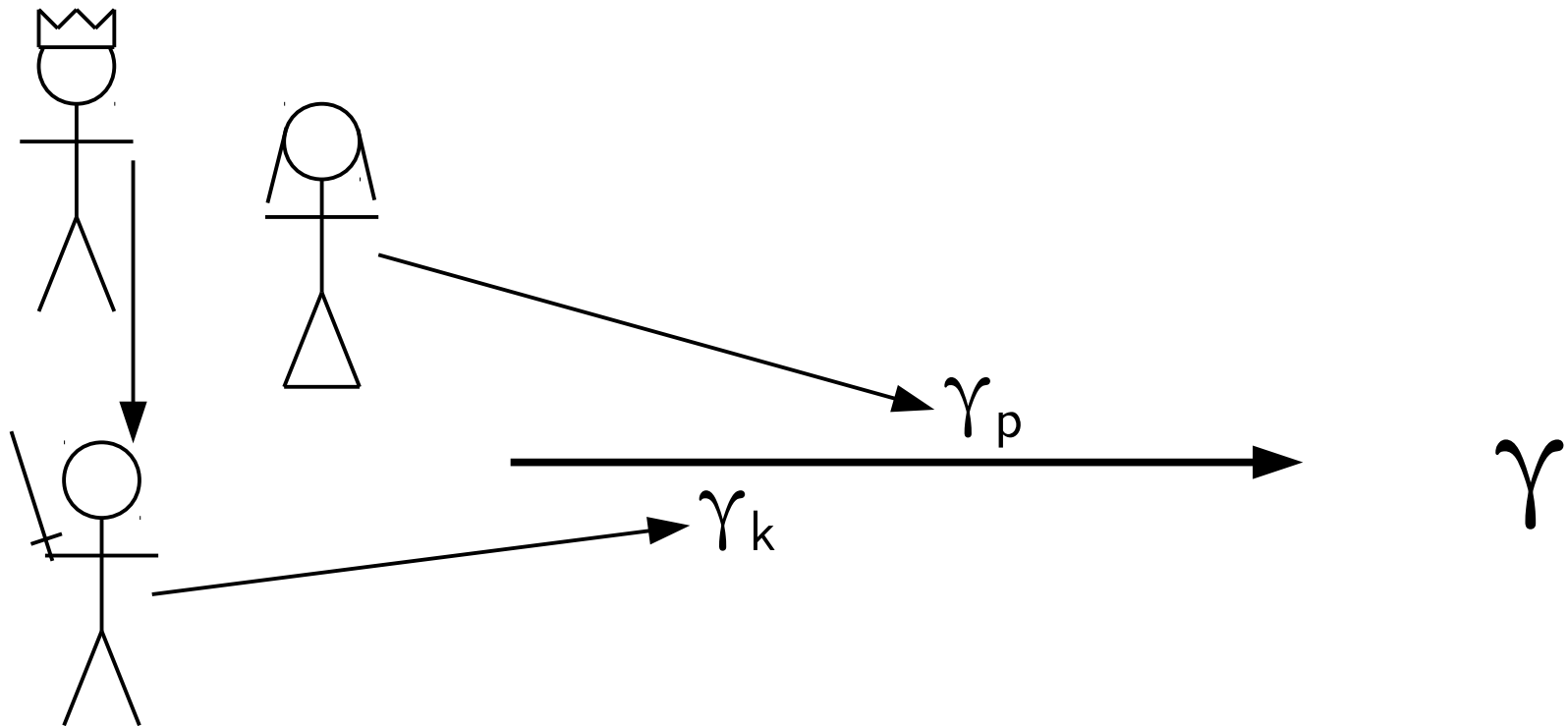
Concrete approaches: fabula



Concrete approaches: fabula



Concrete approaches: fabula

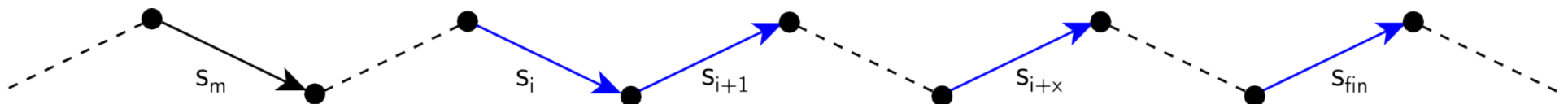


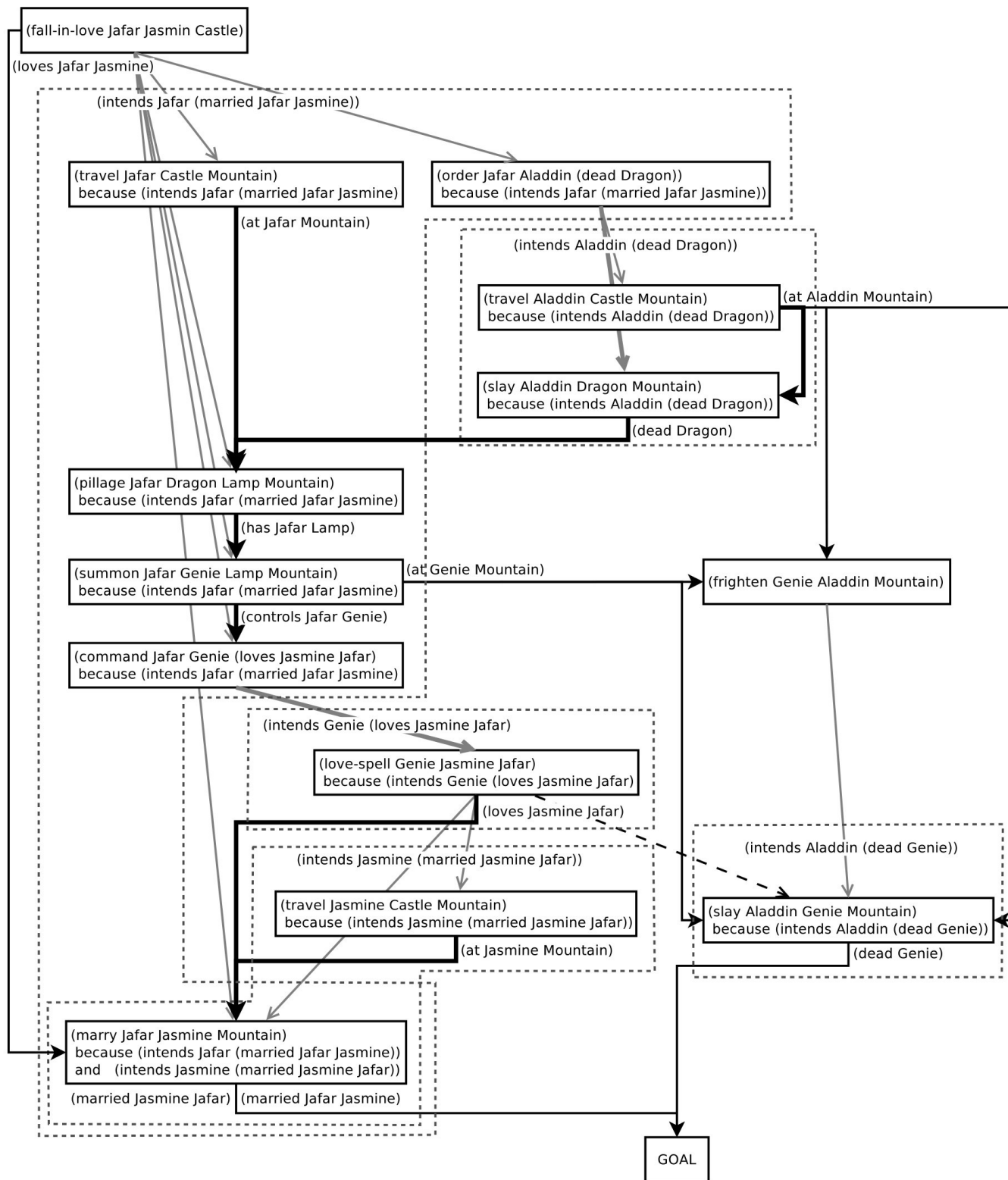
Concrete approaches: fabula

- Def. Intentional plan:
 - Intentional actions: associated with (intends A g)
 - Final step $s_{fin} \in S'$ makes g true
 - Motivating step $s_m \notin S'$
 - Causal or motivational links to s_{fin}

Concrete approaches: fabula

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Concrete approaches: discourse

- Goals
 - Variation
 - Interactivity
- Methods
 - PoV
 - Decomposition

Concrete approaches: discourse

- PoV
 - Perspective
 - Disposition
- Example
 - $V\text{-sell-}D = \langle \neg V\text{-army} \wedge \neg D\text{-sold} , V\text{-army} \wedge D\text{-sold} \rangle$

Concrete approaches: discourse

$$V\text{-sell-}D = \langle \neg V\text{-army} \wedge \neg D\text{-sold} , V\text{-army} \wedge D\text{-sold} \rangle$$

