

Justified Opinions are Better than Simple Ones: The Use of Argumentation Theory in Forming Collective Opinions

Wassila Ouerdane¹ Alexis Tsoukiàs²

¹LGI, École Centrale de Paris, ²LAMSADE - CNRS, Université Paris-Dauphine

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Outline

- 1 Judgement Aggregation
- 2 Consensus?
- 3 Justifications
- 4 Argumentation
- 5 So What?

Example 1

$$c \wedge f \Leftrightarrow p$$

	c	f	p
judge 1	yes	no	no
judge 2	no	yes	no
judge 3	yes	yes	yes
majority	yes	yes	no

Example 2

Multiple Elections

Voter 1	yes	yes	no
Voter 2	yes	yes	no
Voter 3	yes	no	yes
Voter 4	yes	no	yes
Voter 5	no	yes	yes
Voter 6	no	yes	yes
Voter 7	no	yes	yes
Voter 8	no	yes	yes
Voter 9	yes	no	no
Voter 10	yes	no	no
Majority	yes	yes	yes

Arrow's Theorem

Impossibility

There is no way to construct a consensual social opinion respecting simple conditions and providing meaningful/useful/consistent results

Why?

The reason is Arrow's theorem. Collective rationality is not just putting together individual rationalities.

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From Consensus to Legitimation

- A collective judgement is expected to be consensual. **BUT**
...
 - consensus leads to majority;
 - majority is not a universal concept;
 - majority opinions are not always legitimated.
- We need to legitimated opinions more than consensual ones.

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Example 3

Consider the following evaluation table concerning four candidates (A, B, C and D) assessed against four experts.

	E_1	E_2	E_3	E_4
A	7	5	9	6
B	8	4	7	8
C	5	8	10	4
D	9	3	5	10

Question

construct the arguments for which any among the candidates could win the contest.

The Example is nasty ...

First Option

Candidate D will be the choice is E_1 and E_4 form a winning coalition (stronger than E_2 and E_3).

Second Option

Candidate D will be the choice is the difference of judgements of E_1 are the double of the other ones.

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Can B ever be the choice?

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What language to use?

Argumentation Theory

- it is a process for **constructing** and **evaluating** interacting arguments
- it is a process for making **justified practical decisions**;

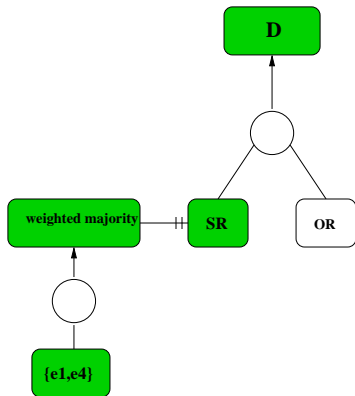
Formal theories of argumentation have been extensively developed in the field of AI, in particular:

- by developing **abstract models of aggregation of arguments**;
- by using the structures of **argumentation scheme** as a tool for knowledge representation.

Back to the Example

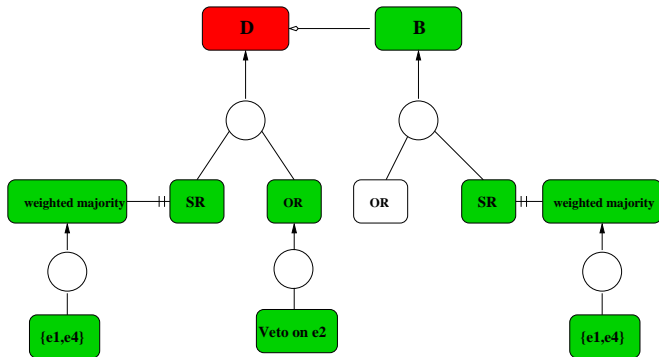
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- D is the winner iff E_1 and E_4 are the winning coalition.



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What matters in aggregation?

- Differences of Preferences
 - Preferential Independence
 - Negative Preferences
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- The set to be ordered
 - The problem statement

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Conclusions

- In aggregating judgements we need legitimation ...
- The reasons for which a collective opinion is legitimated include the procedure through which it has been established.
- Social Choice inspired Multiple Criteria Decision Analysis.
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