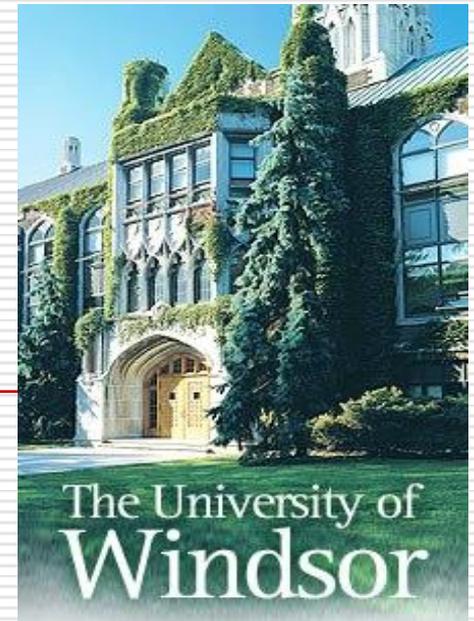# Types of Dialogue and Burdens of Proof

COMMA 2010: Desenzano del Garda (Italy)
Wednesday 8 September 2010

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# Nine-Point Outline of Talk

- ☐ First, some remarks about dialogue systems generally.
- ☐ Second, burden of proof (BoP) in persuasion dialogues.
- ☐ Third, burdens of proof and persuasion in law.
- ☐ Fourth, some brief remarks about BoP in negotiation, information-seeking and eristic (quarrel) dialogues.
- ☐ Fifth, BoP in inquiry and discovery dialogues.
- ☐ Sixth, BoP in deliberation dialogue.
- ☐ Seventh, the relationship of presumption to BoP.
- ☐ Eighth, conclusions.
- ☐ Ninth, some open questions.

# Types of Dialogue

| Dialogue Type | Initial Situation | Participant's Goal | Goal of Dialogue |
|---|---|---|---|
| Persuasion | Conflict of opinions | Persuade other party | Resolve or clarify issue |
| Deliberation | Dilemma or practical choice | Coordinate goals & actions | Decide best action |
| Discovery | Need to find an explanation of facts | Find & defend a hypothesis | Choose best hypothesis |
| Inquiry | Need to have proof | Find and verify evidence | Prove/disprove hypothesis |
| Information-seeking | Need information | Acquire or give information | Exchange information |
| Negotiation | Conflict of interest | Get what you most want | Reasonable settlement |
| Eristic | Personal conflict | Verbally hit out at opponent | Reveal deeper basis of conflict |

# Dialectical Shifts

- Dialectical shifts occur where the participants begin to engage in a different type of dialogue from the one they were initially engaged in (Walton and Krabbe, 1995).

- In the classic case (Parsons and Jennings, 1997, 267) two agents are engaged in deliberation dialogue on how to hang a picture and they agree they need a hammer and a nail. They start to negotiate on who will get the hammer and who will go get the nail.

- In this kind of shift, the negotiation dialogue is said to be embedded in the deliberation dialogue (Walton and Krabbe, 1995), as it helps the deliberation dialogue along.

# Stages of a Dialogue

- A dialogue is an ordered 3-tuple ⟨*O*, *A*, *C*⟩ where *O* is the opening stage, *A* is the argumentation stage, and *C* is the closing stage (Gordon and Walton, 2009, 5).
- Dialogue rules (protocols) define what types of moves are allowed by the parties (Walton and Krabbe, 1995).
- During the argumentation stage, each party takes turns making moves containing speech acts.
- There is a global BoP at the opening stage that determines the outcome at the closing stage.
- Local BoP depends on the move and type of speech act.

# Some Common Speech Acts

| SPEECH ACT | DIALOGUE FORM | FUNCTION |
|---|---|---|
| Question (yes-no type) | S? | Speaker asks whether S is true. |
| Assertion (claim) | Assert S | Speaker asserts that S is true. |
| Concession (acceptance) | Accept S. | Speaker incurs commitment to S. |
| Retraction (withdrawal) | No commitment S. | Speaker removes commitment to S. |
| Challenge (demand for proof of claim). | Why S? | Speaker requests hearer give an argument for S. |
| Put Argument Forward | P1, P2, . . . ,Pn therefore S. | P1, P2, . . . ,Pn give a set of reasons for S. |

# Local BoP Rules

- ☐ There is a BoP attached to making an assertion (but see the problem of defining 'assertion' later).
- ☐ There can also possibly be BoP for other speech acts, like putting forward an argument.
- ☐ For example, it has been suggested that there is a burden of questioning: D.Walton (2003). Is There a Burden of Questioning?, Artificial Intelligence and Law, 11, 1-43.