- Perspective: Viserys / Daenerys
- Disposition:
 - V: indifferent / regretful
 - D: submissive / revengeful

Concrete approaches: discourse

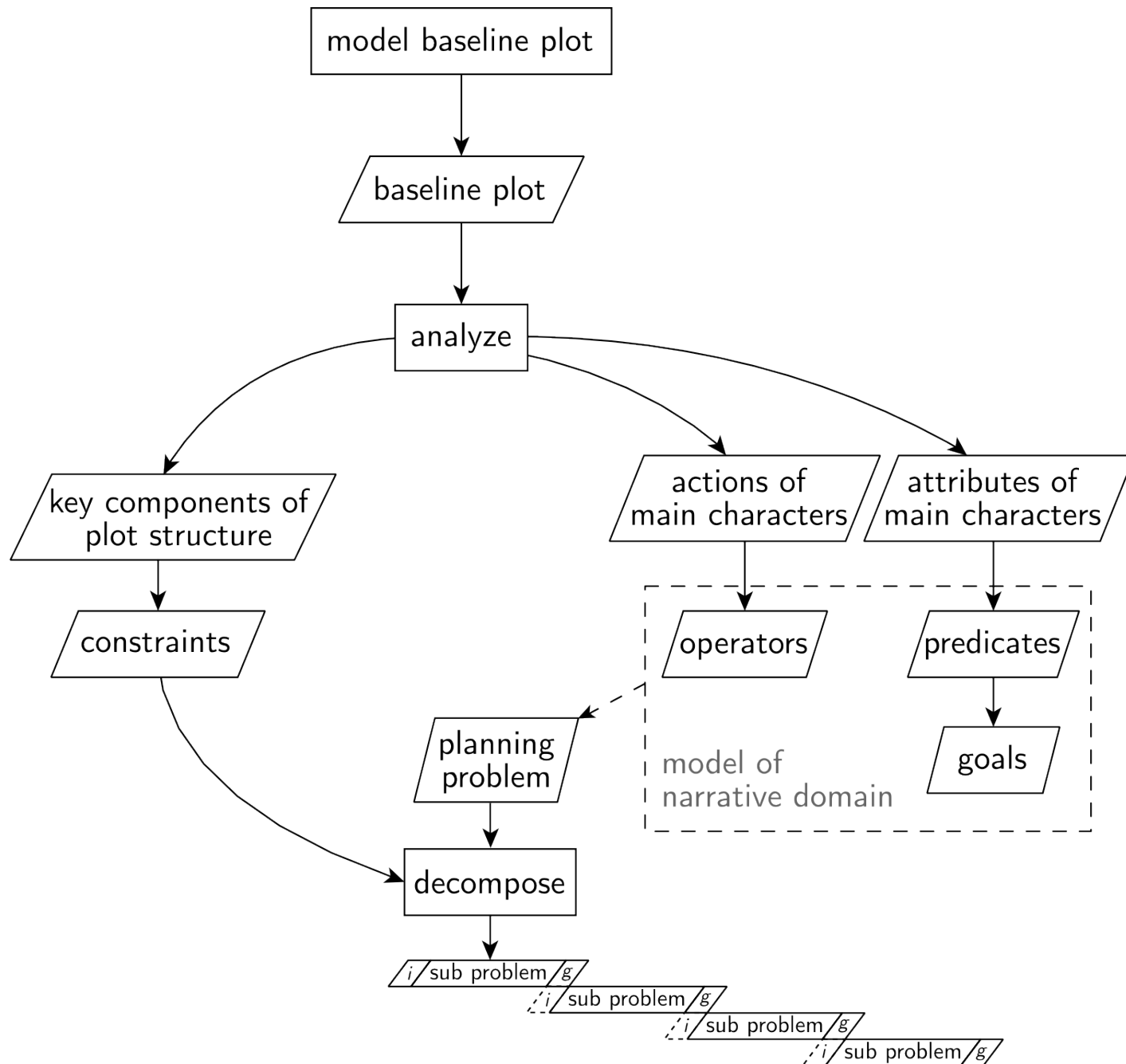
$$V\text{-sell-D} = \langle \neg V\text{-army} \wedge \neg D\text{-sold} , V\text{-army} \wedge D\text{-sold} \rangle$$

