Formalizing Practical Argumentation Lecture 6: the Procedural Layer: Introduction

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Introduction

- Procedural Justice: A decision is **just** if it is the outcome of a fair and effective procedure for decision making. (Rawls, Alexy, Hage/Leenes/Lodder...)
- Procedural Rationality: A decision is **rational** if it is the outcome of a fair and effective procedure for decision making. (Rescher, Loui, Gordon ...)
- Some: dialectics is a fair and effective procedure for decision making.

- In AI NML's were meant to formalise resource–bounded reasoning.
- But NML's are computationally inefficient
- Loui/Gordon:
  - NML's treat resource–boundedness at the wrong level, viz. the **logical** level;
  - they should treat it at the **procedural** level.
- Related to Toulmin's procedural validity of arguments:
  - validity not determined by syntactic form but by procedural form.

Protocols for dispute

- Protocols for dispute regulate
  - What are the possible speech acts?
  - When can they be made?
  - What are their effects?
- Main differences with dialectical argumentation systems:
  - The players are real actors
  - The knowledge base is constructed dynamically.
- Therefore, a protocol for disputation also regulates
  - denying or conceding a claim
  - proposing or retracting premises
  - ...

π_1: **Argue**[(1) *Contract*]

δ_1: **Deny**(1)

π_2: **Argue**[(2) *Offer*, (3) *Acceptance*,
(4) *Offer* $\wedge$ *Acceptance* $\Rightarrow$ *Contract*]

δ_2: **Concede**(2,4), **Deny**(3)
Argue [(5) *"Accept" late*,
(6) *"Accept" late* $\Rightarrow \neg$ *Acceptance*]

π_3: **Concede**(5), **Deny**(6),
Argue[(5) *"Accept" late*,
(7) *"Accept" recognized*,
(8) *"Accept" late* $\wedge$ *"Accept" recognized* $\Rightarrow$
Acceptance]

δ_3: **Concede**(8), **Deny**(7)

π_4 **Deny**(**Deny**(7))

Winning a dispute

- The proof-theoretical 'core' of a dispute, its dialectical tree (for sceptical reasoning):

  P_1: [2,3,4] for *Contract*
  O_1: [5,6] for $\neg$ *Acceptance*
  P_2: [5,7,8] for *Acceptance*

- A party has won a completed dispute iff
  - All premises in the dialectical tree of the dispute have been conceded; and
  - The party wins the dialectical tree (according to the sceptical proof theory).

- P wins the above tree, but not all premises have been conceded, so no winner of the dispute.

Open problems

- Inputting arguments: in formal or natural language? Or some intermediate language?
- Partial computation: evaluate disputes wrt the actually advanced arguments, or wrt all logically possible arguments?
- Levels of proof: allow for different levels of proof for subissues?
- Modifying protocol: allow for reasoning about the protocol?
- Conducting disputes: is research on strategies/heuristics for dispute useful?