

# Block 4: Dialogue protocols and explanation

# Argumentation-based Dialogue

A communicative interaction during which two or more parties exchange arguments to draw conclusions regarding the topic of their discussion.

# Types of dialogue

Dialogue types	Dialogue situation	Initial goal	Individual goal
Persuasion	Conflict of opinions	Persuade other party	Resolve or clarify issue
Inquiry	Need for proof	Find and verify evidence	Prove (or disprove) hypothesis
Information-seeking	Need of information	Acquire or give information	Exchange of information
Negotiation	Conflict of interests	Get what you most want	Reasonable settlement both can live with
Deliberation	Dilemma or practical choice	Co-ordinate goals or actions	Decide best available course of action

*(D. Walton and E. C. W. Krabbe, 1995)*

# Components of dialogue

A communicative interaction during which two or more parties exchange arguments to draw conclusions regarding the topic of their discussion.

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  - Protocol:  $Pr =$  Set of rules determining legal moves in dialogue
  - Strategy:  $Str =$  Function deciding what move to make



# Persuasion dialogue system for grounded semantics example

- Moves:
  - $sender \in \{P, O\}$ ;
  - $locution \in \{claim(\phi), why(\phi), argue(A)\}$
  - $id \in \mathbb{N}$
  - $target \in \mathbb{N}$ : id of preceding move in  $d$  (dialogue history)
- Protocol:
  - First move** of the dialogue has **no target** and **starts with  $claim(\phi)$  or  $argue(A)$**
  - $P$  starts the dialogue,  $O$  replies, and then participants alternate turns**
  - A participant **cannot reply** to their **own move** and must reply to a previous move
  - Every participant needs to introduce a **new move**
  - $P$ 's moves **cannot be bi-directional attacks**
  - The dialogue **finishes** when a participant has **no other move** to make
  - A participant is the **winner** if their **counterpart has run out of moves**
  - Argument  **$A$  is in the grounded extension** if and only if  **$P$  has a winning strategy** (has made the last move in every branch of the tree) **for the game that starts with  $P$  moving the argument  $A$**

# Persuasion dialogue system for grounded semantics example

Locutions	Attacks
<i>claim(<math>\phi</math>)</i>	<i>why(<math>\phi</math>)</i>
<i>why(<math>\phi</math>)</i>	<i>argue(A) ( <math>\phi = conc(A)</math> )</i>
<i>argue(A)</i>	<i>why(<math>\phi</math>) ( <math>\phi = prem(A)</math> )</i> <i>argue(B) ( B attacks A )</i>

# Persuasion dialogue for grounded semantics example

## **P's Arguments:**

**A:**

A0: foc\_screen (Social media make you focus on a screen)

A1: A0 => detr\_mean\_inter (If social media make you focus on a screen, then this may lead one to be detracted from meaningful interactions )

A2: A1 => – sm\_impr\_rel (...If one is detracted from meaningful interactions, then it is possible that social media has not improve people's relationships)

**C:**

C0: con\_eng (Social media causes constant engagement)

C1: C0 => distr\_ind (If social media causes constant engagement, then individuals may be distracted from their loved ones)

C2: C1 => neg\_em\_needs (...If individuals are distracted from their loved ones, they neglect their emotional needs)

C3: C2 => detr\_mean\_inter (...If individuals neglect their emotional needs, then they may be detracted from meaningful interactions)

**Y:**

Y0: exc\_sm (Social media is used extensively)

Y1: Y0 => less\_qual\_time (If social media is used extensively, then this may lead to loved ones spending less quality time together)

Y2: Y1 => less\_qual\_rel (...If loved ones spend less quality time together, then the quality of their relationship may be reduced)

Y3: Y2 => – sm\_impr\_rel (If quality of loved ones' relationship is reduced then it is possible that social media has not improved people's relationships)

# Persuasion dialogue for grounded semantics example

## O's Arguments:

### B:

B0: shar\_img\_sm (Social media is used to share images)

B1: B0 => ind\_exp\_eff (If social media is used to share images, it is possible that individuals express themselves more effectively)

B2: B1 => en\_com\_rel (...If individuals express themselves more effectively, then communication in relationships may be enhanced)

B3: B2 => -detr\_mean\_inter (...If communication in relationships is enhanced then one may not be detracted from meaningful interactions)

### X:

X0: sm\_al\_con (Social media allows loved ones to stay connected)

