

# Teaching the Dog's Breakfast<sup>1</sup>: Some Dangers and How to Deal with Them<sup>2</sup>

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## *1. Introduction*

We have each had almost 40 years of experience teaching logic, formal and informal, argumentation and critical thinking at the university level. Like everyone who teaches introductory logic, critical thinking or critical reasoning, or informal logic—call it what you will—we have been looking at the spate of textbooks that publishers send us (there are well over 100 on the market). What we find there is a mish-mash of conceptual conflations, confusions, sloppiness, blurriness—bad critical thinking about the very subject matter we're teaching. The point is not that each text takes a different and incompatible theoretical position; there could be no objection to that. The problem, rather, is that in too many cases the theory seems not to have been thought through carefully, or a controversial theoretical position is taught without alerting the student to its problematic status. To take a couple of examples: there seems to be a widespread assumption that teaching argument analysis is equivalent to teaching critical thinking; and many authors teach that “deductive” and “inductive” (a) name argument types, and (b) exhaust the argument types. These are at best dubious claims, and all are contested in the literature. (This is not the place to defend this claim in detail. For a start, the reader may consult Blair, 2006).

Our objective in this paper is to suggest some clarifications, and to spell out their implications for how such a course should be conceived and structured. By the way, the textbook authors may not be the principal culprits. The publishing companies want these texts to be all things to all people so as to maximize sales, and they pressure authors to include a wide range of material, as we know from personal experience and anecdotal reports from colleagues.

## *2. Some essential distinctions*

One of the most hopeful developments in the 1970s was the emergence of what some have called the “thinking skills movement,” which had as its aim to install the teaching of thinking skills into their rightful place in education at all levels. This movement led to the development of a number of initiatives, some of which targeted critical thinking (e.g., Richard Paul’s Sonoma State University annual conferences, begun in 1981); others, problem-solving (Rubenstein, 1975); others, decision-making; others still, lateral thinking (DeBono, 1967). This plurality of initiatives prompted educational psychologist Lauren Resnick to ask: “How should we make sense of these many labels? Do critical thinking, metacognition, cognitive strategies and study skills refer to the same kind of capabilities? And how are they related to problem-solving abilities that mathematicians, scientists and engineers try to teach their students?” (1989: 1).

Following Resnick’s example, we go over some of the main categories that are frequently involved in the “call it what you will” course, making comments on each of them in the hopes of encouraging greater clarity about what one proposes to do in teaching them. Such introductory courses (and the texts that are created for them) often

conflate “things” that needs to be distinguished—like critical thinking and informal logic. Furthermore, the objectives in these introductory courses involve positions on difficult concepts requiring theoretical treatment that they do not receive there. So we comment on the following concepts: reasoning, logic, informal logic, critical thinking, problem solving, decision making, argument(ation), inference and implication. Our glosses on these concepts and their distinctions are no doubt themselves controversial and of course they fall short of thorough, carefully supported analyses. Each could use book-length treatment, and some have received it. But that’s our point: *these fundamental concepts should not be taught as if they are simple, settled and unproblematic.*

*REASONING.* (1) A cognitive activity. Solving logic puzzles (Sudokus, for example), solving problems (from crossword puzzles to how to save the planet), arguing, coming to a decision about what to do or what attitude to take, working out an explanation, these and many more activities all employ reasoning, but *the process and the norms for good execution* might be different from one to the other. (2) A report or transcript (the verbal expression) of such cognitive activity. *One* of many different uses of 'argument' is to denote a report of *one* of many kinds of reasoning, but an explanation (for just one other example) can equally be a report of reasoning.

It follows that there is not one kind of cognitive activity that is good reasoning. That in turn implies that if you promise to teach students how to improve their reasoning skills, you need to qualify your promise and limit your ambition.

