

University of Windsor

Scholarship at UWindsor

OSSA Conference Archive

OSSA 5

May 14th, 9:00 AM - May 17th, 5:00 PM

A Possible Rapprochement of Informal Logic with Formal Logic

George Boger

Follow this and additional works at: <https://scholar.uwindsor.ca/ossaarchive>



Part of the [Philosophy Commons](#)

Boger, George, "A Possible Rapprochement of Informal Logic with Formal Logic" (2003). *OSSA Conference Archive*. 12.

<https://scholar.uwindsor.ca/ossaarchive/OSSA5/papersandcommentaries/12>

This Paper is brought to you for free and open access by the Conferences and Conference Proceedings at Scholarship at UWindsor. It has been accepted for inclusion in OSSA Conference Archive by an authorized conference organizer of Scholarship at UWindsor. For more information, please contact scholarship@uwindsor.ca.

Title: A Possible *Rapprochement* of Informal Logic with Formal Logic
Author: George Boger
Commentary: R. George

© 2003 George Boger

1. Introduction: a relativist trend within informal logic

The explosion of developments in logic over the past 25 years deriving from the informal logic movement, as complemented by studies in argumentation theory, pragma-dialectics, critical thinking, and the new rhetoric, has been astounding. A signature feature of this compassing movement treating *argumentation*¹ is an extraordinary confluence of disciplines — ranging from psychology, sociology, linguistics, rhetoric, and classical textbook logic to phenomenology, and cognitive science. This confluence has dramatically enriched and added new vitality to discussions about argumentation. It has also tagged this movement as broadly multi-dimensional and as replete with trends not all of which are equally compatible and some even contrary. This situation has encouraged some critics to mark this as a serious limitation, citing the movement's lack of definition and apparent aimlessness; they might even venture to predict its eventual dissolution, suggesting that its varied influences will become reabsorbed into traditional disciplines. Nevertheless, informal logicians consider this situation not to detract from but to be a positive feature of the movement, and they tout its special revolutionary and non-conventional nature.

Another prominent feature of argumentation theory is its focus on *reasoning* just as a *human activity*. This focus traces its origin at least as far back to its modern founders who sought to avoid the 'straits of formal logic', such as Chaim Perelman, Stephen Toulmin, and C. L. Hamblin. Indeed, allowing some broad stroke of definition, we take this feature to characterize the nature and objective of the argumentation movement. This is not a surprising feature, since an initial impetus for the new trend was a deep dissatisfaction with traditional formal logic, or, better, with the putative progress of modern mathematical logic. In short, they assessed that work in constructing abstract formal languages, recursion theory, quantification theory, the axiomatization of number theory, mathematizing logic, proof-theory, power sets and set-theory, and an inability to 'formalize' fallacies holds no promise for meeting the needs of ordinary human beings making a living. Human beings are accustomed to using natural languages and not abstract formal languages. For adherents of this new movement — again, whether informal logicians, pragma-dialecticians, or critical thinking theorists, etc. — formal logic had excised human beings from the reasoning process to render them inconsequential, passive onlookers only to focus then on the sterile relations of propositions. And, after all, do propositions really exist? This is all well and good, they have said, for the development of computers; but human beings are not computers. Formal logic, it seemed to these iconoclastic thinkers, has little or no relevance to what human beings actually do in their everyday lives. It could not offer practical advice relating to problem solving, mediating differences, or assessing persuasive and disputational discourse. Nor was it especially normative in respect of evaluating arguments —

the *what* human beings do when they argue, debate, persuade, mediate, make a point, draw a conclusion, assess ... that is, when they think. Informal logic emerged explicitly to address this void, or failing, of formal logic, and it has done admirably well in carving a niche for itself. The expectation is that informal logicians, and argumentation theorists generally, will continue to make significant contributions to understanding human reasoning.

Argument evaluation, or argument assessment, then, has emerged as a special concern among argumentation theorists. They have been occupied in great measure to answer the question 'What are the marks of a good argument?' Its persuasiveness? The acceptability of its premises? Its cogency? An absence of fallacies? Clear language? The truth of its premises? Its validity? All of these constituent aspects of an argument — even what counts as an argument — have been extensively considered and continue to be examined by these logicians. It is worth noting that the assessment of the traditional fallacies, the so-called 'informal fallacies', might locate a historical genesis for these logicians. And they have composed a vast literature on these 'bad arguments'. Just here informal logicians, pragma-dialecticians, and critical thinking theorists have been especially dissatisfied with formal logic because they perceive an asymmetry to exist between not formalizing fallacies and invalidity over against formalizing validity. Indeed, formal logicians have not seriously taken up fallacious reasoning to develop a theory of fallacy, either recognizing their inability or sloughing the matter as of little importance. In most cases it is possible to demonstrate the validity of an argument by means of a deduction; there is a long tradition to this effect and formal logicians have dealt extensively, if incompletely, with the notion of deducibility. However, in respect of establishing invalidity, formalists have only the methods of counterargument and counterinterpretation available to them.² But these methods introduce non-logical constants, which thereby might be thought to corrupt their formalism. Now, while some logicians would *formalize* the assessment of the traditional fallacies, others are not convinced that this formalism is properly the counterpart of, for example, a method using such deduction rules as addition, simplification, detachment, and the equivalences.³ Rather, they have searched for non-conventional 'forms' or patterns of reasoning. Douglas Walton and John Woods stand out as logicians who have made significant contributions in this respect, and they continue to move in this direction. On the other hand, there are developments, most notably those of Frans H. van Eemeren and Rob Grootendorst, that assess fallacies pragma-dialectically as breaking the rules that manage a discussion or a debate or a mediation in which arguing is a constituent part. Logic on this count effectively shifts from a concern for establishing validity or objective knowledge to studying the rules that regulate discourse; logic becomes focused on the pragmatics of discourse. Mediation, for example, might often suspend judgment about truth and falsity in order to settle on a practical plan of action agreeable to opposing parties. Persuasive argumentation might likewise sidestep concern with validity and truth in favor of obtaining a desired end. These explorations into human activity have been productive and have found their applications beyond classroom teaching — or outside upper level seminars on recursion, omega-completeness, and set theory — in the real world of conflict resolution, legal argumentation, and assessing the 'rhetoric' prominent in the political and commercial arenas. In any case, the study of fallacious reasoning has been a soundboard against which models for assessing good arguments are being developed.

