Applications of AI Planning: Story Telling

Preface

- Application areas: strucutural similarity

- Story: sequence of character actions

- Benefit?

Preface

- Application areas: strucutural similarity

- 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 $\rightarrow$ Predicates

  Actions of main characters $\rightarrow$ 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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- On a basic level

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Story world modeling

- A = { V-army , V-king , D-sold }

- O = { V-sell-D , V-conquer-W }
    - V-sell-D = ⟨ ¬V-army ∧ ¬D-sold , V-army ∧ D-sold ⟩
    - V-conquer-W = ⟨ V-army ∧ ¬V-king , V-king ⟩

- I = ¬V-army ∧ ¬V-king ∧ ¬D-sold

- γ = V-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 $\rightarrow$ 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

Narrative Theory

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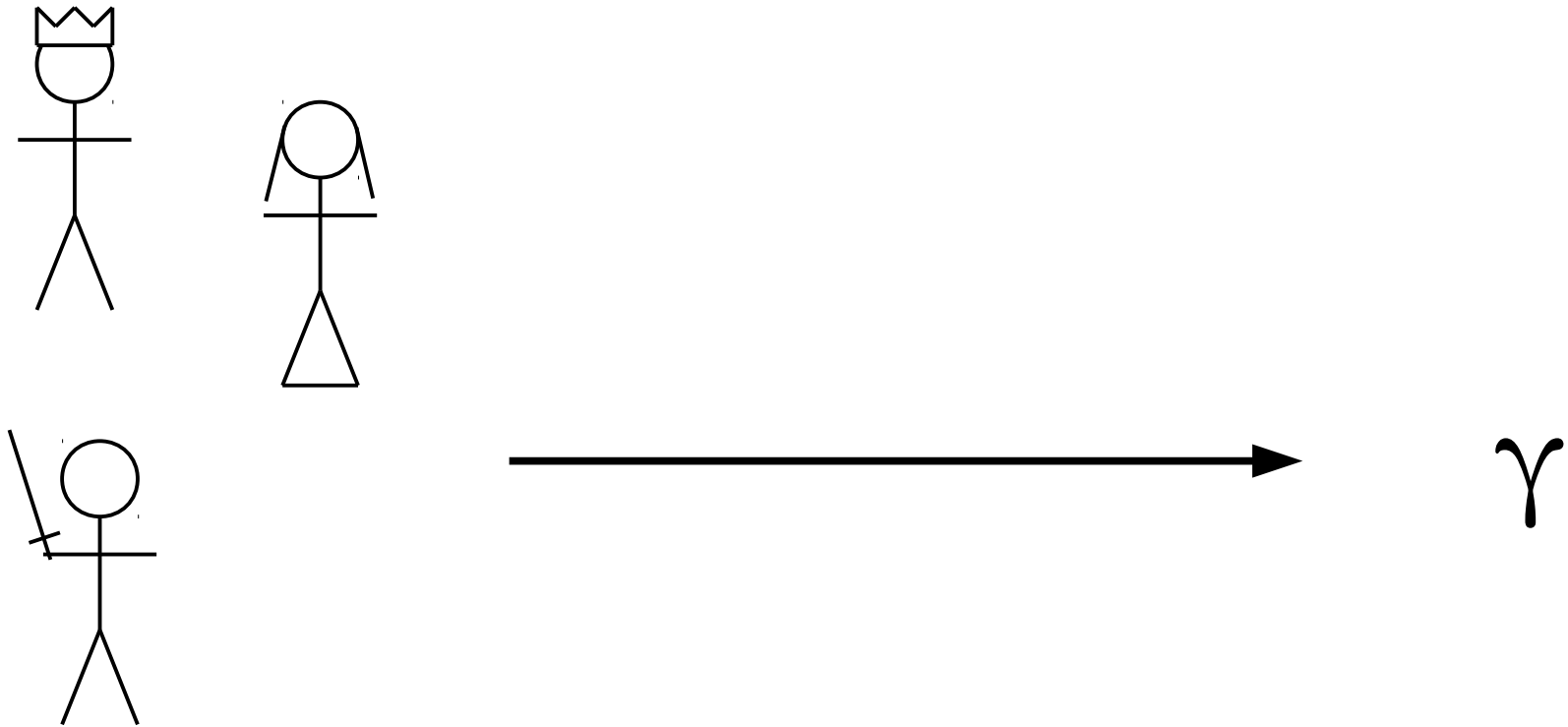
Planning a fabula

