INTERNATIONAL COLLOQUIUM

INSIDE ARGUMENTS

LOGIC *vs* ARGUMENTATION THEORY

Faculty of Letters of the University of Coimbra (Portugal)

March 24-26, 2011

ABSTRACTS

(alphabetical order)

A Little Light Logic

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As a student, in the 1960s, I trained as a philosopher and mathematical logician. When I began teaching philosophy and logic I had a shock—which was that teaching logic didn't help my students to be more logical (teaching philosophy didn't seem to help either). So I began to work on ways of helping students become more logical and reasonable. This was a relatively novel idea in the 1970s and it lead first to the publication of *The Logic of Real Arguments* and later to *Critical Thinking: An Introduction*—with various diversions into assessment issues on the way. In this, my last conference talk (!), I shall reflect on the roles of formal logic, informal logic and critical thinking in education – and on some of the mistakes I have made!

Some Thoughts about Logical Form and Argument Analysis

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The purpose of this paper is twofold. On the one hand, it is a rejection of some arguments present in the literature against the relevance of formal logic to argument analysis and evaluation. On the other hand, it is an assessment, from the perspective of philosophy of language, of formal analysis of arguments. I claim that without having a good understanding of some fundamental concepts in philosophical semantics and pragmatics, such as *logical form*, *implicature* and *presupposition*, formal analyses of arguments are prone to error. I defend my thesis by discussing a number of examples found in introductory books to logic.

In the first part of the paper I assess two arguments offered by R. Johnson in Johnson (1999, 2000, 2008) and by Johnson and Blair (2000). The arguments are meant to show that, "Formal logic (FDL) is not really concerned with argumentation. There are a number of reasons to think this." (Johnson 1999 p.270) I think Johnson's conclusion is wrong, if we look at how philosophers of language understand concepts such as logical form. To mention just one of Johnson's arguments, he argues that FDL is wrong in accepting just one criterion of good argumentation, i.e. soundness. If this is the only criterion of good argumentation, then there can never be both good arguments for a certain thesis P as well as good arguments against P. Soundness does not allow for this. However, Johnson argues, with many thesis this is the case; therefore, FDL is unacceptable. On the contrary, I claim that Johnson's own characterization of argumentation as "an instrument of rational persuasion" (1999 p.271) suggests that there has to be at least one criterion according to which there cannot be good arguments

both in favour and against a given thesis P. If an argument is instrument of rational persuasion, then a good argument must be a good instrument of rational persuasion, one that should persuade us rationally. But if there are good arguments both for P and for ¬P, then we should be at the same time persuaded both that P and ¬P, which is simply absurd.

Johnson also intends to persuade us of the irrelevance of the semantics-pragmatics to argumentation. He (1990 p.270) rejects Walton's view that, "Formal logic has to do with the forms of argument (syntax) and truth values (semantics)... Informal logic (or more broadly, argumentation, as a field) has to do with the uses of argumentation in a context of dialogue, an essentially pragmatic undertaking." (1990 pp.418-9, see also 1997, 2008) I defend Walton's thesis against Johnson's arguments. In assessing the relevance of Walton's point to argument analysis and evaluation it is important to keep in mind that the theoretical aims of semantics and pragmatics are different from those of argumentation theory. A semantic theory is supposed to give us an account of those properties of linguistic expressions that constrain what can be conveyed by uttering a particular form of words in a given context (cf. Neale forthcoming, Stanley 2007). Compositional semantics gives us an explanation of linguistic phenomena such as systematicity and productivity. As part of this endeavour, semanticists postulate a level of representation of the proposition literally expressed by an utterance of a sentence, which they call *logical form*. The speaker may convey other propositions as *implicatures* (cf. Grice 1989). The business of pragmatics is to tell us how this is possible.

Distinguishing between what enters the logical form and what does not is fundamental for a correct analysis of a fragment of discourse or text. Insufficient attention paid to this distinction has led to some unfortunate analysis of certain examples in textbooks of formal and informal logic, as well as to a general impression that logic is inapplicable to real life arguments. Attention needs to be paid to pragmatic phenomena such as *conditional perfection* (cf. Geis & Zwicky 1975, Auwera 1997, Horn 2000), or *scalar implicatures* (Horn 1999, Kratzer 2003). Just to give one example, 'some' is formalized in introductions to logic as the existential quantifier. However, 'some *F*s are *G*' introduces a generalized implicature to the effect that *not all Fs are G*. The latter proposition is also part of what the speaker means, although it is not part of what is literally said. If this implicature is not taken into consideration many valid arguments will appear fallacious, when they in fact are not. The same happens with conditional perfection, as it has been argued (cf. Burke 1994, Moldovan 2009). Moreover, it has to be taken into account that it is a controversial and highly theoretical claim, not easily available to students of introductory courses in logic, that certain contents are non-literally conveyed. This has to do with the arguments given in Grice (1975) in favour of a parsimonious treatment of meanings. As it has been argued, speakers and audiences are sensitive to speaker meaning, and not to literal meaning (see Bach 2002).