It is fair to say that a third prominent feature of the argumentation movement is its focus on epistemics, or, perhaps better, on cognition and intentionality. Human beings are thought to take center stage on this count. In this connection, an argument or argumentation is not a lifeless entity dwelling in a platonic universe and consisting in static propositions and sets of

propositions and their static relationships, but a living, dynamic, and meaningful social activity. An argument is an interaction between (or among) human beings — it is dialectical, not monolectical. Here argumentation theorists emphasize study of the *inferential links* that persons *experience* when they reason through a discourse rather than study more strictly the implicational relationships among propositions. Taking this tack has opened wide the doors of argumentation evaluation to the scrutinizing lenses of psychology, cognitive science, rhetoric and linguistics, and to the social sciences in general.

Now, while argumentation theorists have undeniably secured enduring accomplishments, we wish in this discussion to address a concern that some movement logicians might be veering off course in an important respect. Studying the subjectivity of inferential links threatens to draw the movement close to, or even into, psychologism and phenomenological analysis. This tendency has not gone unnoticed by some movement adherents who want to maintain that the truth of the premises contributes to a given argument's being a *good* argument or that a fallacy is not just an appearance in someone's consciousness or someone's perception but *something objective* about an argument. Premise acceptability, a generally recognized feature of a good argument, might, then, include the premises being true, as Ralph Johnson seems to maintain. Still, this requirement is not unanimously accepted as necessary; Chris Tindale makes such a case and points to the relativism of notions of truth. Indeed, Trudy Govier has argued that argument assessment is better off addressing the context of the argument, of the social activity, since what is acceptable, or cogent, or even true, varies from one audience and context to another. This trend among informal logicians and argumentation theorists, while perhaps not defining the movement, nevertheless seems to be problematic just because of its relativism and, perhaps, of an associated subjectivism.⁴ Taking this tack threatens a traditional principle of logic to overcome ignorance and fallibility as much as possible. If argumentation theory shifts concern from assessing objective implicational relations to how human beings cognitively make inferences, then it might undercut a methodology that acknowledges error as other than a misstep in an argumentation process. Mediation and persuasive discourse are cases in point. In this connection, we witness a dialectical tension within the argumentation movement that promises further discoveries. In any case, there is no pernicious intention among these thinkers, as even a cursory reading of their works reveals a profound concern with the quality of human life. For example, critical thinking textbooks have a decidedly critical posture toward 'political rhetoric' or legalese obfuscation and tricks of advertising that reveals their interest to empower ordinary human beings with a sharp discerning capability. This posture helps to account for their focus on context to get at the meaning of what is presented in one or another argument. Still, when we introduce a classical concern of logic, here considered in relation to establishing objective knowledge, then this trend is at least problematic toward realizing this end. We might ask ourselves — Is it possible for a human being to be mistaken about some matter or other? For example, might a human being believe a given state of affairs to be the case when in fact the given state of affairs is not the case? Such states of affairs might include matters relating to the natural world, to societal relationships and interpersonal dynamics, and even to *what transpires during an argumentation*. Merely to reply with "Who is to determine the criteria of truth?" circumvents any genuine concern ordinary human beings might share about really knowing 'what is happening'. Our caution does not aim to diminish the successes secured in studying conflict resolution, mediation, fallacious reasoning, models of persuasion, and assessing knowledge as socially constructed. Rather, it aims to encourage a dialogue with formal logic in

order to examine a possible shortcoming of argumentation studies and to suggest a role formal logic might play in strengthening such studies.

Table 1 sketches three kinds of argumentation and locates our focus on deductive reasoning in respect of the other two. Treating only deductive reasoning, then, circumscribes our discussion. On this count we omit considering extra-logical matters, not as unimportant for promoting and assessing human 'argumentative' behavior, but not as crucial for promoting intelligible discourse. We believe that the theoretical apparatus of formal logic can provide *models* against which human beings can assess their success or failure to establish knowledge. This apparatus is one among other important instruments available to human beings toward that end. Argumentation theorists seem not to have placed obtaining knowledge at the forefront of their concerns and we wish to raise interest about this matter. Below we first treat the need to extract the propositions expressed by persons during argumentation. The notion of proposition is clarified in the context of distinguishing the process and the product of an argumentation. Second, we make a case for the objectivity of truth and falsity, of validity and invalidity, and of cogency and fallaciousness. Here we provide more traditional notions of argument and argumentation as consisting in propositions, which thereby make them susceptible to objective analysis. Third, we outline what formal logic has to offer informal logic and argumentation theory.

KINDS OF ARGUMENTATION⁵

	KIND in respect of OBJECTIVE	CHARACTER	NORMATIVE CONCERN with evaluation		CONCERN with Truth & Falsity	CONCERN with morality
			Good Argument	— Bad Argument		
1	MEDIATION	Social activity Dynamic of disputing parties Reasonableness & cogency, etc. are context relative	Successful mediation	Failure to resolve a dispute A fallacy consists in breaking a rule managing disputational discourse	Secondary Might work with pragmatist and coherence notions of truth & falsity	Not especially concerned with moral matters
2	PERSUASION	Social Activity Dynamic of agent & audience Premise acceptability, etc. is context relative	Successful persuasion	Failure to persuade A fallacy consists in breaking a rule managing persuasive discourse	Secondary Might work with pragmatist and coherence notions of truth & falsity, possibly with correspondence	Not especially concerned with moral matters
3	TRUTH or OBJECTIVE KNOWLEDGE	Not a social activity Static relationships among propositions Cogency & validity are context independent	Establishing knowledge 1. Deduction – knowledge of logical consequence 2. Demonstration – knowledge of the truth of a conclusion	Failure to establish knowledge 3. Fallacy – a break in the cogency of a deductive discourse	Primary Correspondence is a primary notion of truth & falsity Not exclusory of coherence & pragmatist notions	Generally concerned with moral matters Even considers being truthful a moral virtue

Table 1

2. Extracting the product of an argumentation

A cardinal feature of informal logic and argumentation theory is the centrality of concern for the *activity* of arguing and reasoning in general. They also share in this connection a focal concern with argument evaluation. Now, since argumentation logicians take an argument (1) to be a social activity involving disputants or an arguer and his/her audience, (2) to appear in one or another context, and (3) to have one or another purpose, they incline toward taking the evaluation of an argument not to be circumscribed by considerations of 'formal' validity but to involve these other factors. Thus, in just this respect, then, argumentation logicians veer toward fusing an arguer with his/her argument and these with an argument's context — and they refer to this entire 'operation' as an *argumentation*. In this way they consider themselves as closing the gap between logic and the needs of human beings that formal logic on their view has made unbridgeable. This being the case, they are consequently disinclined to recognize the *product* of such an argumentation to be an independently existing object subject to its own evaluative criteria. Normative concerns seem to them to lie outside the capability of formal logic and rather to be the purview of informal logic. These logicians have aimed to close the gap between logic and the needs of human beings, but, we believe, at the risk of eliminating an important difference between the *process* of arguing and its context, on the one hand, and the *product* of such a process, the 'argumentation' itself, on the other. In this connection, one might consider them to run afoul of the *process/product fallacy*.

