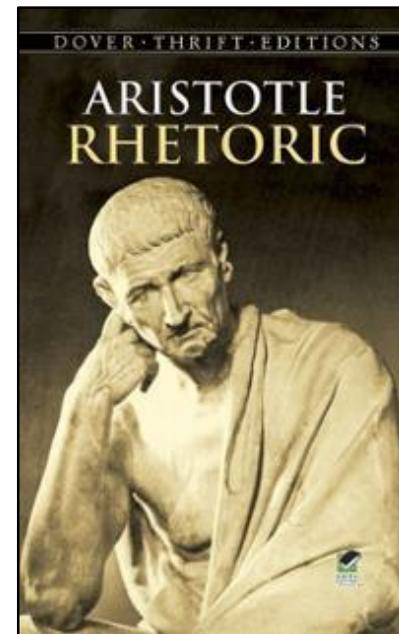
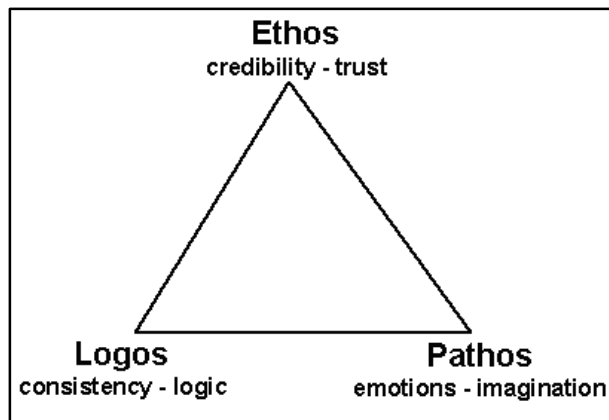


Part 6

Further Challenges and Outlook

Many remaining challenges – from Logos to Ethos and Pathos

- **Argumentation involves Logos, Pathos, and Ethos**
- Existing work are typically focused on Logos
- Modeling Pathos and Ethos opens a new set of intriguing and important problems
- Towards **Persuasive** NLG?



Many remaining challenges – from Logos to Ethos and Pathos

- **Emotion analysis in Computational Argumentation**
- Humans typically mix rational and emotions to guide their decisions and actions
- Real world Computational Argumentations systems will need to model emotions, social context, and bias
- Initial attempts are already underway (cf. Benlamine et al, IJCAI-15)



Many remaining challenges – cont.

- **Understanding and Modeling ‘Argument Quality’**
- Can we automatically predict that one **claim** is more persuasive than another in a given **context**?
- Can we automatically predict that a particular **premise** is more persuasive than another in a given **context**?
- Can we automatically predict that one **argument** is more persuasive than another in a given **context**?
- Several works are trying to pursue such questions (cf. Tan et al, WWW, 2016)



Many remaining challenges – cont.

- **Argument Mining and Synthesis over multiple domains and corpora**
- Different corpora have quite different characteristics
 - Student essays / Wikipedia articles / news reports / Editorials / More...
- Can we use models learned in Wikipedia to detect argumentative content in newspapers?
- Cross-domain Argument Mining (Al-Khatib et. al, NAACL 2016)
- Argument Synthesis over multiple massive corpora has greater probability of **automatically generating new persuasive content** – i.e., new arguments



Computational Argumentation as an emerging community

- **Unifying several communities with lots of potential interaction**
 - Series of Arg. Mining workshops
 - AI and Law – ICAIL and JURIX conferences
 - Computational Models - COMMA conferences, CMNA workshops, ...
 - More ...
- **Rapidly growing attention by major CL, NLP, and AI conferences**
 - NAACL-16 with an Argumentation dedicated session
 - COLING-16, EMNLP-16 - 'Computational Argumentation' topic
 - ACL-16 – this tutorial + **3rd Workshop on Argument Mining, this Friday**
- **Dedicated international events**
 - Frontiers and Connections between Argumentation Theory and NLP, Bertinoro, Italy, 2014
 - Debate Technologies, Dagstuhl, Germany, 2015
 - Natural Language Argumentation, Dagstuhl, Germany, 2016
 - More...



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Thank you...