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Limited Effectiveness of Argumentation in Mediated Communication

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The theory of limited effects of communication developed in the late forties and in the fifties of the late century is build upon the insight that at the end of the communication process there is not an amorphous mass of receivers that could be directed and maneuvered ad libitum by the mass media as stated by the hypodermic or bullet theory of communication, but, on the contrary, an highly structured audience whose reception is determined by own interests and biases. First of all people choose corroborative information of their own opinions and tend to wave information that questions them. There is no open availability to listen to different positions and to take in account equidistantly their arguments. The inner logic of the message is subdued by the pathology of the audiences.

The onsetting of mass audiovisual communication on a daily basis in the sixties and seventies through television enfeebled still more the non argumentative public discourse. Neil Postman decries in the book *Amusing Ourselves to Death*, 1985, the age of show business brought by television, where there is no place to the rational and structured discourse engendered by the verbal and typographic mind. The media shift, from the printing press to the electronic visual media, caused an epistemological revolution on the way people perceive, think and speak. Television favors entertainment above all and converts information and education into infotainment and edutainment. Serious argumentation is too cumbersome to the audiovisual mind.

However, mediated communication does not rule out argumentation, but for sure it changes its modalities. Nuanced arguments will hardly make their way in television. Boldness and quick-wittedness will be more effective in a medium where instantaneity and non linearity determine the streaming of communication.

Beyond Toulmin vs. Carnap on 'Probability'

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In his *Logical Foundations of Probability*, Carnap put forth the view according to which there are two fundamentally different pre-scientific concepts of probability. One of them is best captured by its scientific explication in terms of the logical-semantic idea of the degree of confirmation of a hypothesis with respect to the set of sentences describing the evidence (probability1). The other one is best captured by its scientific explication in terms of the empirical idea of the relative frequency of an event with respect to a long sequence of instances of a mass phenomenon (probability2). Both probability1 and probability2 are legitimate scientific concepts. Thus, according to Carnap, the original, pre-scientific, distinction in meaning between these uses of probability terms was preserved and furthered in the course of the development of the scientific approach to probability. Philosophical discussions about the appropriate analysis of *the* meaning of probability statements are therefore pointless.

In his *The Uses of Argument*, Toulmin agrees with Carnap that it is a mistake to look for a single reference in terms of which all the uses of 'probability' could be accounted for. However, he also maintains that it is equally senseless to try to correct this mistake by appealing to the idea of there being two different references associated with the appropriate uses of the term rather than one. According to Toulmin, both frequencies as well as confirmation relations are but types of *evidence* one takes into account in the formulation of our judgments in which the term 'probability' occurs. But the evidence that backs a judgment should not be confused with its *meaning*. Toulmin claims that the term 'probability' does not impinge on the meaning of the statement to which it is attached; it is rather a *modal modifier* that modulates the *force* with which an agent is disposed to assert that statement. The pointlessness of the philosophical discussions Carnap talks about is real; it has, however, a different and deeper source than the one he diagnosed.

On what grounds are we to adjudicate this dispute between Toulmin and Carnap? On the one hand, the distinction Toulmin draws between the force of the modal term 'probably' and the criteria for its use is illuminating. On the other hand, it is hard to accept that nothing substantial is being dealt with in the debate around the question of how best to interpret our unanalysed notion of probability. In order to find a way out of this conundrum, what I propose to do is to evade shaky intuitions about ordinary language and look into some recent psychological results concerning the way subjects relate pre-scientifically to contexts of perceived uncertainty, randomness or chance. What these results suggest is that it is possible to organize the subjects' responses to these contexts into two distinct and clearly identifiable characterizations of them: one we might call 'objectivist' and one we might call 'subjectivist'. Thus, if we consider the way people *do* relate to what Toulmin calls the evidence backing our utterances of probability-statements, what we get is a revealing cleavage between two ways of

conceptualizing it. Carnap's claim concerning the existence of two distinct pre-scientific concepts associated with our use of probability-terms might be somehow vindicated by these results. On the other hand, the outlines of this division do not match Carnap's characterization of the relevant *explicanda*.

Charges of Inconsistency and the *tu quoque* fallacy

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According to the pragma-dialectical theory of argumentation, in a critical discussion logical and pragmatic inconsistencies are not allowed. Generally, pointing at inconsistencies within the discussion is therefore a reasonable move. However, pointing at inconsistencies between positions taken in the past and positions taken in the present or between what the arguer claims and his actual behavior counts as a violations of the freedom rule, amounting to a *tu quoque* fallacy. Empirical studies show that ordinary arguers tend to think that the *tu quoque* fallacy is not an unreasonable discussion move. In this paper, several explanations of this phenomenon are explored. One explanation is that ordinary arguers value consistency so highly that they do not allow any inconsistencies. Another (related) explanation is that charges of inconsistency may be reasonable in some activity types, but not in others.

Techniques de l'argumentation formelle

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Après qu'un débat féroce ait longtemps opposé les défenseurs d'une "logique informelle" et les partisans d'une réduction pure et simple de la théorie de l'argumentation à la logique déductive, il semble aujourd'hui possible de dégager un ensemble non unifié de modèles formels (quoique pas exclusivement logiques) permettant de rendre compte de différents aspects du caractère correct ou non des argumentations. Nous insisterons de notre côté sur le fait qu'une preuve formelle doit elle-même tenir sa force de conviction de certains procédés argumentatifs qui tiennent notamment de la rhétorique visuelle. Contrairement à ce qu'espéraient les fondateurs des idéographies logiques, la déduction n'a pas entièrement éliminé l'intuition des preuves mathématiques, puisqu'on retrouve celle-ci au niveau même de l'évidence "géométrique" des transformations symboliques elles-mêmes. Et cette évidence doit elle-même être soigneusement construite.