In relation to a proclivity to relativize cogency, and even truth and falsity, to the dispositions of one or another audience, argumentation logicians also tend to eclipse a principal aim of logic, that is, in its traditional or classical conception, to establish objective knowledge. Focusing on premise acceptability and not especially on premise truth, on the pragmatics of discourse and rules of disputation and not on the internal coherence of an argumentation, and fusing the arguer and the argument in a unitary activity, all conspire together to blur the distinction between what one believes to be the case and what really is the case. Perhaps the notion of *context relativism* compasses these activities, and surely such a notion presides as an underlying philosophical principle of argumentation theory. Now, considering *context relativism* to close the gap between the theory and practice of logic and shunting formal logic as irrelevant diminishes the subject-object distinction. And diminishing this distinction contributes to suppressing an important distinction between *thinking* and *being* by conflating *inference* and *implication*. However, reasserting a distinction between subject and object in this connection involves turning attention to the propositions in an argumentation and to their logical relationships. Suppressing a focal concern with *objective relations among propositions*, the traditional constituents of arguments and the bailiwick of formal logic, demotes concern with implication and brings to the fore concern with *making inferences*. But, now, these inferences just are cognitions; being such, they are not construed as possibly isomorphic reflections in consciousness of objective implicational relationships among propositions. Rather, these cognitions, these inferences, these mental states, are just what a participant experiences, however they are effected, in one or another argumentational context, and however they are related or unrelated to objective reality. In fact, there is a significant chasm introduced between thinking and being that some believe either to be unbridgeable or not worth bridging. It is no wonder that psychology and cognitive science have become insinuated into or have been enlisted into argumentation studies. The analogue of this might be enlisting psychologists in market advertising or political speech writing. In this respect, then, they seem to run afoul of the *epistemic/ontic fallacy*.

Now, given a tendency to suspend consideration of propositional relations, we notice also a tendency to merge the activities of argumentation and persuasion. Again, these moves trend argumentation theory away from matters of establishing objective knowledge and toward subjective matters of effective and affective discourse. Addressing these matters, of course, are worthwhile and necessary, but they might be rudderless in respect of helping human beings know 'what is happening.' In this connection, we want to alert argumentation theorists that in addition to developing rhetorical and disputational pragmatics, we ought not lose sight of the need to develop *topic neutral methods* for distinguishing truth from falsity, even validity from invalidity.

Once a logician separates the evaluation of an argument from an assessment of its propositional relations to focus on the arguer and his/her audience, a logician then no longer assesses arguments as objects or products, but really a logician then assesses only the persons who present arguments and their audiences. In particular, a logician assesses a person's skill or lack of skill to use various instruments when making a case or persuading an audience. We, on the other hand, wish to distinguish (1) the *process*, or activity, of someone arguing (including inferential chains of reasonings in consciousness) in a given arena with a given audience, from (2) the *product* of arguing, the *argumentation*, as itself consisting in propositions and their implicational relations, or, at least, in sentences expressing a meaning unambiguously. We might then easily take an argument or argumentation to be an *instrument*.⁶ In this connection, then, we take an argumentation to be the product of arguing — it is something objectively there, having an independent existence, once expressed and identified, and subject then to its own evaluation with its own objective criteria distinct from an arguer. This can only be the case if we consider an argument, or an argumentation, to consist in propositions. However, the notion of a "proposition" needs some clarification, which might make its inclusion more congenial to informal logicians.

Setting aside arguments relating to mediation (with its focus on rules for managing good discourse) and considering arguments relating to, for example, disputation and persuasion, we recognize any number of factors that might result in misunderstanding, or failure to persuade or to settle a dispute. Progress to a satisfactory conclusion or resolution of such arguments might then become forestalled indefinitely. After experiencing some huffing & puffing, a guttural growl, a rolling of eyes, etc., someone irritated might ask — "What is that supposed to mean?!" Disputes and differences of opinion continuing in this manner often devolve to misunderstandings between the parties involved in a dispute. And these misunderstandings themselves devolve to *not getting the meanings* of a participant's utterance, whether expressed by means of a sentence or a gesture. Of course, other disputes might involve no misunderstanding where the participants tenaciously hold different agendas, etc. Here we address those argumentations and disputations wherein any number of problems occurs, including those infused with the traditional fallacies, or those not involving a fallacy *per se* but some ignorance on the part of a participant. There is general consensus that a core concern of settling disputes and for successful argumentation in general is to get clear about *what* is being asserted or denied, and what is considered germane or irrelevant, etc. "Let us get clear about what you mean?" "What does your sentence mean?" And we know that sentences, expressions, and gestures are notoriously ambiguous. Thus, a mark of good argument evaluation ought to include determining just what meaning is, or what meanings are, expressed by one or another participant in a dispute.⁷

Let us call the *meaning* of a sentence its *proposition* — this meaning is the proposition expressed by the sentence. Of course, a sentence might then express more than one proposition. We do not thereby impute to such propositions any special platonic ontology; a platonic manner of speaking is nevertheless practically helpful in respect of providing some precision of understanding. A proposition, then, is just a meaning of a given sentence, and a sentence is a human utterance. This is one acceptable, although not the only nor an uncontroversial, way of specifying what a proposition is even among formal logicians. Be that as it may. And, in addition, let us also say that a proposition can be expressed in a multiplicity of ways — by means of natural language sentences (whether as declarative, interrogative, imperative, exclamatory) considered as speech-acts, or by gestures and grimaces, by body language, signs, background setting, the shape of a table, etc. Surely, this is congenial to argumentation theorists. Still, all these instruments might require of a specific vehicle — a sentence, for example — that it be *interpreted*, or *translated*, to determine just what a given participant *means* by that vehicle. Michael Gilbert and Leo Groake, for example, continue to explore this matter productively.⁸ However, construing argument analysis as *objectifying* all the dynamics of an argumentation or dispute by extracting the propositions expressed by them — by translating such dynamics into the propositions they express — seems to have been overlooked by argumentation theorists. And, of course, any such utterances and *actions* that express one or another proposition immediately become a part of the argumentation of the person expressing them. Let us, then, take all such expressions during the course of a dispute, now translated into propositions, into account when we *assess* a participant's argument. Someone might now say:

“What proposition do you want to establish? To refute? To persuade someone to accept? Do you know which? Okay, let's see whether that proposition follows from the other propositions you proffer.”

Let us not emphasize, then, whether the premises 'support' the conclusion, or even whether the premises are acceptable or unacceptable to one or another participant. This is all subjective. In this connection premise relevance becomes assessable in respect of the content of the propositions in the premise-set as implying or not implying the conclusion.⁹ The project then becomes to determine whether the conclusion is a logical consequence of the premises.