X1: X0 => sm\_help\_long\_dist\_rel (If social media allows loved ones to stay connected, this may help in long distance relationships between them)

X2: X1 => sm\_impr\_rel (If long distance relationship between loved ones is helped then it is possible that social media has improved people's relationships)

# Persuasion dialogue for grounded semantics example

P: claim(-sm\_impr\_rel)

## Dialogue example formalised

$m_0 = \langle 0, P, \text{claim}(-\text{sm\_impr\_rel}), \emptyset \rangle$

$m_1 = \langle 1, O, \text{why}(-\text{sm\_impr\_rel}), 0 \rangle$

$m_2 = \langle 2, P, \text{argue}(A), 1 \rangle$

$m_3 = \langle 3, O, \text{argue}(B), 2 \rangle$

$m_4 = \langle 4, P, \text{argue}(C), 3 \rangle$

$m_5 = \langle 5, O, \text{argue}(X), 2 \rangle$

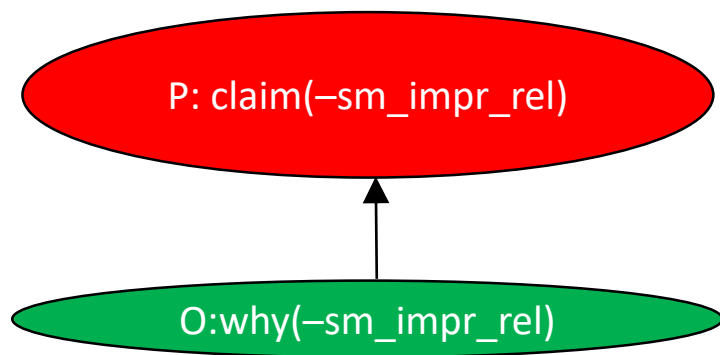
$m_6 = \langle 6, P, \text{argue}(Y), 5 \rangle$