Thou Shalt (Not) Argue:
On Being Reasonable and Other Forms of Irrationality

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Although the distinction between being reasonable and being rational is not especially well-recognized in ordinary language, it is firmly entrenched in legal theory. In philosophy, it is also common enough in epistemological and ethical discourse. But despite the importance of those areas for argumentation, the distinction does not play a particularly prominent role in argumentation theory. It should. The distinctions between formal and informal logic, between logic in a broad sense and logic in the narrow sense, and, when it is made, between informal logic and critical thinking are serviceable stand-ins for some purposes, but not for all. In this paper, the rational-reasonable distinction is imported into argumentation theory. I identify the governing models and metaphors, as well as the cognitive and argumentative virtues associated with each. The distinction is then deployed on the often-overlooked questions of when, with whom, and what we should argue about. The conclusion that emerges is that there is an imperative to argue, as part of the imperative to be rational, that has its source in our nature as epistemic agents, but that imperative can be constrained by a counter-imperative to be reasonable, and *not* to argue, that has its source in our status as members of a community of ethical agents.

Inference Claims

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In argumentation, we support our claims with reasons, inviting our addressees to accept our claims on the basis of the reasons offered. We implicitly maintain that each claimfollows from the reason or reasons offered in its immediate support. To maintain that a claim follows in this way is to make a special sort of claim: an inference claim.

What is the general form of such inference claims? What does it mean to say that a claim follows from a reason or reasons offered in its immediate support?

Introductory logic texts nowadays identify following with necessary truth preservation: if the reasons are true, then the conclusion must be true. They go on to explain this necessity as due to a logical form of the argument: if the conclusion follows, it is because the argument has a contentless form that cannot have an instance with true reasons and an untrue conclusion.

To this conception, one can object that a conclusion does not follow merely because the conclusion must be true or merely because the reasons cannot be true; there must be a connection between the reasons and the conclusion. Further, one can object that the restriction to logical or contentless forms is an unwarranted prejudice: If an argument has a form that rules out true reasons and an untrue conclusion in a non-trivial way, then the conclusion follows, even if the form has some content.

These two objections give rise to an alternative conception of following as necessary truth transmission. The necessity need not be logical.

On the truth-transmission conception, an argument's inference claim is the claim that the argument has a form that necessarily transmits truth from the reasons to the conclusion. That is, the argument has a non-empty set of content expressions whose generalization with respect to specifiable classes produces a form of argument that (non-trivially) cannot have an instance with true reasons and an untrue conclusion. A plausible instance of this claim could be proposed as an unexpressed premiss of the argument.

In contrast, some theorists of argumentation have argued recently that an inference claim is merely a singular conditional whose antecedent is the conjunction of the argument's reasons and whose consequent is the argument's conclusion. In the same spirit, others have argued that this singular conditional is the unexpressed premiss of some or even all arguments. I shall consider their arguments.

Finding the Logic in Argumentation

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The field of argumentation studies needs to be based on some model of logical reasoning. Although deductive and inductive models of reasoning are useful in some instances, there is a growing consensus that there also needs to be some third alternative standard of correct reasoning to evaluate the strength or weakness of an everyday conversational argument. Those working on defeasibility have focused more on reasoning/inference, while those in informal logic have strongly focused on argument. Arguments are evaluated (in the dialectical tier) by examining counter-arguments that attack them, and once one has looked at all the arguments that support a given argument, and balanced them against all the arguments that attack it, one can judge which side has more probative weight on balance, the pro or the con. But each of these single pro or con arguments needs to be evaluated (at the illative core) in its own right, as well as with respect to how it balances with opposed arguments. How is this done? Many of the single arguments fit argumentation schemes. In many instances, the preferred method of argument identification, analysis and evaluation centers around the application of argumentation schemes to the given text. Once an argument is identified, how it is to be evaluated depends on how well it answers critical questions matching the scheme that fits the argument. To sum up this method, we can say that there are two aspects to it. One is the evaluation of each single argument. This is the illative or logical part. Here argumentation schemes play the key role. The dialectical part is seeing how the pro and con arguments are balanced when used in a wider perspective to resolve an unsettled issue.

The most widely useful argumentation schemes that fit arguments in everyday conversational argumentation are defeasible ones. A good example is argument from expert opinion. This scheme is not well modeled by a deductive interpretation. Basing it on an absolutely universal generalization, to the effect that what an expert says is

always true, does not yield a useful logical model. Indeed such a deductive model would make the scheme into a fallacious form of argument by making it too rigid. In practice, evaluating an argument from expert opinion is best carried out by seeing how well it survives the testing procedure of critical questioning.