So, what is the importance of this matter for informal logicians? How does this affect critical thinking theorists? Or pragma-dialecticians? How can the accomplishments of formal logic help argumentation theorists? *First*, let us again affirm that we maintain that seeking truth and knowledge is not a fruitless endeavor, however difficult to realize, but a crucial concern of conscientious human beings. This objective can complement the objectives of mediation and persuasion, although it might be obstructive to them as well. *Second*, while we recognize the relevance of context and audience to argument evaluation, although more to the success or failure of a speaker/arguer to make his/her case, we circumscribe this relevance to extracting the propositions expressed by the sentences uttered by a speaker. The importance of this matter cannot be overemphasized as it affects both informal and formal logicians; and just here we might acknowledge their convergence. The context of an argumentation, indeed, the entire arena, not only frames the utterances of a participant or participants and thereby infuses them with meaning, but this framework itself is, or parts of it are, enlisted into the argumentation itself — it becomes part of *what* a participant expresses. The *project* of a logician, that is, of an argument evaluator, is *to identify all the propositions* that constitute a participant's argumentation. This can be quite difficult; nevertheless, this is essential work. Still, a special advantage to reinvesting interest in propositions, as construed in our discussion, is their being

unambiguous. Another advantage is their becoming *fixed* — and this enables a logician to examine them objectively in respect of their internal coherence.¹⁰

4. Objective independence of truth, validity, and cogency

Reaction to the notion that an argument is “valid in virtue of its form” has generated some understandable reprobation from informal logicians.¹¹ Indeed, this reprobation compasses their departure from formal logic and their affirming that an argument’s cogency is not a function of its form — that validity is not necessarily an essential element of a good argument, that, moreover, making the distinction between form and matter is not a principal part of an informal logician’s method of schematization. Grappling with validity has caused some misunderstanding about formal logic; indeed, some formal logicians themselves do not seem clear about validity, implication, and inference.

Perhaps in this connection we can negotiate some *rapprochement* between the two traditions. We would like here to affirm that *an argument is not valid in virtue of its form*, that holding that this is the case is, in fact, a careless thinking. Rather, an argument is valid, or invalid for that matter, in virtue of the objective relationship between the propositions comprising its premise-set and the proposition comprising its conclusion. And, moreover, we affirm that this relationship has an ontic and not a participant dependent character, analogous to that of the truth or falsity of a proposition.

At this juncture we must enter a *caveat* for our discussion and ask the reader’s indulgence. We work from a *correspondence notion of truth* and apply this notion to validity.¹² Thus, just as the truth or falsity of a proposition (or the sentence expressing the proposition) corresponds to a given state of affairs, which somehow *causes* the proposition to be true — and *not* that the proposition causes the state of affairs to come into existence (in the case of a true proposition) — so the validity of a given argument depends on objectively existent states of affairs (or possible states of affairs). We understand the link of validity to truth as follows. A given proposition is true or false independently of a participant’s perception or belief. Truth and falsity are ontic properties of propositions. Of course, it is one matter for a given proposition to be true, quite another matter for someone to know that the proposition is true. Indeed, someone might believe it to be false; still, belief does not affect the truth or falsity of a proposition. Now, logicians maintain correctly that it is impossible for true propositions to imply a false proposition — a given false proposition cannot be a logical consequence of, or be implied by, true propositions. One way that a logician has traditionally demonstrated that this is the case has been to employ deductive reasoning, as, for example, in the case of indirect proof. Such a state of affairs — namely, that true propositions cannot imply a false proposition — is demonstrated by assuming that true propositions imply a false proposition and then carrying the reasoning through to generate a contradiction. The contradiction signals an absurdity, which itself is a reflection of an impossible state of affairs.¹³ Now, of course, a contradiction can exist, in the sense that someone holds two propositions both of which cannot be true together; but the state of affairs denoted by the contradiction cannot obtain — it is impossible that a given property both belong and not belong at the same time in the same respect to the same object. Another way that logicians have traditionally treated this matter, at least as far back as Aristotle in *Metaphysics 4*, is to show that every proposition is deducible from a contradiction. *This defines unintelligibility*. If we accept the correspondence between (1) the impossibility of opposing states of affairs obtaining

simultaneously in the same object with (2) the unintelligibility of a contradiction, then we can accept that the ontology underlying truth and falsity is identical with the ontology underlying validity and invalidity that makes it impossible that true propositions imply a false proposition. This ontology, moreover, takes argument evaluation out of relativistic and arbitrary considerations to provide for a formal assessment of implicational relationships among propositions. Thus, from a correspondence point of view, validity, as truth, is *grounded in objective being*, just because invalidity points to an impossible state of affairs. Again, this ontology establishes these matters to be participant independent. Thus, just as a participant might correctly or incorrectly believe that a given proposition is true or false, so might a participant believe a given argument to be valid that is in fact invalid, or believe that an invalid argument is valid, or valid when it is valid, or invalid when invalid. Of course, the problem for human beings is to determine that a given argument is valid or invalid. This is an epistemic matter. And in this connection we would like to affirm that the gap between what is believed to be the case and what is the case ought to be closed by establishing knowledge, however difficult this is to obtain. Argumentation theorists seem to have circumvented this approach by shifting concern away from considering propositional relations and placing it on assessing inferential links in the minds of participants.

Addressing the matter of determining that a given argument is valid or invalid moves our discussion to consider cogency and fallaciousness. We believe that, just as truth and falsity and validity and invalidity are ontic properties of propositions and arguments respectively, so are cogency and fallaciousness properties of *argumentations*, but now considered as consisting only in propositions. Again, analogously, a participant might correctly or incorrectly believe that a given argumentation is cogent or fallacious when the argumentation is cogent or when it is fallacious. One traditional way to establish knowledge of an argument's validity is to find a *chain of reasoning* that is cogent in the context of the bounding P-c argument (see below n15), which thereby links, in the mind of a participant, the conclusion proposition to the propositions in a premise-set as a logical consequence. This is traditionally called a *deduction*, and deductive reasoning embraces a *principle of deducibility* that we might formulate as follows:

A given proposition *c* is formally deducible from a given set of propositions *P* when there exists a finite sequence of propositions that ends with *c* and begins with *P* such that each proposition in the sequence from *P* is either a member of *P* or a proposition generated from earlier propositions solely by means of stipulated deduction rules.

