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Supporting Argument in e-Democracy

Dan Cartwright, Katie Atkinson, and Trevor Bench-Capon
Department of Computer Science, University of Liverpool, UK

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Overview

- Background and existing tools
- Argumentation schemes in e-Democracy
- Introducing Parmenides
- Parmenides argumentation scheme catalogue
- Worked example
- Future work and concluding remarks

Background

- Decision-making through public consultation important in e-Democracy
- Systems exist to engage citizens in political debate online
 - Wide variety of approaches
 - Existing implementations have limitations
- Today I present a model of debate that attempts to overcome the limitations

Recent Trends

- **e-Petitions** allow users to create and “sign” petitions over the internet
- UK government introduced an e-Petitions website in 2006
- Example: **Problem: We do not know which part(s) of the petition the signatory agrees or disagrees with**

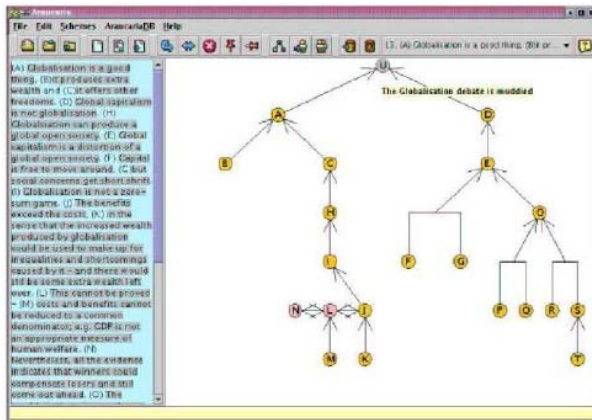
More details from petition creator

Petitioners know that The Hunting Act 2004: has done nothing for animal welfare; threatens livelihoods in the longer term; ignores the findings of Lord Burn's Enquiry; gives succour to animal rights extremists; is based on political expedience following the Prime Minister's unconsidered response on the television programme Question Time in 1999; is framed to persecute a large minority who support a traditional activity; does not command popular support in the country except amongst the uninformed and mal-advised.

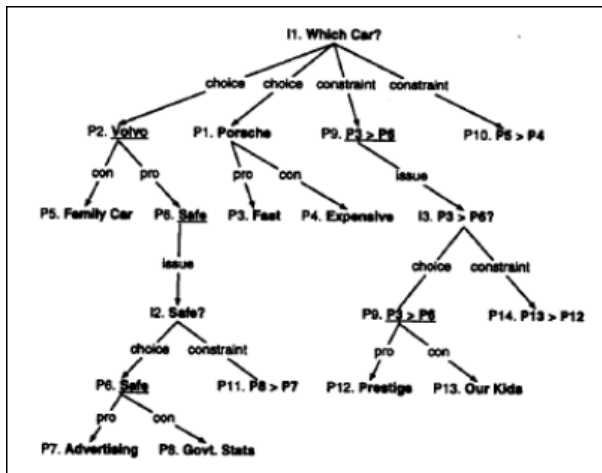
Must agree with **all** or **nothing**

Recent Trends

- **Structured tools**



- Tools for argument visualisation
 - Example: Araucaria (Reed & Rowe, 2003)
 - Visualise textual arguments



- Tools for decision support
 - Example: Zeno (Gordon & Karacapilidis, 1997)
 - Issues with ease of use by laypersons

Argumentation schemes

- Argumentation schemes represent stereotypical patterns of reasoning
- Provide argument structure but also easy to understand and use
- Example – Argument from Expert Opinion:

“ Person E is an expert in Domain D . E asserts that Fact A is known to be true. A is within D . Therefore, A may plausibly be taken to be true. ”

Argumentation schemes (2)

- Schemes have associated **Critical Questions (CQs)**
 - Each scheme has its own set of questions
 - CQs challenge parts of the argument

*“ Person **E** is an expert in Domain **D**. **E** asserts that Fact **A** is known to be true. **A** is within **D**. Therefore, **A** may plausibly be taken to be true. ”*

- Examples:
 - Is E biased?
 - Did E really assert A?