*LOGIC.* This word has many equally legitimate senses. Even the "logic" textbooks characterize logic in different ways (see Blair, 2003). So, great caution and a definite humility are in order when undertaking to say what logic "is." If logic is defined,

as Copi and Cohen confidently declare in the opening sentence of their classic text, as "the study of the methods and principles used to distinguish correct reasoning from incorrect reasoning," (*Introduction to Logic*, any edition, opening line of Chapter 1) then it includes far more than propositional or quantificational logic. For there is also presumptive reasoning, and reasoning to the best explanation, and plausible reasoning, and problem-solving reasoning, and decision making reasoning, and so on. Reasoning certainly can't be restricted to formal deductive logic, if only because that excludes non-formal material deductive logic, non-monotonic logic, and more. Other textbook definitions of 'logic' fall similarly short of inclusiveness, and really ought to be treated as stipulations for use by that author in that textbook

The claim of some textbooks that learning formal deductive logic improves one's reasoning skills is an empirical claim that, to our knowledge, has never been proven. Even if it helps, which is not clear, it's unlikely, given the variety of different kinds of reasoning tasks that don't involve deductive (necessary) relations between propositions, that it would be enough.

*CRITICAL THINKING.* Here's another term with many definitions. We believe it is unhelpful and confusing to identify critical thinking with just any kind of good thinking. Unhelpful, because it provides no guidance about what to try to teach in a critical thinking course; confusing, because it conflates many distinct kinds of thinking. We already have concepts like problem-solving, decision-making, arguing, and reasoning, which, by the way, are not all the same. Those who think critical thinking is a useful concept and that critical thinking skills are valuable have in mind a kind of second-order or meta-level thinking—thinking about thinking. And they have in mind, more

specifically, the evaluation of thinking and of intellectual products in general. Since one must first interpret correctly in order to evaluate properly, skill in interpretation has to be included too. So critical thinking is plausibly thought of as skilled interpretation and evaluation of such intellectual products as observation reports and other kinds of information, explanations, arguments, and so on (see Scriven & Fisher, 1997). Teaching critical thinking, accordingly, seems to involve teaching various kinds of reflective questioning, interpretation and evaluation strategies.

If teaching how to interpret and evaluate arguments, explanations, observation reports and other kinds of information (perhaps among much else) is what seems to be involved in critical thinking, then teaching just one of these is by no means teaching all there is to learn about thinking critically. Teaching logic is not equivalent to teaching critical thinking, nor is teaching skills in one or another kind of reasoning, or teaching how to analyze arguments. Also, if interpretive skills are important, it will be important to teach some *content-specific information*. To give just one example, we believe that learning how to think critically about TV news reports requires learning how TV news reports are created and what constraints they face. These skills are not learned in a formal logic course or a course on argument criticism.

*INFORMAL LOGIC.* Here is the definition we gave in 1987, in an article in *Informal Logic*:

Informal logic is best understood as the normative study of argument. It is the area of logic, which seeks to develop non-formal standards, criteria and procedures for the interpretation, evaluation and construction of arguments and argumentation used in natural language. “ (p. 148)

For this definition to be clear, we need to add several comments.

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First, since that time we have made one modification: we have broadened our description of the range of argument to include the sort of argument that occurs, not just in everyday discourse, but also disciplined inquiry—what Weinstein calls “stylized arguments... within the various special disciplines” (1990:121).

Second, an obvious point is that "informal" takes its meaning in contrast to its counterpart—"formal." Yet this point was not made for some time, hence the nature of informal logic remained opaque, even to those involved in it. Informal logic is non-formal in this sense: it rejects the notion of logical form as the key to understanding the structure of arguments and it likewise abandons (or downplays) validity as constitutive for the purposes of the evaluation of argument(ation). But "procedures which are somehow regulated or regimented, which take place according to some set of rules" (Barth and Krabbe, 1982:19) are clearly formal in another sense. In this other sense of “form”, informal logic can be, and indeed is, formal. For there is nothing in the informal logic enterprise that stands opposed to the idea that argumentative discourse should be subject to norms, i.e., subject to rules, criteria, standards or procedures. What is rejected is that the criteria for evaluating all arguments are to be obtained solely by reflection on the logical form or on the deductive validity of the argument.

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How, then, does informal logic differ from formal logic? Informal logic differs from formal logic not only in its *methodology* but also by its *focal point*. That is, the social, communicative practice of argumentation can and should be distinguished from both deductive inference and deductive implication, which are the proper subjects of formal deductive logic. Informal logic is concerned with the logic of arguments used in

argumentation: namely, the nature of the cogency of the support that reasons provide for the conclusions they are supposed to back up.