The notion of deducibility is familiar to logicians, even to those who are dissatisfied with the formalism of deductive logic. Still, when we consider the 'stipulated deduction rules' and relax our criticism of formal logic, we might notice something agreeable to informal logicians, but previously underrepresented by them. A traditional deduction rule, such as hypothetical syllogism, disjunctive syllogism, or detachment, is just an *elementary argument pattern* all of whose concrete object language argument instances are valid.¹⁴ What is interesting to note in this connection is that the validity of each of these argument instances is an ontic property and not participant dependent — and this ontic character is reflected in the elementary argument pattern. Let us refer to this ontic property as the argument pattern's being *panvalid*.¹⁵ However, equally important, such a panvalid elementary argument pattern possesses a *special epistemic quality* — namely, its being easily recognized. Thus, encountering an instance of an argument fitting such a panvalid pattern indicates that the given argument is valid and now *known* to be

valid. This epistemic quality is especially efficacious in the case of longer deductive discourses, where encountering a string of such argument instances links a given conclusion as following logically (we might say ontically) from given propositions. Formal deducibility, while having an ontic underpinning, amounts to a participant finding and constructing a cogent chain of reasoning that is just a sequence of propositions that are conclusions of such valid *elementary* arguments. *This defines cogency.*

Let us now say that an argumentation is a three-part system consisting in a set of propositions called premises, a single proposition called a conclusion, and a sequence of propositions that are conclusions to elementary arguments called a chain of reasoning. Given this understanding of an argumentation, we can see that a *cogent* chain of reasoning is a sequence of interlinked conclusions of valid elementary arguments. Leaving aside the cognitive aspect, the 'getting it,' we see that cogency is an ontic property of an ordered sequence of conclusion propositions of elementary valid arguments. Again, it is one thing for the sequence to be cogent; it is another thing for someone to understand that this is so.¹⁶ To deny that cogency is an ontic property of such a sequence of propositions is to reject *the principle of transitivity of consequence*, namely: "every consequence of a consequence of a given proposition is again a consequence of that proposition" (cited in Corcoran 1989a: 34-35). Cogency is an ontic property of a 'good' argumentation, specifically, of a deduction, and its counterpart, fallaciousness, is an ontic property of a 'bad' argument, namely, of a fallacy. Table 2 displays these matters. Considering argumentations in respect of their consisting in propositions extricates both deductions and fallacies from participant relativity and places responsibility for their recognition on participants. Thus, to hold that the cogency of a deduction presupposes knowledge of the validity of the component elementary arguments affirms its independence and helps to secure obtaining objective knowledge.

PROPOSITONS AND ARGUMENTATION¹⁷

PROPOSITION	P-c ARGUMENT	ARGUMENTATION
<p style="text-align: center;">p</p>	$\frac{P}{? c}$	$\frac{P}{? c}$ <p style="text-align: center;">p₁ p₂ . . p_{n-1}</p> $\frac{-c_n}{-}$
<p>A given proposition is either: TRUE or FALSE</p>	<p>A given argument is either: VALID or INVALID</p> <p>Logical consequence</p> <ol style="list-style-type: none"> 1. P implies c 2. All the information in c is contained in P <p style="text-align: center;">IMPLICATION</p>	<p>A given argumentation is either: COGENT or FALLACIOUS</p> <ol style="list-style-type: none"> 1. <i>Deduction</i>: a cogent argumentation that links conclusion to premises as a logical consequence 2. <i>Demonstration</i>: a cogent argumentation with true premises — CONTINUITY of IMPLICATION 3. <i>Fallacy</i>: a non-cogent (fallacious) argumentation — DISCONTINUITY of IMPLICATION

Table 2

As it turns out, logicians, at least as far back as Aristotle, have discovered that there are certain *forms* or *argument patterns* among propositions or sets of propositions such that when a given argument fits one of these patterns the argument instance is valid. The pattern *reflects* an ontic state of affairs — it is a part of ‘the nature of things.’ As with truth and falsity, it is not that such a pattern causes an argument to be valid or that such a pattern causes a corresponding state of affairs to exist, but, rather, that the state of affairs (or possible state of affairs) causes the pattern to be panvalid. As we do not hypostatize propositions, we do not hypostatize their patterns — we might treat them as reflections in consciousness of objectively existing states of affairs. Whatever their special ontic status, they are nevertheless objective in their correspondence between objects in consciousness and objects in the independently existing world. Recognizing these patterns, however, is epistemic, and something essential for human beings in coming to *know* ‘what is happening.’ Thus, it is not that an argument is valid in virtue of its form; rather a given argument *is recognized* to be valid in virtue of recognizing that it fits one or another panvalid pattern. Recognizing a panvalid pattern such as *modus ponens*, for example, establishes knowledge of logical consequence in shorter or longer discourses. And knowledge of logical consequence is no small matter of inconsequence — it is the stuff of knowledge, but it does not compass all knowing. Thus, it is one matter to know that a given proposition follows logically from other propositions; it is another matter to know that the proposition itself is true or false, since we know that a given proposition that is a logical consequence of other propositions is not necessarily true just because it is a logical consequence. These are two different kinds of knowing. Both kinds of knowing are important for human understanding. And both kinds of knowing require that a participant learn (1) how to determine whether a given proposition is or is not a logical consequence of other propositions and (2) how to determine whether a given proposition is true or false. Thus, in respect of deductive reasoning as a constituent of knowledge, whether of coherence or correspondence, we ought to embrace the findings of earlier logicians who discovered certain ‘formal’ patterns that help human beings to recognize in an argument that its conclusion follows ‘logically’ from its premises.

4. What formal logic has to offer argumentation theory

We have aimed to resurrect for informal logicians the crucial importance of considering the formal relationships among propositions that constitute argumentations. Doing this does not diminish the importance of an argument’s context; rather, it redirects its importance for the purpose of identifying the propositions expressed by a participant in an argument in a given context. The importance of doing this is at least twofold. *First*, it enables someone to isolate precisely what is at stake in an argumentation — that is, just what is the conclusion a participant wishes to establish, what are the premises, and what constitutes the chain of reasoning linking or failing to link the conclusion to the premises. Establishing the constituent propositions of an argumentation eliminates ambiguity and prepares for objective argument analysis. *Second*, it extricates argument cogency from the quagmire of subjectivity, that is, once the propositions have been identified. It thereby helps to objectify not only an argumentation for impartial analysis but also the truth and falsity of the propositions constituting an argumentation. The outcome of this process might be that the participants have to suspend judgment about the truth or falsity of their propositions. Be that as it may. However, they will also have distinguished

that pursuit from the pursuit of whether or not what someone says follows from other things the person says or supposes or even leaves unstated as smuggled premises.