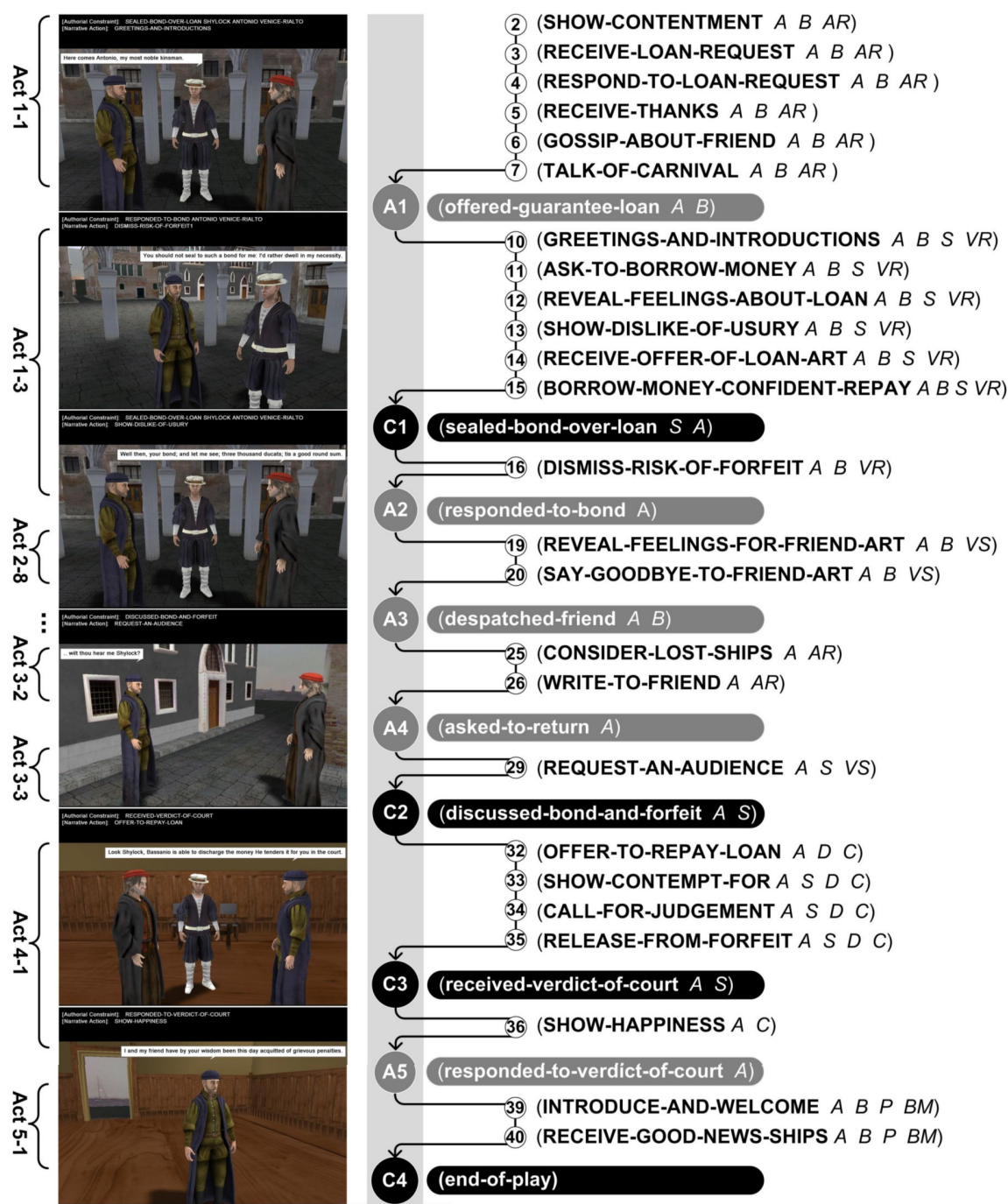
- PoVs:

- Viserys-indifferent $\rightarrow V\text{-sell-D} = \langle \dots$
- Viserys-regretful $\rightarrow V\text{-sell-D} = \langle \dots$
- Daenerys-submissive $\rightarrow V\text{-sell-D} = \langle \dots$
- Daenerys-revengeful $\rightarrow V\text{-sell-D} = \langle \dots$

Concrete approaches: discourse

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39 (NARRATIVE-ACTION LIST-OF-ARGS)

A1 (PoV-specific-constraint LIST-OF-ARGS)

C2 (common-constraint LIST-OF-ARGS)

A: Antonio
B: Bassanio
D: Duke
S: Shylock

BM: Belmont
C: Courtroom
AR: Antonio-Residence
SR: Shylock-Residence
VR: Venice-Rialto
VS: Venice-Street

Conclusion

- Approachable on different levels
 - Fabula
 - Discourse
- Specialized planners vs. modeling
- Interactive story telling

Sources

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