Finally, it should be noted that the “in” of ‘informal’ was originally conceived as indicating a kind of opposition to formal (deductive) logic. But it became clear that the issue was not which logic was better. Which is “better” depends on the situation. If you are interested in whether one sentence or proposition follows necessarily from another or others (i.e., in entailment relationships) then deductive logic is what you need. If you are interested in what inference to draw from the empirical data you have, then inductive logic is what you need. If you are interested in whether the premises of an argument provide good support for the conclusion, informal logic provides a more insightful account, or such was the belief that motivated our initiative.

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Teaching informal logic is NOT teaching reasoning and it is not teaching critical thinking and it is not teaching deductive logic without its formal or symbolic apparatus. It is teaching about one kind of reasoning, the reasoning expressed in arguments, and it provides tools for critical thinking about one kind of intellectual product: arguments.

*PROBLEM-SOLVING.* There is a literature, mostly coming out of engineering and medical education, about strategies for solving problems (see Rubenstein, 1975). “Problems” are understood as desired goal states for which the means, or the best means, of reaching them are not initially known. Thus problem-solving is one kind of reasoning. Formulating a proof in deductive logic is one instance of problem-solving, but so is figuring out the best location and design for a bridge. Proposed solutions to problems can be good or poor, so assessing such solutions is one of the tasks to which critical thinking can turn. But critical thinking is not the same as problem solving.

The point is that teaching critical thinking, logic, informal logic, or general reasoning skills is not the same as teaching problem-solving, and vice-versa.

*DECISION-MAKING.* If decision-making is to be distinguished from problem-solving, it might be defined as the process of determining what actions should be taken or what policies should be implemented, given a situation requiring a choice. Unlike with problem solving, the desired end state is not a given. Decision-making involves means-ends reasoning, but it can also entail working out the practical implications of principles, rules or laws. It is thus one kind of (or type of exercise of) reasoning. It is not the same as arguing (though arguing requires making decisions) and it is not the same as logic. Like other intellectual processes and products, it can be evaluated, and thus subjected to critical thinking. The “practical reason” of Aristotle and of Kant is reasoning in decision-making.

There is no equivalence between teaching good decision-making strategies, good problem-solving strategies, critical thinking, argumentation or logic.

*ARGUMENT, ARGUMENTATION.* Here are two more terms with many, many definitions and no proprietary rights. Keep the product/process distinction (and potential ambiguity) in mind for both terms. Arguments are one way we try to justify claims we make, to convince others of their reasonableness, or to get others to do things. In some uses of the term, arguments are simply concatenations of statements or propositions; in others, they are vehicles of communication for various purposes. For some they are sets of sentences, for others they are complex speech acts or speech events. The simple dichotomy between argument as a reason for a claim and argument as a quarrel, found in too many logic texts, is an embarrassing, even culpable, oversimplification. There is so

much more than needs to be said and philosophers really ought to know better. Moreover, the study of logic, formal or informal, does not exhaust what needs to be known to be adept at making and assessing arguments. The fields of Rhetoric and Speech Communication have large and illuminating literatures pertaining to arguments and argumentation.

The logical norms of good arguments might for some kinds be formally expressible, for others informally expressible. But if we are teaching how to evaluate arguments, we need to teach dialectical responsibilities and rhetorical sensitivity (that is, sensitivity to occasion, context and audience). Teaching some deductive logic tools is not teaching someone how to argue well when it counts. Good arguments are responsive to objections, and sensitive to audience and occasion, as well as being embodiments of cogent reasoning. Moreover, plenty of good arguments are deductively invalid. So teaching logic, especially elementary formal logic, is very far indeed from all there is to teaching about arguments. But, also, as we've said, teaching how to interpret and assess arguments does not exhaust the teaching of critical thinking skills.

*INFERENCE*: 'Inference' is potentially ambiguous between the process of inferring and the product that results from such a process. The term is also used variously to mean "implication," "argument," or "reasoning." Those provisos having been noted, inference (as a process) may be described as the process of drawing a conclusion from some proposition (or propositions)—as for example when I reason: "There are reports of rain for this afternoon, so I had best take my umbrella."

So, if you are going to say you are teaching about inferences, you have to stipulate for your students the sense in which you are using the term, and it would be responsible to let them know that there are other senses of the term in wide use.

*IMPLICATION:* ‘Implication’ has the same potential for process-product ambiguity as ‘inference.’ Some use those two terms interchangeably; others don’t. In one sense, an implication is a logical relation that can hold between sentences or propositions, on a par with consistency, contrariety and contradiction. But there is also implication in the sense of leading someone to believe, like that involved in innuendo (e.g., the implication of the observation, “Tony was sober today”). As a product, an implication is what may be inferred from a statement or set of statements. When using the term ‘implication’ in teaching logic, full disclosure requires noting these complexities and stipulating how you relate implication to inference in your teaching terminology.