Knowledge of formal validity, then, is no small matter for human beings wanting to 'know what is happening,' whether this pertains to what transpires in an argumentation or what bears on, for example, the natural and social worlds. Now, if we take the science of logic to be a part of epistemology and epistemology to be concerned with examining how human beings establish knowledge, then logic becomes applied epistemology. Even formal logic, then, is always poised for its application in this connection. One project of epistemology is to determine means for establishing knowledge of the truth or falsity of propositions relating to one or another domain. This project generally lies outside of deductive logic, save for applying two formal methods that aim at knowledge. (1) The **hypothetico-deductive method** is used to disconfirm a hypothesis or proving it to be false when the truth of correlative premises is known. (2) The **deductive method** is used most often in axiomatic discourse for proving a hypothesis to follow logically; but when the premises are known to be true, this method establishes the truth of the conclusion — this is a demonstration. In this connection, formal logic has defined *deduction, refutation, and demonstration*; and now we suggest a formal definition of *fallacy*.¹⁸ We have seen how ontology and logic are intimate companions. Formal logic has also provided in this connection methods useful for **discovering hidden consequences** of propositions.

Another project of epistemology is to determine a foundation for and to discover the means by which we establish knowledge of logical consequence. Formal logic has established the **principle of form**.¹⁹ It has developed the **method of counterargument** and **method of counterinterpretation** to establish knowledge of invalidity. But more important, the theoretical apparatus of formal logic has established the hallmarks of intelligibility.²⁰ Here we can cite its having articulated the **law of contradiction** and the **law of excluded middle** that provide an ontic underpinning for intelligible discourse.²¹ Its having treated the **principle of consistency** that every true proposition is consistent with every other true proposition complements these laws. This principle also underlies intelligible discourse and is equally applicable to various notions of truth, whether a correspondence, a coherence, or a pragmatist notion. Formal logic has defined **logical consequence** as an ontic property existing between propositions.²² This notion underpins intelligible discourse by which we recognize, for example, the incoherence of a paradox or know that true propositions cannot imply a false proposition. Especially important in connection with logical consequence is the formal logical notion of **cogency** that we have developed in this discussion. Cogency consists in linking the conclusion propositions of valid elementary arguments sequentially as a chain of reasoning in an argumentation. In this connection, formal logic has articulated **the principle of transitivity of consequence**, that every consequence of a consequence of a given proposition is again a consequence of that proposition.

In its commitment to overcome ignorance and fallibility as much as possible, formal logic has worked with a notion of *precision in thinking* as exemplified, for example, in the ideal of a **logically perfect language**. Such abstract, formal languages have repelled argumentation theorists just because of their formalism and their distance from ordinary discourse. However, working with this notion enables someone to take ordinary discourse and extract the propositions a participant expresses using such natural language. Part of this process, for example, involves identifying ambiguity, which, then, can enlist the work of **semantics** and **linguistics**, if only for helping to make more precise the logical form of a given proposition as a part of an argument. Aristotle long ago recognized the need to eliminate ambiguity for the sake of intelligible discourse; perhaps he set such a precedent for precise language when he required that a

proposition 'affirm or deny one thing of one thing.' We might recall that in *Sophistical Refutations* he remarked that many 'bad' arguments result from a participant's ignorance (1) of what a refutation is (a deduction of the contradictory of a given proposition) and (2) of what a proposition is. And just in respect of intelligible and precise discourse, Aristotle also formulated in *Prior Analytics*, *Posterior Analytics*, *Sophistical Refutations*, and *Metaphysics* the notion of **universe of discourse** by which one determines what is germane to a specific discourse. Again, a 'bad' argument might devolve to a participant's reasoning cogently but outside the domain of the topic; surely informalists might refer to this notion in respect of their concerns with relevance.

5. Concluding remarks

An adept speaker skilled in argumentation and fallacy theory, formal logic, the theatre of presentation, and familiar with his/her audience's predilections marshals all this information *instrumentally* to persuade an audience of one or another belief. Such a speaker's persuasive success rests on three principal factors, *all of which pertain to the conditions of an audience*: (1) participant ignorance of formal logic, and fallacy theory in this connection; (2) participant ignorance of facts and objective knowledge; and (3) participants' prejudices, their lacking a clear commitment to obtaining truth and a willingness to suspend judgment toward that end. Perceiving that formal logic could not rescue such participants — be they persons subjected to a political speech, the evening news, commercials, etc. — and moved perhaps by a democratic impulse, informal logicians and critical thinking theorists emerged to fill that vacuum and to empower persons to make discerning judgments. However, centering their criticism on the 'baroque spirals' thought to have been spun by formal mathematical logicians has resulted in some of these logicians subordinating the place of validity among the features of a good argument.

Critical thinking theorists, pragma-dialecticians, and informal logicians have aimed to diminish the gap between logic and the practices of human beings. However, in the process they have diminished the role formal logic might play in closing that gap. However, by relativizing cogency to the dispositions of an audience, by fusing the arguer with his/her argumentation, and by attending to the inferential links a person experiences during an argumentation, they have widened a gap between belief and knowledge that diminishes a concern with objectivity. We have aimed to reassert more forcefully the gap between ignorance or belief and knowledge in respect of (1) truth and falsity, (2) validity and invalidity, and (3) cogency and fallaciousness. Relativizing these notions tends to obscure this gap to the detriment of human understanding and enduring conflict resolution. Logicians need more determinately to distinguish the presentation of an argumentation from the argumentation itself and in this way recognize that an argumentation can be evaluated independently according to the criteria developed by formal logic. Logicians could then focus on developing a person's ability to avoid mistakes in reasoning by promoting (1) knowledge and command of information and (2) knowledge of logical consequence as complemented by (3) the pragmatics of discourse.

Informal logicians as much as formal logicians have foundational *metasystematic* concerns. The one has emphasized what formal logicians might consider 'extra-logical' matters, such as the pragmatics of discourse; the other has emphasized the 'formal' matters relating to validity and logical consequence. However, the interests of the two might have been artificially counter-

posed. While it is all well and good to examine and to become skilled at using rhetorical methods of persuasion and methods for negotiating a dispute to an agreeable conclusion, we must not lose sight of an enduring concern *to know the truth*. In this connection, formal logicians have developed **models** — whether of formal or natural languages, of deduction systems, or of argumentations, etc. These *formal* models serve as *ideals* against which not only a logician but an ordinary person ‘turned logician’ can assess everyday discourse.²³ There is nothing wrong with positing an ideal, such as the notion of a circle, even to refer to this notion as ‘circularity itself’ — or of ‘idealizing’ unambiguous sentences with the notion of proposition. The harm occurs when someone hypostatizes such notions as having independent existence, which then ‘lord over’ human beings. Informal logicians and argumentation theorists have properly resisted this hypostatization of the so-called *forms of thought*, but at the expense of throwing the baby out with the bath water. Perhaps our approach to embracing certain formal matters might be agreeable to informal logicians.