Argumentation schemes (3)

- How can we respond to critical questions?
 - “Yes” or “No”, sometimes
 - In real world, often respond with another argument
 - Response may be a different argument type
- Developing models of argument scheme interaction
 - Using one scheme to respond to Critical Questions of another
 - Which schemes can be used in each case?
 - Are some schemes more persuasive?
 - Classification of schemes

Argument Scheme interaction (I)

- Example:

In the current circumstances R , we should perform action A , which will result in new circumstances S , which will realise goal G , which will promote some value V



*In the current circumstances **there is a 27% unemployment rate in the UK** (...)*

Argument Scheme interaction (2)

*In the current circumstances **there is a 27% unemployment rate in the UK**(...)*

- This statement is challenged by a Critical Question associated with the scheme:

CQ1: Are the believed circumstances true?

Is there a 27% unemployment rate in the UK?

- Response can be provided by instantiating a different argument scheme

Argument Scheme interaction (3)

- The critical question:

Is there a 27% unemployment rate in the UK?

- Could be responded-to by the following evidence:

Position to know: Person *E* is in a position to know whether Fact *A* is true. *E* asserts that *A* is true. Therefore *A* is true



The Government is in a position to know the unemployment rate. The Government asserts that the unemployment rate in August 2009 is 27%. Therefore it is true that the unemployment rate in August 2009 is 27%.

Argument Scheme interaction (4)

- Now, if the respondent questions the statement that **there is a 27% unemployment rate in the UK...**
 - i.e. he poses the critical question "*Is there a 27% unemployment rate in the UK?*"
 - He is presented with the evidence to support this claim
 - The evidence is presented as an instantiation of a different argument scheme
 - The user critiques the evidence by answering Critical Questions associated with the particular scheme

Introducing Parmenides

- An online forum (K. Atkinson et. al., 2004)
 - Government present policy proposals
 - Users submit their critique of the proposal
 - Aims to provide a platform for debate that is easy to use
 - Consists of 3 main components
 - Debate Creator
 - Debate critique interface
 - Debate analysis toolset
- Debate administrator enters debate details
- Parmenides website allows users
- Graphical representation of data in database
- Allows pinpointing elements of most agreement or disagreement

Parmenides – Argument Scheme

- Parmenides originally based on an argument scheme for *practical reasoning*

“In the current circumstances R , we should perform action A , which will result in new circumstances S , which will realise goal G , which will promote some value V ”

- Users critique the argument by answering “Yes” or “No” to critical questions
- Further schemes now implemented to evaluate argument scheme interaction models

Parmenides – Scheme Catalogue

- New set of tools for Parmenides to support multiple argumentation schemes and their interactions
- Consists of two components:
 - *Scheme entry interface* – guides the administrator through adding an argumentation scheme
 - *Web-based catalogue* – database of schemes within the system, with additional information, to assist debate creators

Parmenides – Worked Example

- A fully-worked example of how a debate is used and analysed within Parmenides
- Our example is **The Speed Camera Debate**
 - Based around the installation of more speed cameras on UK roads
 - Proposed action: Install more speed cameras

Parmenides – Worked Example (2)

- Justification for installing more speed cameras:

We believe that **Install more speed cameras** is right because:

In the current situation:

The government makes money from fining speeders, Many drivers break the speed limits, [There is a high death toll on UK roads](#)

Our goals are:

Increase government revenue, [Reduce the number of drivers breaking the speed limit](#), Reduce the number of deaths on UK roads

This will achieve:

[Reduce the number of deaths on UK roads promotes Saving lives](#), Reduce the number of drivers breaking the speed limit promotes Law and Order, Increase government revenue promotes Government wealth

(<http://cgi.csc.liv.ac.uk/~parmenides/speedcam>)

Parmenides – Worked Example (3)

- We want to add supporting evidence for the statement *“there is a high death toll on UK roads”*
- Argument scheme is chosen and instantiated

“Expert A is in a position to know whether Fact F is true. Expert A assert(s) that Fact F is true. Therefore Fact F is true”



“ The chief police officer (CPO) is in a position to know whether there is a high death toll on UK roads. The CPO asserts that there is a high death toll on UK roads. Therefore it is true that there is a high death toll on UK roads”

Parmenides – Worked Example (4)