Where does this leave us? Is there some way can take further steps forward by finding the logic of defeasible argumentation schemes? In this paper it will be argued that there are resources from artificial intelligence that offer hope as useful ways of helping us to move forward. One of these is called defeasible logic. It is a species of logic that recognizes of defeasible inferences that are open to defeat by counter-arguments and exceptions to rules. The other resource is the Carneades system. Although argumentation schemes and matching critical questions have been usefully incorporated into previous argument mapping technologies, until Carneades there was no underlying model of reasoning that can weigh the critical questions matching a scheme into the balance of argument evaluation. Carneades models the critical questions as three kinds of premises of an argumentation scheme. In this paper, it is shown how these two resources can be combined to open the way to finding the logic of argumentation, even if we do not know all of its properties yet. As a bonus, this approach provides a method of argument construction, a capability especially useful for rhetoric.

Formals and Ties: Connecting Argumentation Studies With Formal Disciplines

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How the relationships between a largely informal field of study as argumentation theory and disciplines such as formal logic and formal dialectic should be defined is a precarious matter. For one thing, there are no clear definitions of these disciplines themselves. Rather than to waste our energy searching for the philosopher's stone in this area, I propose to have a look at ways that formal models of reasoning and of discussion can contribute to the analysis and the evaluation of arguments. I'm thinking of systems of logic or dialectic – not just classical systems, but also deviant ones – that can be used to formulate, as well as evaluate, formal inferences, deductions, or discussions.

One kind of use, which has often been under attack, is the formalization and evaluation of informal arguments. Though I shall have something to say in defense of this practice, it does not, I would say, constitute the more important way formal systems contribute to argumentation studies. Their main interest lies in the conceptual clarifications that precise formalisms yield and the inspiration they may offer for formulations of norms and rules that form the core of argumentation theory.

The nature of such uses will be explained and illustrated using examples from authors writing about dialogical logic or formal dialectic: Lorenzen, Hamblin, Rescher, Woods & Walton, Mackenzie, and Walton & Krabbe.

Meaning and Argument

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Though teaching formal logic typically takes on the task of clarifying unclear language; they tend to do this more in the purpose of proof making. A reasonable assumption implicit in this strategy is that our arguments should be clearly presented before evaluated. But then a primary task of logic set to such purposes should be to develop those skills that enable us to capture adequately in notation argument we express in a natural language. Symbolizations techniques may resist a mechanical treatment but from this it does not follow that manipulating natural language into formal languages is not a suitable subject matter — or so I shall argue.

Reconstructing and Assessing the Conditions of Meaningfulness. An Argumentative Approach to Presupposition

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Presupposition is presented as a phenomenon inherent all types of communication, both at the level of the sentence and the communication move. They represent the conditions of meaningfulness, or felicity, of a sentence or a discourse act. But why and how can we take a proposition for granted? How can we assess the reasonableness of presuppositions? In order to address such questions, we need to approach the problem from a linguistic, argumentative, and epistemic perspective. On this view, some propositions can be taken for granted because the speaker presumes that they are accepted by the other party. Such an epistemic foundation of implicitness does not require the presupposed premises being true, and not even actually shared, but simply presumable. Presuppositions can be therefore conceived as provisional conclusions about the other party's linguistic behaviour, based on his knowledge or acceptance of some ground information. This argumentative approach to the conditions of meaningfulness provides an instrument for assessing the reasonableness of a presupposition and understanding its dialogical effect. On this view, the dialogical force of a presupposition lies in its presumptive nature, which sets and shifts the burden of proving its unacceptability or unreasonableness.

The Role of Logic in Analyzing and Evaluating Argumentation

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From a pragma-dialectical perspective, van Eemeren discusses the role of logic in analyzing and evaluating argumentation. First he makes clear that, in order to fulfil its analytic and evaluative purposes well, argumentation theory cannot do without logic but needs to take account of insights from other disciplines as well. As an illustration, he pays attention to some of the problems involved in reconstructing argumentative discourse to get an analytic overview that constitutes a suitable point of departure for evaluation. Next he concentrates on some of the problems involved in evaluating argumentative discourse as a means of resolving differences of opinion on the merits.

An Enquiry into the Methods of Informal Logic

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Quine showed us that there are different methods used in formal logic: the truth-table method, the deduction method, the Venn diagram method, etc. In this presentation different methods of informal logic are identified, the fallacies method, the analogy method, the deductive-reconstruction method, the method of informal warrants, the argument-scheme method, and some others. The key concepts upon which each of these methods relies are identified and the skills needed to deploy the methods are described. A suggestion is made about some of the headings under which we might compare the adequacy of these various methods, such as their reliability, efficiency, scope and texture. By ‘reliability’ is meant a method’s propensity to yield correct answers; by ‘efficiency’ is meant both the ease with which a method is learned and the ease with which it is used; by ‘scope’ is meant the range of natural language arguments the method can be used for; and by ‘texture’ is meant the method’s capacity to lead us to judgments that are intermediate between the poles of logically very good argument and logically very bad argument. The paper concludes with an oversight of the comparative strengths and weaknesses of the different methods of informal logic.

On the Divorce between Philosophy and Argumentation Theory: Analytic Philosophy as a Case Study

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One of the most spectacular findings of the history of philosophy and Western thought since Ancient Greek times was the birth and development in the past thirty years of what has become known as "argumentation theory". Multiple and diverse approaches to such theory provide not only for the analysis of argumentation in our every day life, but also for the actual improvement and enrichment of our ways to argue, thus giving a fundamental contribution, at least apparently, to the resolution of the famous issue of the relationship between philosophy and the meaning of life.