Notes

1 In this discussion we use the expressions ‘argumentation theory’ and ‘argumentation movement’ (and correlative expressions) to designate the entire sweep of trends challenging in one or another respect the project of formal logic; without considering their differences, we focus on a similarity they share. In addition, ‘formalist’ (and ‘formalism’) is used to denote a traditional formal logician and ‘informalist’ (and ‘informalism’) is used in a corresponding way. We also use the word ‘argumentation’ throughout the early part of our discussion in a way familiar to informal logicians; however, in §2 we specify another more traditional meaning.

2 The methods of counterargument and counterinterpretation require as their ground the method of fact — that is, having available an instance of an argument known to be invalid having true premises and a false conclusion. A counterargument is such an argument, one known to be invalid and having the same form as a given argument whose invalidity is to be determined. In a counterargument the logical constants remain the same but the non-logical constants are changed. In a counterinterpretation the grammar and words remain the same but they are interpreted differently. On the notion of argument form, see nn15 & 19 below. In this discussion we sometimes use the expression ‘the premises are true’ elliptically for ‘the propositions [or sentences] in the role of premises are true’ as also ‘the conclusion is false’ for ‘the proposition [or sentence] in the role of conclusion is false’; etc. This applies also to ‘premise acceptability.’

3 At an earlier OSSA Conference in May 1999, we argued that the fallacies discussed by Aristotle in *Sophistical Refutations* might be analyzable more traditionally according to the syllogistic patterns established in *Prior Analytics* A4-6. David Hitchcock was the commentator. Our respective discussions are available in the Conference Proceedings published on a CD in 1998.

4 We cite relativism and subjectivism here in their more pejorative senses, however, without meaning to disregard their affirmative content. Our criticism is familiar.

5 This table is not comprehensive and only provides a sketch for the special focus of our discussion. Participants provided helpful comments during a session of the OSSA Conference IL @ 25 in Windsor, ONT that improved the table. Particularly helpful were comments by Professor Daniel Cohen of Colby College. Professor Robert Binkley of Western Ontario University suggested including a fourth kind of argument, namely, dialogue.

6 We have dealt more fully with treated arguments as instruments in a paper presented in April 2002 at the conference Mistakes of Reason: A Conference in Honour of John Woods. The University of Toronto Press will publish conference proceedings edited by Professor Kent Peacock.

7 This, of course, applies equally well to someone trying to get a matter clear in his/her own mind — a kind of internal dialogue.

8 We cannot answer the question of whether human beings can think without words and language. Here, however, we take it that language is required for conscious thinking. In this connection, then, however human beings might express themselves, all such expressions intending to assert a meaning (a proposition) are subject to formal logical analysis.

9 John Corcoran (1998), in particular, has developed an information-theoretic notion of logical consequence that informal logicians might find agreeable.

10 Surely disputational, argumentative, and persuasive discourses, as well as mediation, are open to objective evaluation according to coherence and correspondence notions. Below we consider them in relation to a correspondence notion of truth.

11 We wonder whether a source of their dissatisfaction with formal logic is their seizing on its treatment of material implication without distinguishing it from logical implication. An argument is materially valid just in case either the proposition that is the conclusion is true or at least one of the propositions in the premise-set is false. This is the case irrespective of the argument's propositional content. In this connection we might note that Aristotle and Quine thought of logic as a kind of formal epistemology rather than as formal ontology along the lines of Frege and Russell. Perhaps there are trends within formal logic more amicable to informal logicians.

12 Of course, a correspondence notion of truth embraces coherence, but a coherence notion of truth might not embrace correspondence. Again, treating principally correspondence circumscribes our discussion.

13 Aristotle in *Prior Analytics* B2 did precisely this in the case of Barbara. 'Barbara' names a syllogistic argument pattern all of whose instances are valid as 'modus ponens' names such a pattern for propositional logic. Cf. n15 below.

14 The distinction between logic from metalogic reproduces the distinction between use and mention. Informal logicians no less than formal logicians treat metasystematic matters; only their respective emphases have been different.

15 We use 'panvalid' of an argument pattern when every instance of the pattern is a valid argument. Using 'panvalid' helps to make the category distinction between arguments and patterns of arguments. "Form" and "pattern" are distinguished as follows. A given argument has one and only one form, but might fit any number of patterns. For example, every argument, valid or invalid, fits the pattern 'P-c', where 'P' denotes the premise-set and 'c' the conclusion. 'Barbara' names a panvalid pattern for Aristotle's syllogistic logic; 'modus ponens' names a panvalid pattern for modern propositional logic. In addition, then, some patterns might be paninvalid, having only invalid argument instances, and some neutrovalid, having some valid and some invalid instances.

16 The ideal, of course, is that the relationship between the sequence of propositions (capturing objective meaning) that are conclusions of elementary arguments and the sequence of 'getting' those propositions in the mind of a participant is isomorphic.

17 For explanation of 'P' and 'c', see n15 above. The 'p' and the 'p' with subscripts '1', '2', 'n-1' in this table denote propositions. In addition, the sequence indicated by 'p1, p2 ... pn-1' identifies a chain of reasoning.

18 A formal fallacy theory would include (1) a definition of fallacy and (2) a method of formal analysis. Using the above notion of argumentation, formal logic offers the following definition. A fallacy is an argumentation in which one or more of the following occurs: (1) the conclusion is not a logical consequence of the premise-set; (2) the chain of reasoning is not cogent, whether or not the argument bounding the chain of reasoning is valid; or (3) the chain of reasoning is cogent but not in context of the bounding P-c argument. These considerations are ontic features of the fallacy, and thus they are independent of a participant's recognition.

19 This principle states that every argument in the same form as a given valid argument is valid; that every argument in the same form as a given invalid argument is invalid. An argument has one and only one form, although a given argument might fit any number of patterns (for example, every argument fits the pattern 'P-c').

20 Our list here only indicates some contributions that formal logic might make for evaluating natural language discourse; it is intended to emphasize intelligibility, which is required for intelligible discourse.

21 An expression of the law of contradiction in relation to states of affairs holds that it is impossible that a given property both belong and not belong to a given object at the same time in the same respect. Another expression of this law but in relation to propositions holds that it is impossible that a given proposition is both true and not true at the same time in the same respect.

22 Two statements of logical consequence are: (1) c is a logical consequence of P if every true interpretation of P is a true interpretation of c; (2) c is a logical consequence of P if all the information contained in c is already contained in P.

23 We might easily recognize that the notion of a logically perfect language, which is a mathematical artifact, is useful for working with natural language discourse.

References

Allen, Derek. 1994. "Assessing arguments". In *NEIL*, pp. 51-57.

Blair, J. Anthony & Ralph H. Johnson (eds.). 1980. *Informal Logic: The First International Symposium*. Pt. Reyes, CA: Edgepress.