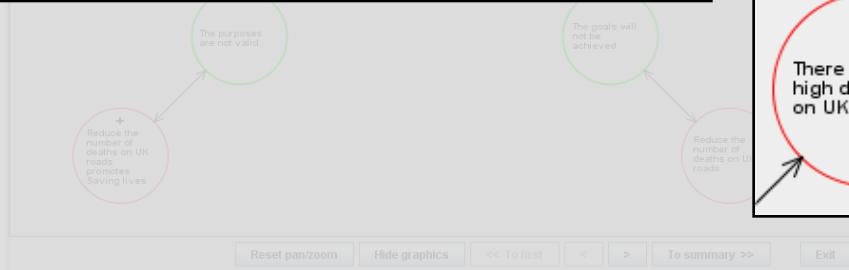
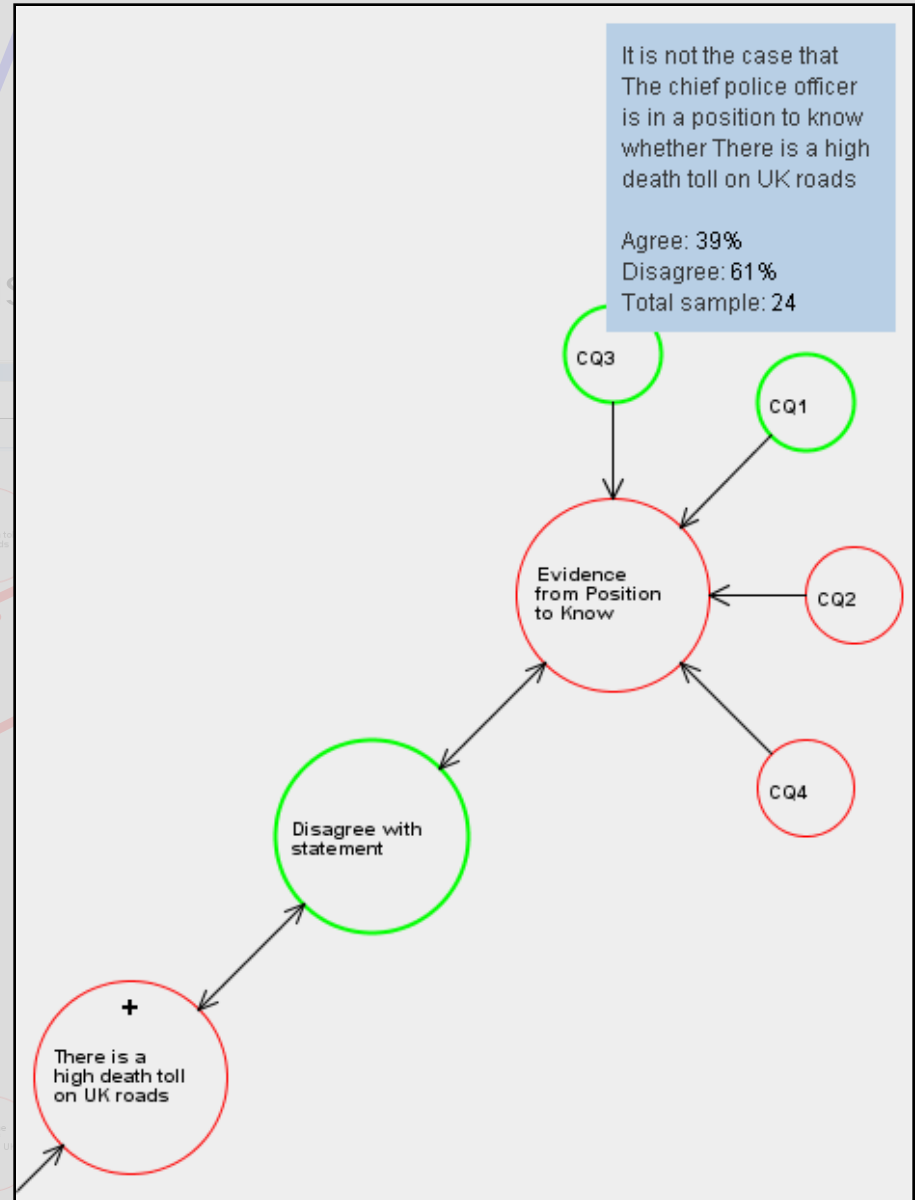
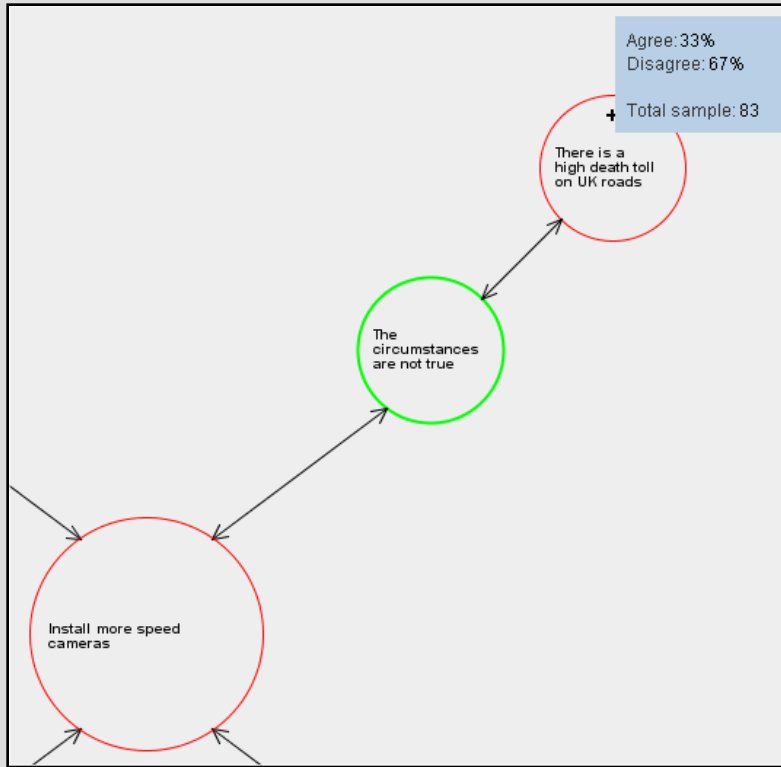
- If a respondent to the debate **disagrees** that “*there is a high death toll on UK roads*”...