"Argumentation theory", however, has been introduced as a theory which would not have philosophical foundations: the idea, which is currently generally accepted, is that it is a neutral field, not necessarily philosophical, which would cross rationality as a whole, while embracing the inputs from several other distinct fields of expertise. In this regard, some argumentation theorists have spoken, in the past few years, of the need for "a general theory of argumentation"; a theory which, from a philosopher's viewpoint (we would like to add), only philosophy may provide. The divorce between philosophy and argumentation theory arose in the 1970s when the thought that formal logic provides the essential framework of argumentation study was rejected. In the Anglo-Saxon tradition, formal logic, in this or that version, was and still is, to some extent, that kind of framework. Although some of the most outstanding argumentation theorists today started as philosophers, it is not surprising that their rejection of formal logic forced them to progressively cut their philosophical roots and to adopt the idea, previously mentioned, that argumentation theory is a neutral and interdisciplinary field, somewhat indifferent to philosophy.

For analytic philosophy, from the 20th century to today, formal logic has provided the only possible framework for argumentation study. Yet, paradoxically or perhaps not, we do not find it in any of the founders of that school, nor in any of its most important followers, the simple idea of *argument*. The main philosophical problem for all of them was to reach a 'theory of meaning', which would develop independently of any concept of argumentation itself. The author closely analyses this perspective, and seeks to find its systematic and historical ties with the more general modern divorce between philosophy and argumentation theory.

The Place of Logic in Argument Study

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The question of the place of logic in argument study is ambiguous, since "logic" has three distinct meanings. "Formal deductive logic" is perhaps the meaning most frequently associated with the term. But "logic" may mean formal logic together with

considerations for evaluating what are classed together as inductive arguments–inductive enumeration, statistical syllogism, arguments by analogy, causal arguments instancing Mill's methods, confirmation of hypotheses, i.e. arguments whose evaluation may involve issues of probability theory. More widely yet, informal logic extends the scope to conductive arguments and further insists on assessing premise acceptability in addition to connection adequacy in appraising arguments. We shall investigate the place of logic in all three senses in argument study. This comprehensive sense already identifies logic's place in the overall project of argument study–logic is concerned with evaluating argument cogency–Do the premises give us good reason for accepting the conclusion?–as opposed to the equally legitimate but distinct concerns of rhetoric and dialectic.

By including premise acceptability in its purview, informal logic already gives a place to formal logic in argument evaluation. Although in most cases, assessing premise acceptability involves epistemological as opposed to formal considerations, recognizing that premises are logically true and thus acceptable or logically false and thus unacceptable is a formal deductive consideration, as is the consistency of the premise set as a whole.

Turning to connection adequacy, to assess the role of logic in the three senses we have identified requires discerning what types of arguments there are for assessment purposes. We propose first dividing arguments into conclusive versus defeasible. Defeasible arguments may be divided into those whose warrants are backed from below, from above, or are self-backed. Warrants backed from below include those based on empirical evidence. Here questions of warrant reliability involve considerations of probability and induction–involving both enumerative and variative induction. Warrants backed from above include those whose reliability is certified by the constitutive rules of some institution. Their reliability is a question of whether they have been properly derived from these rules. Self-backed warrants are self-evident on epistemological grounds.

Conclusive arguments may also be divided into three classes–those where the validity of the warrant depends solely on formal considerations, those where semantic considerations also play a part, and enthymematic arguments in Hitchcock's sense. By presenting this typology, we hope to indicate the place of logic, in all its three senses, in argument study.

Logical Criticism and Argumentation Schemes: Argument from Expert Opinion as a Case in Point

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According to the pragma-dialectical theory of argumentation, an argument can be either presented as being logically valid or as being in accordance with an appropriate argumentation scheme that has been applied correctly. Depending on the proponent's choice between these options, different norms ought to be applied (Van Eemeren and Grootendorst 2004). A formal treatment of this part of the pragma-dialectical theory

would be desirable. Walton and Krabbe (1995) can be viewed as providing a part of such a treatment. Their normative model for *complex persuasion dialogue* enables the parties to put forward the considerations they consider pertinent to resolving the issue and then to check, by way of a dialogical procedure, whether the standpoint (conclusion) follows from the reasons (premises) due to the logical validity of the reasoning. In this paper, I will discuss how a similar model could be developed that enables the parties: (1) to present arguments, not as logically valid, but, as being (merely) in accordance with an appropriate argumentation scheme; (2) to put forward further considerations that are pertinent to resolving the issue at hand; and (3) to determine by way of a dialogical procedure whether in fact the standpoint, within the circumstances of the dialogue, follows from the reasons due the acceptability of an argumentation scheme. I will restrict my attention to arguments from expert opinion and the way to model them (Walton, Reed and Macagno 2008).

First, an inventory is made of the speech acts that are needed for an opponent to critically test the merits of an argument from expert opinion. According to Krabbe and Van Laar (forthcoming), critical reactions can be specified by way of four parameters: *focus, force, norm and level. Especially important in the dialogical procedure will be* critical reactions that *focus* on the so-called connection premise and that have the *force* of recommendations to defuse particular counterconsiderations.

Second, I shall examine some of the norms that govern these speech acts in this particular dialogue setting. For one, I will contend that the opponent does not need to incur a burden of proof when putting the proponent's argument from expert opinion to the test; instead, a burden of explanation suffices.