- Based in IPOCL approach

- Focus on intentionality

  - Character goals
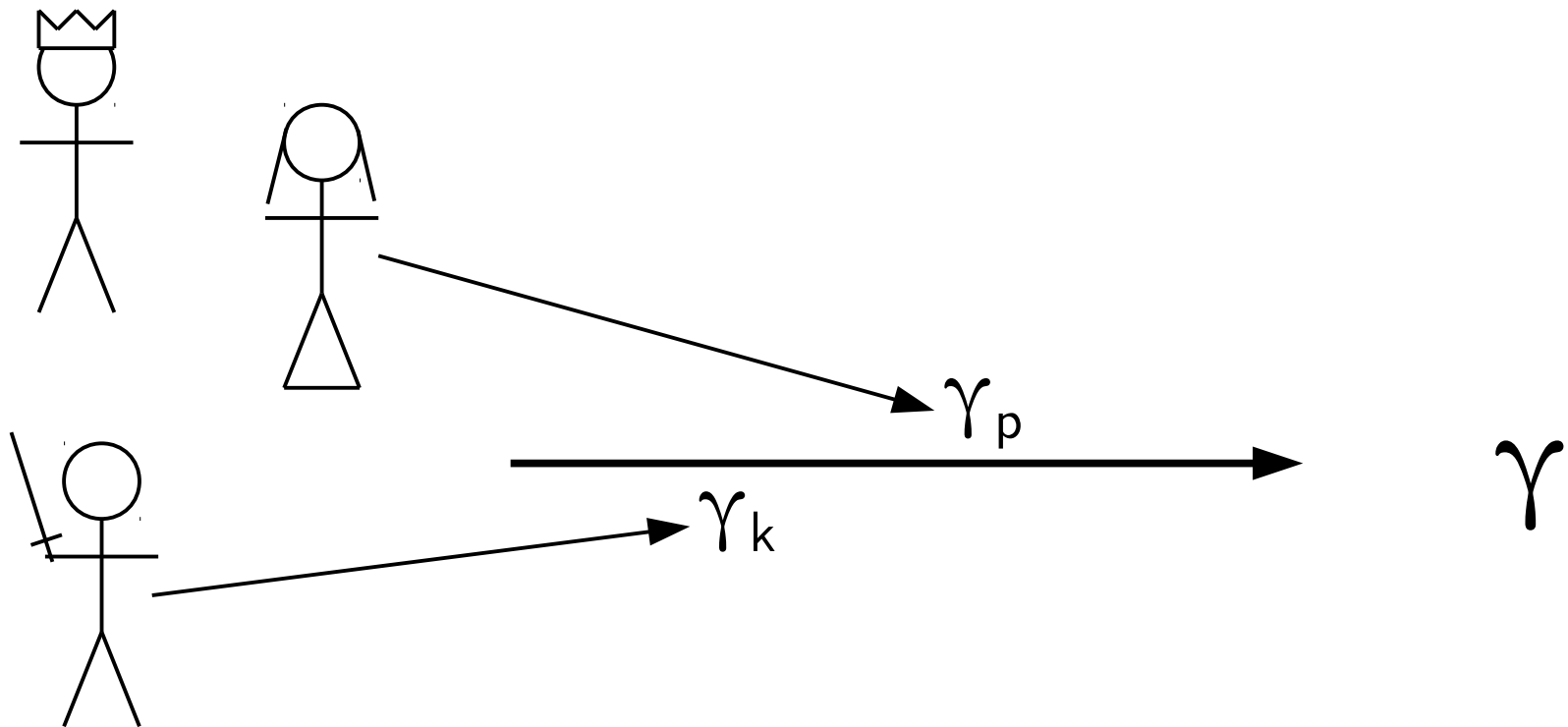
  - Delegation

  - Intentional plans, frames of commitment

Planning a fabula