	Yes	No
There is a high death toll on UK roads	<input type="radio"/>	<input checked="" type="radio"/>

- ... he is presented with the supporting evidence
- He critiques the evidence using the CQs from the relevant argument scheme

With respect to the above position, do you agree that...	Yes	No
The CPO is an honest (trustworthy, reliable) source	<input type="radio"/>	<input checked="" type="radio"/>
The CPO is in a position to know whether there is a high death toll on UK roads	<input type="radio"/>	<input checked="" type="radio"/>
The CPO really made this assertion	<input type="radio"/>	<input checked="" type="radio"/>

Parmenides – W



Parmenides – Worked Example (6)

- Frameworks allow fine-grained analysis of debate
 - Which part of debate is most agreed/disagreed with
 - Which particular justification for action causes most conflict
- Analysis of argument scheme interactions
 - Richer information about **why** users disagree with particular elements
- e.g. see whether most disagreements are about **subjective** or more **objective, fact-based** elements

Future work

- Further extend the number of argumentation schemes available in Parmenides
- Evaluation of the system
 - Some evaluation already carried out
 - Large-scale evaluation currently in planning
- Evaluation criteria
 - Expressive enough for debate creators?
 - Ease of use for participants
 - Usefulness of debate analysis

Conclusion

- Argumentation schemes can be used to structure debates
- Interaction of argumentation schemes allows more in-depth debating to take place
- Parmenides provides a practical implementation of the scheme interaction models
- We try to balance *structure* and *expressiveness*
- Future work involves expanding the schemes in Parmenides, and large-scale evaluation

Thankyou for your attention

- The Parmenides system can be used at <http://cgi.csc.liv.ac.uk/~parmenides>
- For further information on the topics discussed:
 - Publications: <http://www.csc.liv.ac.uk/~dan>
 - Parmenides: <http://www.csc.liv.ac.uk/~parmenides>
 - dan@csc.liv.ac.uk
- Questions?