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Lorenzen Dialogue Games as Logical Semantics

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Paul Lorenzen in [4] introduced the operative approach to logic, with which he wished to develop a proof system for intuitionistic logic that did not rely in advance on logical notions. This approach was ultimately unsuccessful, and in an attempt to address the drawbacks of the operative approach he turned to dialogue games [3]. In [6] he and Kuno Lorenz developed the dialogical approach to semantics, whereby the semantics for intuitionistic logic are given in terms of winning strategies in dialogues of a particular kind. Lorenzen's motivation was to provide a foundation for intuitionistic logic which was grounded in actual argumentative, disputational, and dialogical practice [5, ch. 6]. In this way, he hoped to give a "meaning-as-use" interpretation of

intuitionistic logical constants, and give transition rules “in which we must affirm the conclusion if we have affirmed the premises" and which “*are prelogical* ; they provide a set of practical linguistic activities, a set of linguistic practices which…justify the introduction of operators invented expressly for these linguistic practices, that is, logical operators" [5, pp. 83{84].

Since Lorenzen and Lorenz's work, the dialogical framework has been extended to handle logics other than intuitionistic logic, including classical logic [1], and, more recently, to types of modal logic, connexive logic, free logic, and relevance logic [2, 8]. However, it is unclear to what extent Lorenzen's original motivations for using dialogue games for logical foundations can be carried over to these recent developments. The problem lies in the nature of the rules which govern the dialogues. These rules are divided into two groups. Particle rules dictate transitions from one dialogue-state to the next according tothe logical form of the formulas involved, while structural rules regulate the global structure of a dialogue. Part of the difficulty with the dialogical approach to logic is that there is no principled restriction on what properties of dialogues may count as a structural rule. Shahid Rahman [7] has illustrated this difficulty in the case of the connective `tonk' (originally introduced by Arthur N. Prior). In this paper we consider simpler example of this difficulty with structural rules: We discuss a simple and well-motivated change to the structural rules for dialogues in classical logic which generates a new logic whose dialogical semantics bears little connection to real-life argumentative practice.

As a result, while Lorenzen's original philosophical motivations for developing dialogical semantics for intuitionistic may be well-grounded in argumentative practice, this motivation does not automatically carry over to extensions of his framework. While the dialogical framework may still provide fruitful alternatives to the usual proof theoretic or model-theoretic approaches to various logics [8, ch. 1], the philosophical grounding of the extensions of Lorenzen's framework remains unclear.

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Between Normative and Descriptive and the Very Idea of 'Deviation'

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An important question in pragmatic theories of language and informal logic is the delicate balance between normative demands of standards and descriptive demands of material adequacy to real situations of communication and argumentation. I try to show some problems concerning this descriptive/normative balance in some particular pragmatic theories, that employs negative notions as "deviation" from (or "violation" of) a norm, like Van Eeemeren's Pragma-dialectics. This type of theories stresses the rational components of speech and inference without consideration of their existential dimensions that could establish other connections with norms and rules. I sustain that the very idea of people's inferential practices "deviating" from an ideal or "violating" standards could impose theoretical constraints and practical damage obstructing one more direct and positive account of what is happening in real situations of reasoning; I suggest that people involved in these situation who behave in anomalous way are maybe trying to perform some kind of positive and legitimate action instead of merely "deviating" from a norm.

Is it Possible to Consider Logic and Argumentation Theory Without Rhetoric?

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One who wants to describe and to analyse the relationships between logic and argumentation theory once upon a time understands that there is another phenomenon in our intellectuial history and culture we can't dispense with it. I mean the phenomenon of rhetoric, which must be understandable as philosophical discipline not as philological one. Some of the cornerstones of this view may be summarized as follows.

In analyzing historical and theoretical aspects of the interdependency of logic and rhetoric we may explicate some interesting feature which is expressed in triad "rhetoric –logic-rhetoric". Basically rhetoric is rooted in the widespread oral practice with a lot of characteristics of such practice. Logic by turn is founded on the rhetoric; by ignoring oral and "personal" overtones logic takes in its focus the structures of rhetorical reasonings. (Isidore of Seville in "Etymologiae" says, the logic is meant for those who want to reason more strictly, and rhetoric – for those who want to say more "eloquently"). During the time this situation changes; logical analysis is forced to take into account a pragmatical features of the reasoning. As a result of this we may see a conception of "rhetorical logic", or if you prefer another term, "logical rhetoric" (for example, a lot of such theoretical approaches as "pragma-dialectics", "informal logic" and so on, involving Perelman's studies or ideas of μ'group). It must be denoted in

addition than there are as minimum two conceptual triad – "dialogue-monologue-dialogue" and "oral-written-oral" – that are correlated with the first triad "rhetoric – logic-rhetoric".

As for relations between logic and argumentation theory it may be marked that historically argumentation on the one hand is part of the logic (see, f.e., Aristotle's "Analytica Posteriora", Roger Bacon's "Summulae Dialectices" or Buridan's "Summulae de dialectica"), on the other hand, argumentation theory involves several logical models as a part.