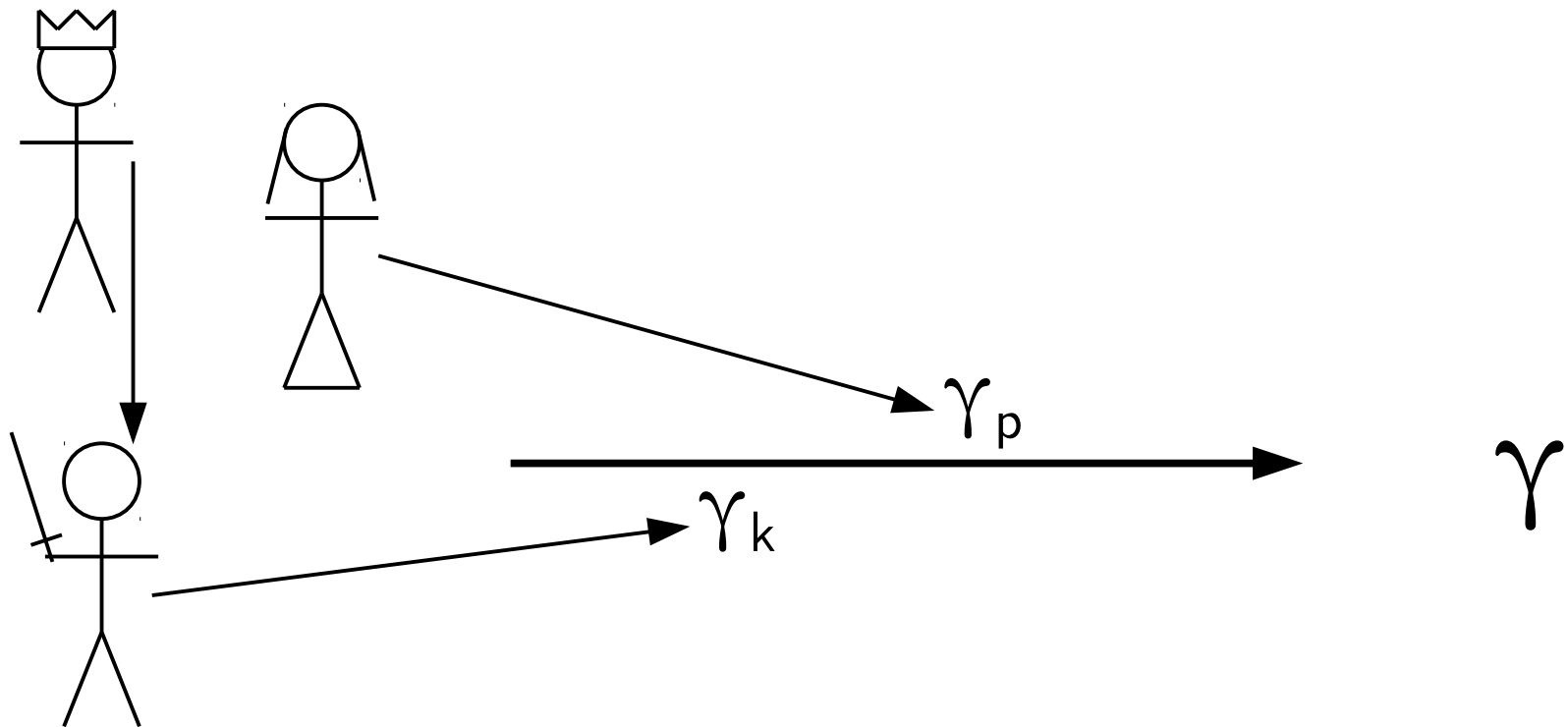
Planning a fabula

Planning a fabula

Planning a fabula

- Def. Intentional plan:

    - Intentional actions: associated with (intends A g)