# Persuasion Dialogue

- A persuasion dialogue is one where a proponent tries to get a respondent to come to accept a thesis designated at the opening stage of the dialogue.

- She needs to do this by presenting an argument that fits a valid form of inference and has only premises that the respondent is committed to.

- Persuasion, in this technical and normative sense of the term (meaning rational persuasion), refers to the effecting of a change in the respondent's commitment set (Walton, 1989).

- If the proponent can carry out this designated task, which represents the ultimate burden of proof in the dialogue, she wins the dialogue as a whole.

# BoP in Persuasion Dialogue

- There are two kinds of persuasion dialogue wiedely recognized, called a dispute and a dissent.

- In a dispute, both sides have BoP. One side has to prove A and the other has to prove *~A*.

- In a dissent, one side has to prove *A* while the other only needs to cast doubt on the attempts of the first side to prove *A*.

- The notion of standard of proof is part of the notion of BoP.

- For example, in law the prosecution has to fulfill the beyond reasonable doubt standard in law to win a criminal trial, whereas all the respondent has to do is to cast enough doubt on the proponent's attempts to make them fail.

# Third Party Audience

- ☐ In a two- party persuasion dialogue, the function of BoP role is to encourage the party who is challenged to bring forward arguments to support its claim.

- ☐ But BoP is unnecessary here, because both parties have the aim of convincing the other party by means of using arguments, and therefore both of them already have plenty of encouragement to bring forward arguments.

- ☐ Therefore in many instances, it needs to be taken into account the both parties are presenting their arguments not to each other but to some third party, who may be said to have the role of audience or referee.

# Burden of Persuasion in Law

- [ ] The term 'burden of proof' is ambiguous in law (Prakken and Sartor, 2007), covering (at least) three different notions, burden of persuasion, burden of production and the tactical burden of proof.

- [ ] The burden of persuasion is set by law before the trial process starts and the judge tells it to the jury.

- [ ] The burden of production "means the obligation of a party to introduce evidence sufficient to avoid a ruling against him on the issue" (Wigmore, 1981, 284).

- [ ] The tactical BoP is an estimate of the risk of losing the case made by one party if he fails to put forward further evidence on an issue (Prakken and Sartor, 2009)

# Defining BoP in Law

- ☐ Only the tactical burden of proof can shift back and forth from one party to the other (Prakken and Sartor, 2009).

- ☐ The burden of persuasion is set at the opening stage of a trial, and is global BoP that applies to all three stages.

- ☐ The tactical burden is a BoP that shifts back and forth during the argumentation as moves are made.

- ☐ Setting BoP requires a designation of a standard of proof that a participant has to meet to fulfill his/her goal of proving something and an assignment of such a standard to each participant in a dialogue.

# Standards of Proof (Carneades)

- **Scintilla of Evidence** (SE) is met if there is at least one applicable argument for a claim.

- **Preponderance of the Evidence** (PE) is met if SE is satisfied and the maximum weight assigned to an applicable *pro* argument (for the claim) is greater than the maximum weight of an applicable *con* argument (against the claim).

- **Clear and Convincing Evidence** (CCE), is met if PE is satisfied, the maximum weight of applicable *pro* arguments exceeds some threshold $\alpha$, and the difference between the maximum weight of the applicable *pro* arguments and the maximum weight of the applicable *con* arguments exceeds some threshold $\beta$.

- **Beyond Reasonable Doubt** (BRD)is met if CCE is satisfied and the maximum weight of the applicable con arguments is less than some threshold $\gamma$.

# BoP in Negotiation Dialogue

- ☐ Proving something by using evidence to support your claim is not the central goal of negotiation.
- ☐ However, there are typically intervals where there is a shift to another type of dialogue where BoPis important.
- ☐ For example a contractor in homeowner may be negotiating a price for installing a new basement in the house, and at some point he may need to convince homeowner that the building code for walls in basements in that area specifies requirements that have to be met.