So, our answer to the title question is "no, it's not possible. But if we take into account this line of argumentation, we may say that logic and rhetoric must be the parts of a new argumentation theory as more general conception (not a theory so far). But there is another approach, under which logic is a science and argumentation theory is not a scientific theory but is an art, more strictly, logic as an art (plus rhetoric) is argumentation theory (or art of argumentation).

Monologue, Dialogue, or Polylogue: Which Model for Public Deliberation?

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After a theoretical step "from axiom to dialogue" (Barth & Krabbe, 1982), the concept of dialogue seems to be prevailing in argumentation analysis (van Eemeren & Grootendorst, 2004; Walton, 1998; Walton & Krabbe, 1995). Still, some seek "the limits of the dialogue model of argument" in "solo arguments" performed in monologues (Blair, 1998; see Johnson, 2000). In this way, a major theoretical dispute between the primarily monological and dialogical approaches continues. (Such dispute is sometimes identified with the distinction between logic and dialectic, or even between formal logic and argumentation theory at large. This is not fully accurate because there are formal dialogical approaches and informal monological approaches.) It is noticeable, however, that the models of dialogue developed in argumentation theory are typically built of di-logical exchanges between two parties (proponent and opponent). In fact, however, the bulk of our daily argumentation takes place by means of a poly-logue, a type of discussion in which many (not just one or two) sides are involved. Polylogues are especially common in political deliberation: from formal parliamentary debates to informal political discussions on the Internet.

The goal of this paper is to explore the significance of theorizing more than two sides to an argumentative discussion. The crucial questions are: Are argumentative polylogues best analysed as a sequence of monologues, a variation of a dilogue, or a collection of interconnected dilogues? Or are they something importantly different? I will argue for the latter. In analogy to pragma-linguists analysing actual poly-logical interactions (e.g. Kerbrat-Orecchioni, 2004), I will discuss three features of polylogues that go beyond the limitations of essentially dyadic models of argumentation: a) the possibility for collective argument and criticism, b) the radical departures from the *ababab* (basically: argument-objection-argument-objection) sequential organisation of exchanges, and c) different criteria for compltеteness/incompleteness of exchanges.

Logic and Fiction

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The Most Important People of the Century is a compilation of the 20th century's 100 most in.uential people, published in Time magazine in 1999; 20 of them belongs to the group of *Scientists and Thinkers* and among them where Turing (1912-1954), Gödel (1906-1978) and Wittgenstein (1889-1951), all three main researchers whose investigations change the development of logic.

In literature the image of logic is tied (linked, binded) to argumentation, deduction and syllogism. The common rules of *Modus Ponens* and *Modus Tollens* force the characters in our novels to arrive to the *right* conclusion. But this is not the only task logic is involved at, as she is at the core of computation, both theoretical and practical, and also plays a crucial role in the whole process of transmission of knowledge and information. Game theory, agency theory and semantic web are more recent areas of interest were logic plays a beautiful melody.

At the end of the XIX century and the beginning of the XX century, logic was mainly devoted to the fundamentation of mathematics using the axiomatic method. Soon the stress was put on the formalism itself, its semantics and deductive calculus, and the relationship between expressive power and computational strength of a logic revealed themselves as extremely important; a logic is like a scale where expressiveness and computability tends to be in an equilibrium.

In logic we also analyze the limits of logic treatment itself as well as the limits of computation, some of the very famous theorems of logic belongs to this limitative category.

Also in logic we develop several diferent systems to cope with situations other than the mathematical one; for instance, when time is important as it works as a modi.er of the truth of sentences, or where we want to investigate not just the deduction process but also the means of discovery.

In my talk I will take some examples of reasoning from literature, not just the mythical Sherlow Holmes, but also from children books, my favorite author being Arnold Lobel, from novels and even from Zen Philosophy. Using these examples we will see that classical propositional logic is not strong enough to cope with easy arguments, we will also point to the di¤erence between deriving a conclusion from a set of premises and just having a mathematical model of hypothesis and conclusion. We will compare formalizations of temporal arguments using classical .rst order logic, many sorted logic and hybrid temporal logic. Translations between logics is a very important area of research nowadays and I will mention the usefulness of this treatment.

Finally we will see that Sherlow Holmes was in fact using abductive reasoning, not deduction.

Logical Theory, Argumentation Theory, and Meta-Argumentation

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This is an examination of various conceptions of, and approaches to, the study of argumentation, especially three that may be labeled logical theory, argumentation theory, and meta-argumentation. I plan to examine their similarities and differences, their relative merits, and their comparative prospects. In line with a current book in progress, I would like to be able to show that the meta-argumentation approach is a highly promising approach.

Informal Logic & its Contribution to Argumentation Theory

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One of the aims of this conference is to "take stock of/assess the relationship between logic and argumentation theory." When we think about "the relationship between logic and the study of argumentation," are we being somewhat simplistic? Perhaps there is no such thing as 'the' relationship but rather a number of such relationships. For when we speak of 'logic,' which 'logic' do we mean? Do we mean formal logic, or formal deductive logic, or symbolic logic, or inductive logic, or informal logic? Do not all of these have some contribution to make to the study of argumentation?