$A_1 < B$

$B < C$

$X < Y$

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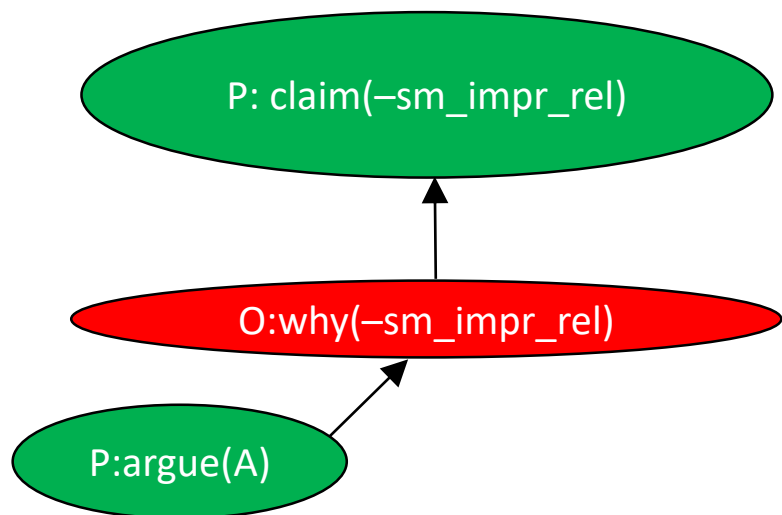
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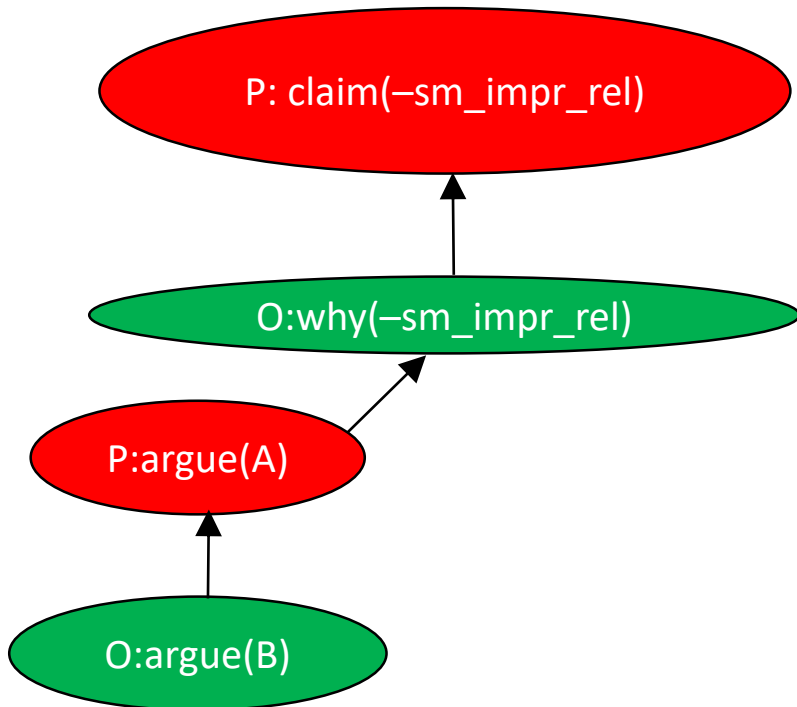
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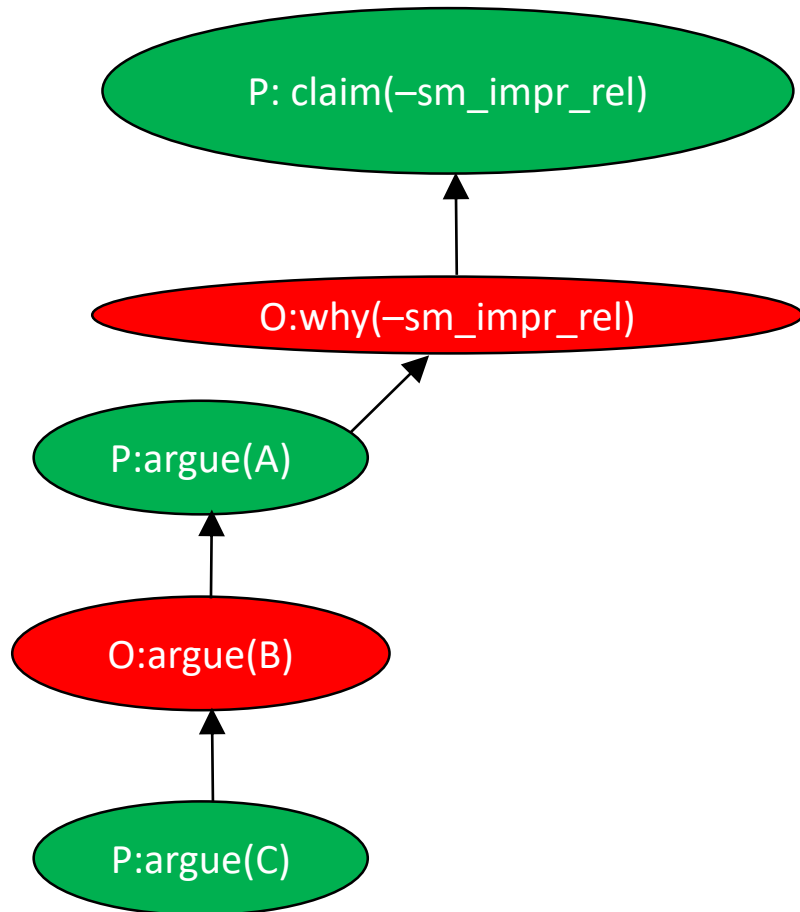
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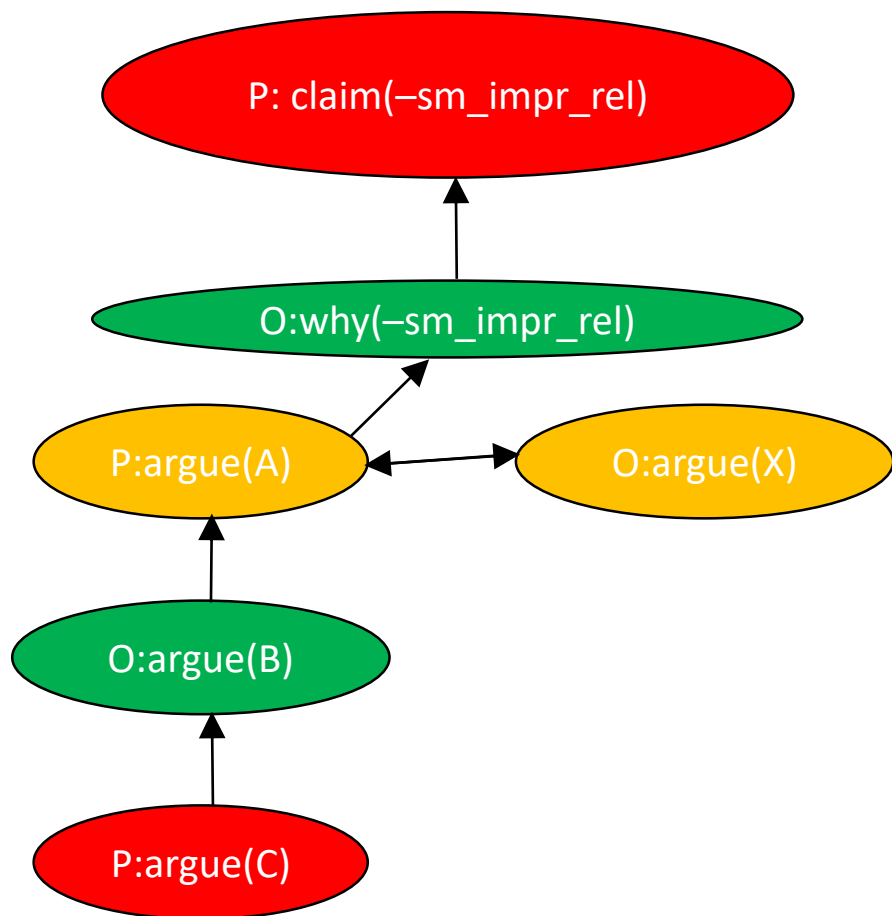
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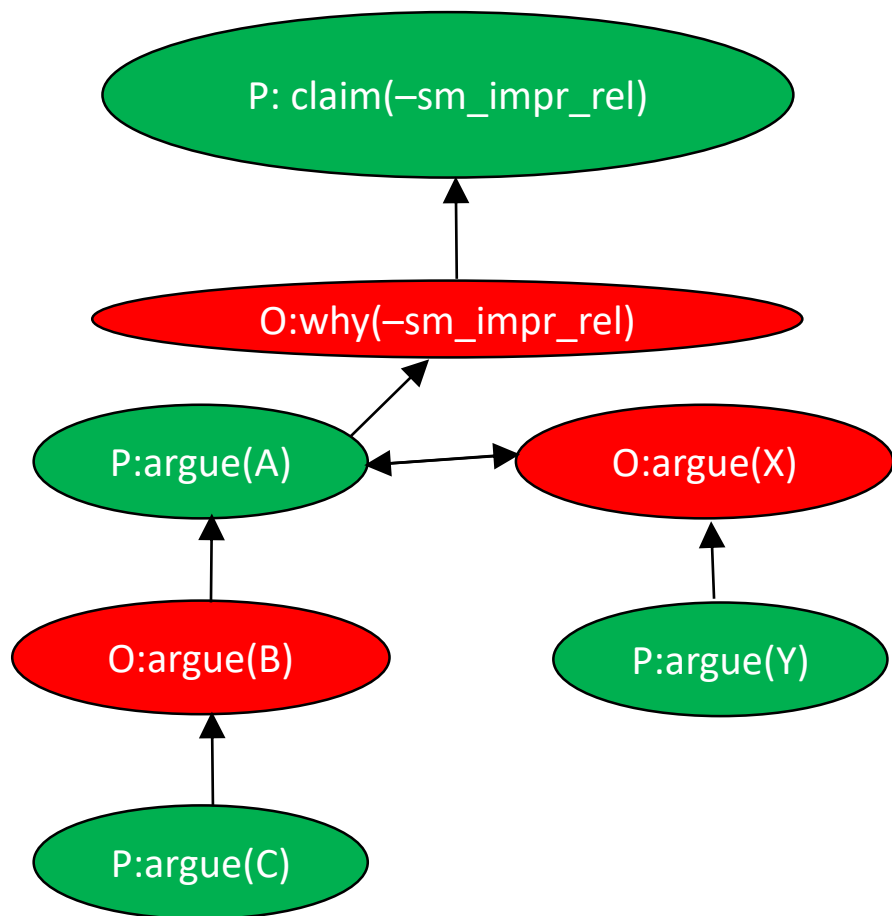
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# Persuasion dialogue for grounded semantics example

1. **First move** of the dialogue has **no target** and starts with **claim( $\phi$ )** or **argue(A)**
2. **P starts** the dialogue, **O replies**, and then **participants alternate turns**
3. A participant **cannot reply** to their **own move** and must reply to a previous move
4. Every participant needs to introduce a **new move**
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# Your turn

Use the protocol shown and the arguments from your debate to determine who is the winner of the dialogue.