# Information-Seeking Dialogue

- Information dialogue is not exclusively taken up with the putting forward of *ask* and *tell* questions, or with the kind of searching for information one might do when using Google.

- One reason is that there is a concern not only with obtaining raw information, but with determining the quality of this information by judging its reliability.

- Another reason is that the requesting agent may need to offer the other agent an argument in order to obtain access to the information requested.

# BoP in Eristic Dialogue

- Parties are only pretending to rationally persuade with evidence in eristic dialogue.

- BoP is not significant in eristic dialogue, except that a party may often accuse the other party of not fulfilling it.

- There is much shifting back and forth from eristic dialogue to persuasion dialogue and then BoP comes in.

# BoP in Inquiry Dialogue

- ☐ The aim of the inquiry is to collect sufficient evidence to either definitively prove the proposition at issue, or to show that it can't be proved, despite the exhaustive effort was made to collect all the evidence that was available.

- ☐ The central aim of the inquiry is proof, where this term is taken to imply that a high standard of proof has been met. The negative aim of the inquiry is to avoid later retraction of the proposition that has been proved.

- ☐ And so the very highest standard of proof is appropriate, namely the standard of beyond reasonable doubt.

# Inquiry versus Discovery

- Discovery dialogue was first modeled as a distinct type of dialogue by McBurney and Parsons (2001).

- In their model, participants began by discussing the purpose of the dialogue, and then during the later stages they use data to present arguments to each other.

- In inquiry dialogue, the participants "collaborate to ascertain the truth of some question", while in discovery dialogue, we want to discover something not previously known, and "the question whose truth is to be ascertained may only emerge in the course of the dialogue itself" (McBurney and Parsons, 2001, 418).

# Fundamental Difference in BoP

- ☐ This difference is highly significant, as it affects how BoP is fundamentally structured in discovery and inquiry.
- ☐ In an inquiry dialogue, the proposition that is to be proved is designated at the opening stage, whereas in a discovery dialogue BoP issues only arise in later stages.
- ☐ Hence in the McBurney-Parsons model, discovery dialogues and inquiry dialogues are distinctively different in a fundamental way with respect to BoP.
- ☐ In scientific argumentation in research, typically there is a shift from discovery dialogue to inquiry dialogue.

# Formal Model of Deliberation

- In the formal model of McBurney et al. (2007, 100), a deliberation dialogue consists of eight stages: open, inform, propose, consider, revise, recommend, confirm and close.
- Proposals for action that indicate action-options relevant to the governing question are put forward during the propose stage.
- Commenting on the proposals from various perspectives takes place during the consider stage.
- At the recommend stage a proposal can be recommended for acceptance or non-acceptance by each participant.

- P. McBurney, D. Hitchcock and S. Parsons (2007).The Eightfold Way of Deliberation Dialogue, *IJIS* 22, 95-132.

# BoP in Deliberation

- ☐ Does burden of proof work in the same way in a deliberation dialogue as compared to the way it works in persuasion dialog?

- ☐ There are local burdens of proof in deliberation dialogue, but is there also a global burden set at the opening stage?

- ☐ On the formal model of deliberation dialogue of McBurney and Parsons (2001, 420), the courses of action adopted by the participants are only articulated in the propose stage, which is later than the opening stage.

# 8 Stages of Deliberation Dialogue

- ☐ **Open:** A governing question, like 'Where shall we go for dinner this evening?', expressing a need take action is raised.
- ☐ **Inform:** This stage includes information about facts, goals, values, constraints, and evaluation criteria for proposals.
- ☐ **Propose:** Cite possible action-options relevant to the governing question
- ☐ **Consider:** This stage concerns examining arguments for and against proposals.
- ☐ **Revise:** Goals, constraints, perspectives, and action-options can be revised in light of arguments for and against proposals.
- ☐ **Recommend:** Based on information and arguments, proposals are recommended for acceptance or non-acceptance.
- ☐ **Confirm:** The participants confirm acceptance of the optimal proposal according to some procedure.
- ☐ **Close:** Termination of the dialog, once the optimal proposal has been confirmed.

# Only a Local Burden

- ☐ Deliberation dialogue arises from the need for action, as expressed in a governing question set at the opening stage, e.g. 'Where shall we go for dinner tonight?'.

- ☐ Proposals for action arise only at the propose stage in the dialogue (McBurney et al, 2007, 99).