And when we speak of 'argumentation,' what do we mean? Do we mean to invoke the distinction some have drawn between 'argument' and 'argumentation'? There are different ways of doing that. And when we speak of 'argument,' do we mean to refer to O' Keefe's distinction (1982) between argument-1 and argument-2? Or to Pinto's idea (2001), seconded by Hitchcock (2004), that argument may be fruitfully seen as "an invitation to inference"? Or to Blair's view (2006) that the essential feature of argument is the illative move? Or to my view that argument is best understood as manifest rationality (2000), and that if argument is to be disentangled from other constructs to which it stands related [inference, implication, entailment, etc], it must be understood as dialectical? Or do we mean to refer to Walton's dialogical approach (1995, 1998). Evidently, then, there are a great many ways of understanding these fundamental terms.

In my paper for the conference, I will begin by setting forth my understanding of these terms, and, after a few historical reflections, I will discuss what I think are the important contributions of informal logic to the study of argumentation.

Agency and Argumentation

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Over the last several decades, theorists have worked to separate theories of argument and argumentation from the constraints and abstractions of formal logic as it developed in the 20th century. Some have done this by recalling Aristotle's distinctions between analysis, dialectic and rhetoric while others have offered new ways to understand rhetoric and the pragmatics of language. Less often considered in this discussion is the work of the classical pragmatist logicians, Charles S. Peirce, Josiah Royce and John Dewey. Peirce, for example, took argument to be at the center of his philosophy. Argument, he wrote, is "any process of thought reasonably tending to produce a definite belief." At first glance, it appears that Peirce endorses a division between logic and argument comparable to the one affirmed by current theories by focusing on belief and not validity or truth. However, a closer reading of pragmatist logical theory suggests that argument and formal logic are not separate but rather are aspects of a larger field of study properly called logic and concerned not with language or thought in particular but with the processes of purposive ordering, that is, the activity or judgment of agents. In his central work, *The Principles of Logic*, Josiah Royce explicitly reframed logic in these terms as the science of order, that is, "the *Theory of the Forms of any Orderly Realm of Objects*, real or ideal" where the objects are the results of ordering and the forms are modes of action. Arguments are part of the process of judgment, that is, the process by which problems are solved, goals are selected and achieved, and situations transformed. John Dewey calls this process inquiry and famously presents logic as the study of inquiry. From the pragmatist perspective, argument emerges not as a matter of language or even of belief as a state of mind, but rather as a particular mode of inquiry whose result is the possibility of new or changed dispositions to act. As such, the theory of argumentation is the product of logical analysis understood as the analysis of principles of order in the context of the process of inquiry. In this paper, I will introduce the general conception of pragmatist logic as offering a theory of agency which, in turn, frames a theory of argument as inquiry.

Argumentation Theory *vs* Formal Logic: the Case of Scientific Argumentation and the 'Logic' of Controversies

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The use of argumentation theory can be shown to be very helpful in contexts in which a purely formal analysis of the problem does not suffice for offering an accurate and successful account of the issues involved. In the present talk, we want to show this in the case of the study of scientific controversies. We defend that there is a certain "logic" of scientific discussions (and, more particularly, of controversies as understood as persistent antagonistic discussions over a disagreement concerning a substantial

scientific issue) in which certain implicit commitments are taken and certain inferential moves (contextually dependent) are allowed. All this should lead, in ideal conditions, to a rational way of solving the conflict. As we will argue, a controversy exists when each side attempts to demonstrate the adequacy of its position by showing its capability in explaining the cases adduced as exemplifications, by demonstrating its fertility in explaining new cases, or by proving consistent with neighboring explanations and basic principles. This notion of scientific controversy will be our departing point. Obviously, we are contending that the competing views share a minimal set of beliefs, commitments, values and conceptual schemes, which constitutes a common background for the beginning of a rational discussion. When this seems not to be the case or when there is some reason to presume that both sides do not share concepts or beliefs that are relevant for the discussion, a previous debate concerning the presuppositions and background of both sides is obviously needed. Rational critique conducted by rule-like and context-dependent instructions must then be an essential component of a scientific controversy if it wants to be rationally conducted. Although in principle not resolvable by the standard means of the discipline involved, controversies could be sometimes resolved by resorting to conceptual debates, rational critical argumentation and a background set of beliefs, commitments, or values. Within an inferential and pragmatic approach, we defend a model of scientific argumentation in which the capability of scientific theories in making more coherent and workable the network of commitments and inferential links of the discipline is thought to be central. According to our model, to accept a new belief within the set of admitted beliefs will not be acceptable without giving some reason in the form of a cogent argument showing the enlightening capacity of the new belief. In order to apply this model of dialectical argumentation to the case of scientific controversies, we resort to an account of argumentation (following intuitions that have been made clear by van Eemeren and Grootendorst 2004, and Walton and Krabbe 1995) with which we provide adequate characterizations of what is to be a rational commitment and a rational change (or revision) of belief, i.e. a kind of "ethics of belief" for scientific practice. We think the dialectical approach to be more useful than other informal accounts like the standard rhetoric approaches (see Pera 1994) in order to capture the richness of structure and the dynamics of scientific argumentation as well as its means in discussions, debates and controversies. Our approach is compatible with a pluralist model of scientific rationality ("pluralist in the sense that it is not reducible to universal norms). At the same time, we will show how our approach provides us with an argument in favour of the fruitfulness of argumentation theory to the detriment of the use of purely formal methods of analysis, which are in fact incapable of accounting for the logic of scientific discussions and theoretic change.

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