    - Final step $s_{fin} \in S'$ makes g true

    - Motivating step $s_m \notin S'$

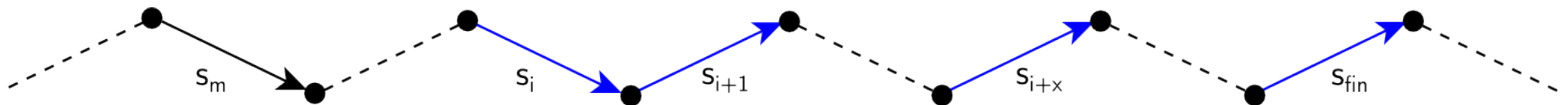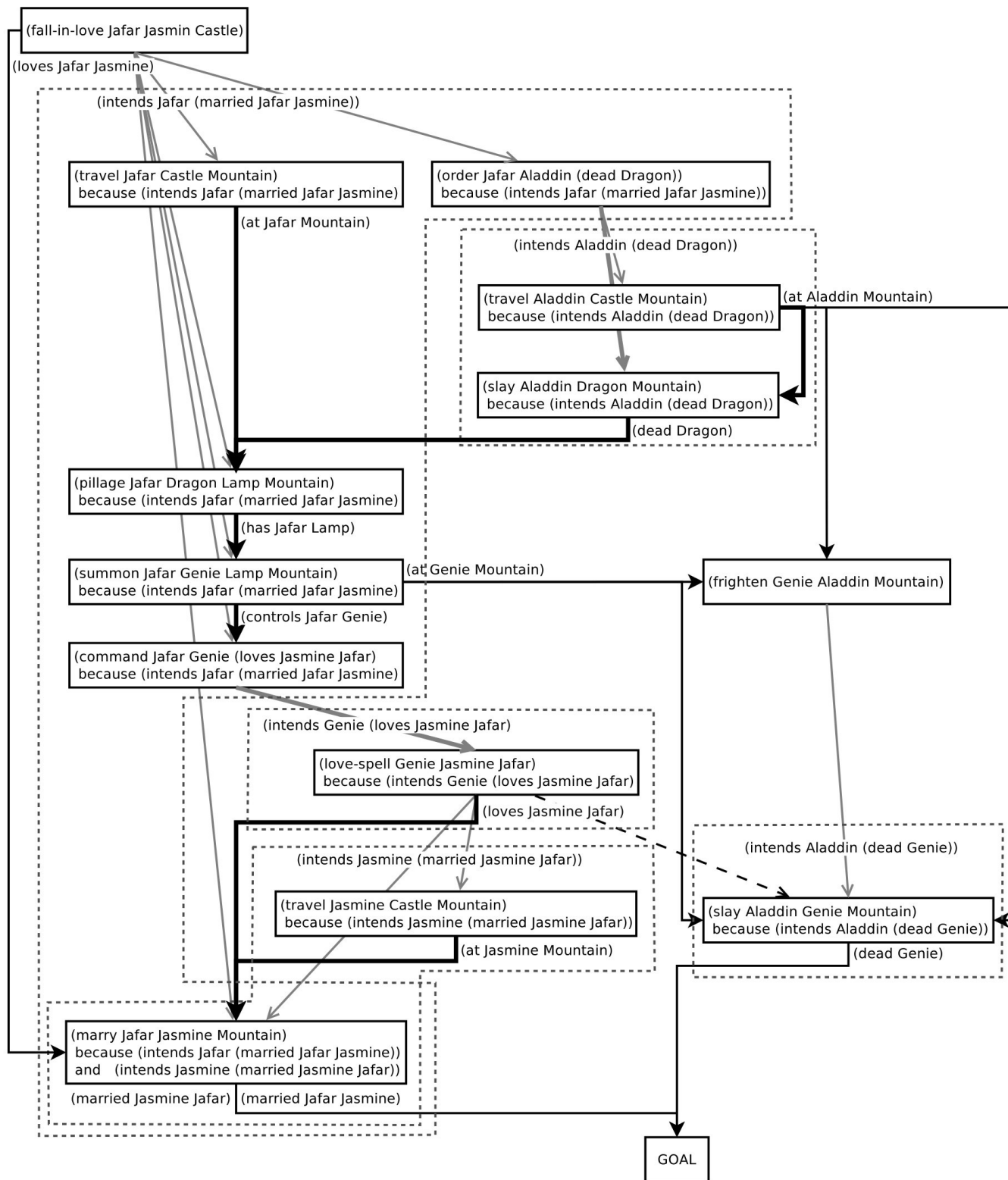   - Causal or motivational links to s_{fin}

Planning a fabula

- ## Def. Intentional plan:

  - Intentional actions: associated with (intends A g)