- ☐ There is no burden of proof set for any of the parties in a deliberation at the opening stage.

- ☐ At the later consider stage, once a proposal has been put forward by a party, it will be reasonably assumed by the other participants that this party will be prepared to defend his proposal [ask_justify locution].

- ☐ Hence there is a local burden of justification only.

# Utility of Presumptions

- The need for making a presumption arises during the argumentation stage of a dialogue when a particular argument is put forward by one side (Prakken and Sartor, 2006).

- A problem arises because there is some particular proposition that needs to be accepted at least tentatively before the argumentation can move ahead, but at that point in the dialogue, this proposition cannot be proved.

- Collecting enough evidence would mean a disruption of the dialogue, because it would be too costly to prove or disprove this proposition by the standard of proof required for properly accepting or rejecting it.
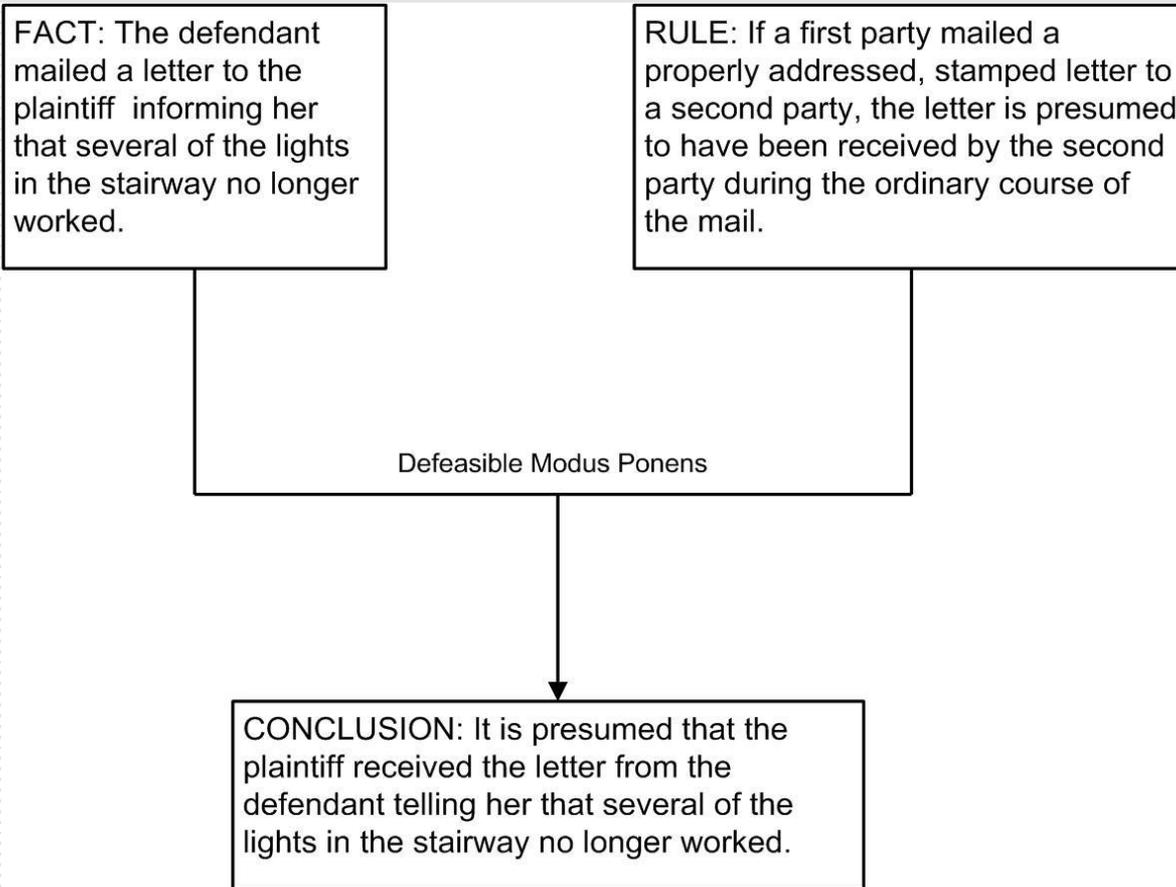
# Example of Legal Presumption

- ☐ The plaintiff suffered a fall on a dark stairway in an apartment building.

- ☐ She sued the defendant, the building's owner, claiming that he did not keep the stairway in a safe condition, because the lighting did not work properly.