Boger, George. 1998. "Aristotle on fallacious reasoning in *Sophistical Refutations* and *Prior Analytics*". *Argumentations and Rhetoric* (CD-ROM), 1997 OSSA Conference Proceedings. St. Catherines.

Corcoran, John. 1989a. "Argumentations and logic". *Argumentations* 3, pp. 17-43

Corcoran, John. 1998. "Information-theoretic logic". In *Truth in Perspective*. Martinez, C., U. Rivas, & L. Villegas-Forero (eds.). 1998. Aldershot, England: Ashgate Publishing Limited, pp. 113-135.

FCCR. Hansen, Hans. V & Robert C. Pinto (eds.). 1995. *Fallacies: Classical and Contemporary Readings*. University Park, PA: The Pennsylvania State University Press.

Finocchiaro, Maurice A. 1994. "The positive vs. the negative evaluation of arguments". In *NIEL*, pp. 21-35.

Finocchiaro, Maurice A. 1995. "Six types of fallaciousness: toward a realistic theory of logical criticism". In *FCCR*, pp. 120-129.

Freeman, James B. 1994. "The place of informal logic in logic". In *NEIL*, pp. 36-49.

FSP. Woods, John & Douglas Walton. 1989. *Fallacies: Selected Papers 1972-1982*. Dordrecht, Holland: Foris Publications.

Gilbert, Michael. 1995. "The delimitation of 'argument'". *Inquiry* 15:1, pp. 63-75.

Gilbert, Michael. 1999. "Language, words and expressive speech acts". In van Eemeren, Frans H., Rob Grootendorst, J. Anthony Blair, & Charles A. Willard, (eds.). *Proceedings of the Fourth International Conference of the International Society for the Study of Argumentation*. Amsterdam: Sic Sat., 231-234.

- Gilbert, Michael. 2003. "Lets talk: emotion and the pragma-dialectic model". In van Eemeren, Frans H., J. Anthony Blair, Charles A. Willard, & A Francisca Snoeck Henkermans (eds.). *Proceedings of the Fifth Conference of the International Society for the Study of Argumentation*. Amsterdam: Sic Sat., 365-368.
- Govier, Trudy. 1987. *Problems in Argument Analysis and Evaluation*. Providence, RI: Dordrecht-Holland.
- Govier, Trudy. 1995. "Reply to Massey". In *FCCR*, pp. 172-180.
- Groake, Leo. 2003. "Are musical arguments possible?". In van Eemeren, Frans H., J. Anthony Blair, Charles A. Willard, & A Francisca Snoeck Henkermans (eds.). *Proceedings of the Fifth Conference of the International Society for the Study of Argumentation*. Amsterdam: Sic Sat., 419-422.
- Groake, Leo & Christopher Tindale. 1985. *Informal Logic: A Prolegomena to Good Argument*. Bristol, IN: Wyndham Hall Press.
- Groake, Leo, Christopher Tindale, & Linda Fisher. 1997. *Good Reasoning Matters: A Constructive Approach to Critical Thinking*. Toronto: Oxford University Press.
- Hamblin, C. L. 1993. *Fallacies*. Newport News, VA: Vale Press.
- Hansen, Hans. V & Robert C. Pinto (eds.). 1995. *Fallacies: Classical and Contemporary Readings*. University Park, PA: The Pennsylvania State University Press.
- IL*. Blair, J. Anthony & Ralph H. Johnson (eds.). 1980. *Informal Logic: The First International Symposium*. Pt. Reyes, CA: Edgepress.
- Johnson, Ralph H. 1996. *The Rise of Informal Logic*. Newport News, VA: Vale Press.
- Johnson, Ralph H. & J. Anthony Blair (eds.). 1994. *New Essays in Informal Logic*. Windsor, ON: Informal Logic.
- Johnson, Ralph H. & J. Anthony Blair. 1980. "The recent development of informal logic". In *IL*, pp. 3-28.
- Johnson, Ralph H. & J. Anthony Blair. 1994. "Informal logic: past and present". In *NEIL*, pp. 1-19.
- Kahane, Howard & Nancy Cavender. 1998. *Logic and Contemporary Rhetoric: The Use of Reason in Everyday Life* (8th ed.). Belmont, CA: Wadsworth Publishing Company.
- Massey, Gerald J. 1995. "The fallacy behind fallacies". In *FCCR*, pp. 159-171.

- NEIL. Johnson, Ralph H. & J. Anthony Blair (eds.). 1994. *New Essays in Informal Logic*. Windsor, ON: Informal Logic.
- Perelman Chaim. 1979. *The New Rhetoric and the Humanities: Essays on Rhetoric and Its Applications*. Dordrecht, Holland: D. Reidel Publishing Company.
- Perelman, Chaim. 1982. *The Realm of Rhetoric*. Notre Dame: University of Notre Dame Press.
- Perelman, Chaim & Lucie Olbrechts-Tyteca. 1969. *The New Rhetoric: A Treatise on Argumentation*. Notre Dame: University of Notre Dame Press.
- Pinto, Robert C. 1994. "Logic, epistemology and argument appraisal". In *NEIL*, pp. 116-124.
- Scriven, Michael. 1980. "The philosophical and pragmatic significance of informal logic". In *IL*, pp. 147-160.
- Tindale, Christopher W. 1994. "Contextual relevance in argumentation". In *NEIL*, pp. 67-81.
- Toulmin, Stephen. 1958. *The Uses of Argument*. Cambridge: Cambridge University Press.
- Toulmin, Stephen. 2001. *Return to Reason*. Cambridge, MA: Harvard University Press.
- Van Eemeren, Frans H. & Rob Grootendorst. 1992. *Argumentation, Communication, and Fallacies: A Pragma-Dialectical Perspective*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Van Eemeren, Frans H. & Rob Grootendorst. 1995. "The pragma-dialectical approach to fallacies". In *FCCR*, pp. 130-144.
- Van Eemeren, Frans H. (ed.). 2002. *Advances in Pragma-Dialectics*. Amsterdam: Sic Sat.
- Walton, Douglas N. 1987. *Informal Fallacies: Towards a Theory of Argument Criticism*. Amsterdam: John Benjamins Publishing Company.
- Walton, Douglas N. 1989. *Informal Logic: A Handbook for Critical Argumentation*. Cambridge: Cambridge University Press.
- Woods, John & Douglas Walton. 1989. *Fallacies: Selected Papers 1972-1982*. Dordrecht, Holland: Foris Publications.
- Woods, John. 1989. "The necessity of formalism in informal logic". *Argumentation* 3, pp. 149-167.
- Woods, John. 1995. "Fearful symmetry". In *FCCR*, pp. 181-193.

Woods, John. 2000. "How philosophical is informal logic?". *Informal Logic* 20:2, pp. 139-167.