  - Final step $s_{fin} \in S'$ makes g true

  - Motivating step $s_m \notin S'$

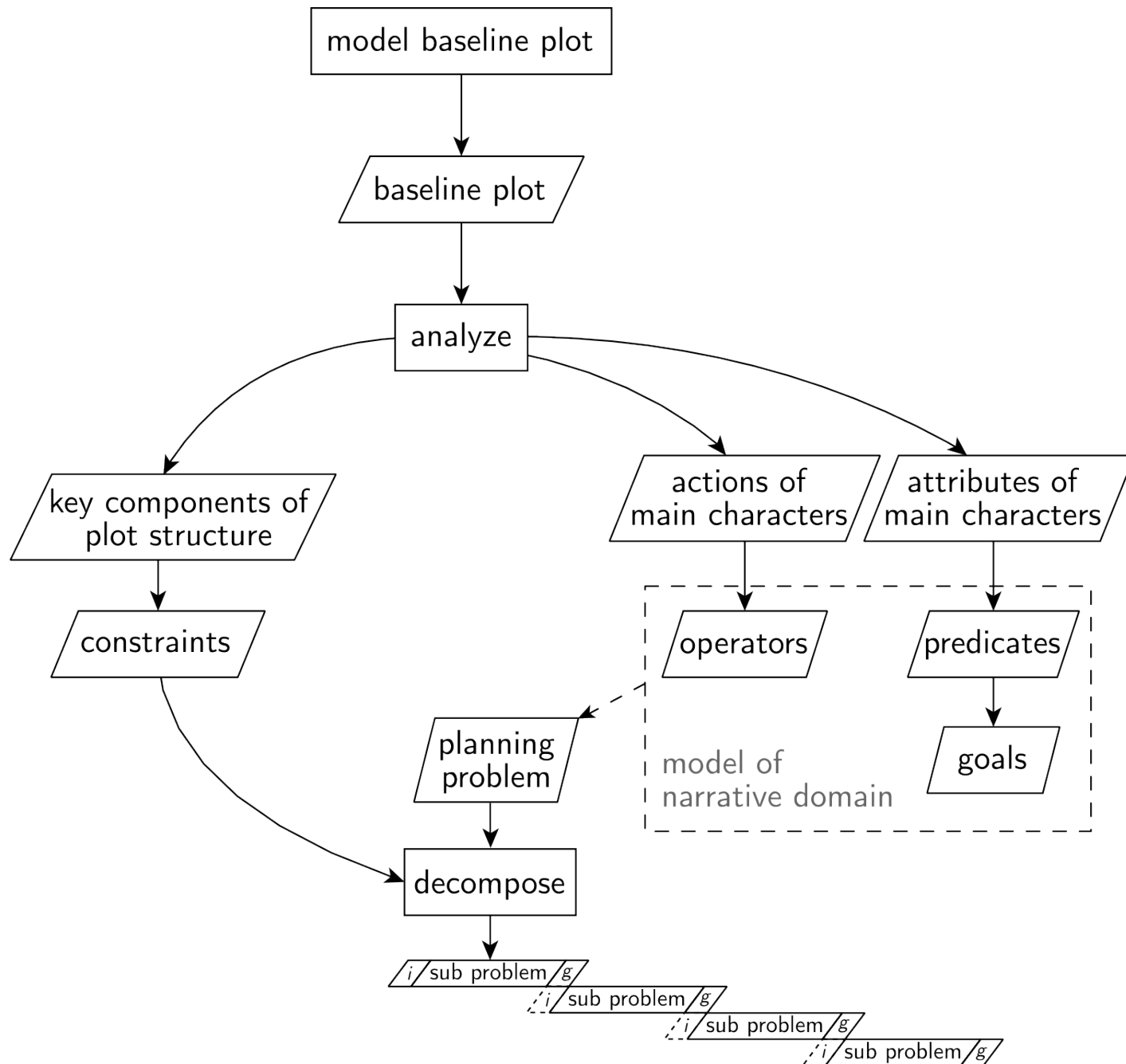 - Causal or motivational links to s_{fin}

(fall-in-love Jafar Jasmin Castle)

(loves Jafar Jasmine)

(intends Jafar (married Jafar Jasmine))

(travel Jafar Castle Mountain)
because (intends Jafar (married Jafar Jasmine)

(order Jafar Aladdin (dead Dragon))
because (intends Jafar (married Jafar Jasmine))

(at Jafar Mountain)

(intends Aladdin (dead Dragon))

(travel Aladdin Castle Mountain)
because (intends Aladdin (dead Dragon))

(at Aladdin Mountain)

(slay Aladdin Dragon Mountain)
because (intends Aladdin (dead Dragon))

(dead Dragon)

(pillage Jafar Dragon Lamp Mountain)
because (intends Jafar (married Jafar Jasmine)

(has Jafar Lamp)

(summon Jafar Genie Lamp Mountain)
because (intends Jafar (married Jafar Jasmine)

(at Genie Mountain)

(frighten Genie Aladdin Mountain)

(controls Jafar Genie)

(command Jafar Genie (loves Jasmine Jafar)
because (intends Jafar (married Jafar Jasmine)

(intends Genie (loves Jasmine Jafar)

(love-spell Genie Jasmine Jafar)
because (intends Genie (loves Jasmine Jafar)

(loves Jasmine Jafar)

(intends Aladdin (dead Genie))

(intends Jasmine (married Jasmine Jafar))

(travel Jasmine Castle Mountain)
because (intends Jasmine (married Jasmine Jafar))

(slay Aladdin Genie Mountain)
because (intends Aladdin (dead Genie))

(at Jasmine Mountain)

(dead Genie)

(marry Jafar Jasmine Mountain)
because (intends Jafar (married Jafar Jasmine))
and   (intends Jasmine (married Jasmine Jafar))

(married Jasmine Jafar) (married Jafar Jasmine)

GOAL

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Planning a discourse

- Goals

  - Variation

  - Interactivity

- Methods

  - PoV

  - Decomposition

Conclusion

- Approachable on different levels
- Specialized planners vs. modeling
- IS

Sources

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