- ☐ To prove notice, the plaintiff claimed she mailed a letter to the defendant, informing him that several of the lights in the stairway no longer worked.

- ☐ RULE: A letter properly addressed, stamped, and deposited in an appropriate receptacle is presumed to have been received in the ordinary course of the mail (Park, Leonard and Goldberg, 1998, 103).

# Fact and Rule Inference

FACT: The defendant mailed a letter to the plaintiff informing her that several of the lights in the stairway no longer worked.

RULE: If a first party mailed a properly addressed, stamped letter to a second party, the letter is presumed to have been received by the second party during the ordinary course of the mail.

Defeasible Modus Ponens

CONCLUSION: It is presumed that the plaintiff received the letter from the defendant telling her that several of the lights in the stairway no longer worked.

# Conclusions 1

- Global burden of proof refers to what has to be proved to remove the doubt or unsettled issue that originated a dialogue, thus winning the dialogue. Global burden of proof is set at the opening stage.

- Global burden of proof is defined as a 3-tuple $\langle P, T, S \rangle$ where $P$ is a set of participants, $T$ is a thesis to be proved or cast into doubt by a participant and $S$ is the standard of proof required to make a proof successful at the closing stage.

- During the middle stages, at a given state, there are local burdens of proof for each argument that can shift.

- These local burdens are determined by the rules for the moves applied during the argumentation stage.

# Conclusions 2

- ☐ BoP works at both the global and local levels in persuasion dialogue, inquiry and information-seeking dialogue.

- ☐ BoP works only at the local level in discovery dialogue and deliberation.

- ☐ BoP appears to have no role in negotiation or eristic dialogue, excepts where there are dialectical shifts.

# Conclusions 3

- BoP in the persuasion dialogue model has been most explicitly used and extensively studied in law.

- It is easy to confuse BoP and presumption, for example in the expression "presumption of innocence", but they are distinct although closely related notions.

- Presumption is an evidential tool that can be used in a dialogue when there is a practical difficulty in collecting evidence that can meet a standard of proof.

# Is Law the Paradigm?

- ☐ How helpful is the legal notion of burden of proof to studying BoP in argumentation outside the legal setting? This issue is controversial.

- ☐ Hahn and Oaksford (2007) argue that the notion of burden of proof has been inappropriately extended into argumentation studies from its proper domain of application in law. They describe this extension as a "hasty transference" of legal concepts to less structured contexts of everyday conversational argumentation.

- ☐ But surely law is the field in which BoP has been most widely applied to cases, and this experience is valuable.

# Open Question 1

- 'The king of France is bald' presupposes that there is a King of France.
- A presupposition is an assumption that is part of an assertion, and that was presumably accepted by the hearer at some previous move in the dialogue.
- What's the difference between a presumption and a presupposition?

# Open Questions 2

- ☐ Very little appears to have been done on BoP in types of dialogue other than persuasion dialogue.

- ☐ The exception is the small and recent literature on BoP in deliberation dialogue (findings still tentative).

- ☐ Case study examples of how BoP and presumption work on safety issues in deliberation would be helpful.

- ☐ Within the literature on inquiry dialogue, more specific attention to the role of BoP would be especially useful.

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# Wigmore's Example

- Suppose that A has property in which he would like to have M invest money and that B is opposed to having M invest money; M will invest in A's property if he can learn that it is a profitable object and not otherwise. Here it is seen that the advantage is with B and the disadvantage with A; for unless A succeeds in persuading M up to the point of action, A will fail and B will remain victorious; the "burden of proof", or in other words the *risk of nonpersuasion*, is upon A.

# BoP in the Example

- The risk of failure is on A, because M will fail to carry out the action that A is trying to persuade him to carry out if M remains in doubt. Moreover, M will remain in doubt unless A brings forward some argument that will persuade him that investing in A's property is "a profitable object".

- To describe burden of proof in this example, Wigmore calls it the risk of nonpersuasion, describing it as "the risk of M's nonaction because of doubt".

- The example shows that the burden of proof is this risk that falls on one side or the other in the dispute.

- This example is a very good one to help us grasp in outline basically how burden of proof works in everyday conversational argumentation: "this is the situation common to all cases of attempted persuasion, whether in the market, home, or the forum."(Wigmore, 1981, 285).