With those distinctions in mind, we turn our attention to the task that instructors of these first year courses face: How best to teach that course you’ve been assigned?

### ***3. The Question of Focus: What are you going to be teaching?***

In our view, there are two dimensions to planning your course:

**(1) Content coverage objectives:** What is to be your fundamental content? Is it: Basic deductive logic, Informal logic, Reasoning skills, Critical thinking, Argument analysis and evaluation, Fallacy analysis, Problem solving, Decision-making? Other? As we hope you have now seen, these are arguably quite different topics, even though related—any one of which by itself would reasonably be the content of a one-semester

course. In fact, any one of them could form the contents of several courses, at the introductory, intermediate and advanced levels.

Given the above distinctions, a good deal of thought must go into the planning of the course. It's quite possible the calendar description of the course at your institution embodies confluences of the concepts we've discussed above. Also, your department might expect the course to be teaching several of these things (at once), whether or not it recognizes the differences among them. So you could well face the "political" challenge of navigating among existing practices and expectations. On the other hand, it might be possible to organize the course so that you cover more than one of these topics, albeit in a pretty sketchy fashion, if you must do so in a one-semester course.

In our view, the important first step is to be absolutely clear in your own mind about precisely what you are trying to teach (and what you aren't) and then be clear with your students about it too. If your course is to be an omnibus course, you might consider giving it an appropriate title, like "Thinking Skills" instead of some other title that suggests a more narrow focus, such as "Introductory Logic;" or "Critical Thinking." If the course is narrowly focused, then it's important not to think of it, or sell it to students as, something it is not. If you are teaching elementary deductive logic, fine; but then don't claim to be teaching your students how to interpret and evaluate the arguments typical of public discourse, and don't claim to be teaching them how to think critically, make decisions, or solve problems.

You also need to become familiar with the scholarly literature on these topics. What you learned in graduate school probably did not prepare you to teach about arguments and argumentation, for instance, which is a huge subject not touched on at all

in the sort of logic courses you took to pass your Ph.D. prelims. For example, even something as apparently uncontroversial as the informal fallacies is a theoretical minefield. There are several competing theories about what an informal fallacy is, or indeed if any exist. Moreover, there is dispute about whether the teaching for informal fallacies, even if it is done up to the standards of one of the current theories, is an effective way to teach students how to interpret and evaluate arguments. So if you are going to teach any of this material responsibly, you need to hightail it to the theoretical literature. Would you teach introductory epistemology or introductory ethics without knowing the theoretical literature? We suspect not. To be sure, formal deductive logic is not like ethics and epistemology—it is more like a science. There are no different theories about validity—though there are various pedagogical strategies for determining it. If someone thinks that teaching some elementary formal deductive logic suffices to teach reasoning skills, argument analysis, or critical thinking, this assumption would explain their indifference to the literature on those topics. Our view is that, at best, this is a highly controversial assumption.

In our experience, philosophers can be incautious about empirical claims. (As journal editors, we get articles submitted that make claims like, "The textbook approach to fallacies is...," without any accompanying citations or other evidence that this empirical claim is indeed true.) We urge you to be cautious about how you specify the outcomes that you promise from your course. These are, after all, empirical claims. Even if your course is carefully designed, conceptually, it is unlikely that you effect a dramatic improvement in the skills you are trying to teach in 14 weeks (or, *a fortiori*, in 10); but in

any case, unless you've done carefully designed pre- and post-course assessments, you don't really know.

#### ***4. The literature***

We have urged readers to turn to “the literature.” Here are some sources. This is a far from systematic collection, and leaves out entirely the problem-solving and decision-making literature.

The principal journals focusing on argument and argumentation are *Informal Logic*, *Argumentation*, and *Argumentation and Advocacy*. The only critical thinking journal we know of is *Inquiry, Critical Thinking Across the Disciplines*. *Informal Logic* also covers informal logic, and more generally, reasoning and argumentation in theory and practice (now available free on line, [www.informallogic.ca](http://www.informallogic.ca), and its back issues will soon be available there too). *Philosophy and Rhetoric* is another good resource.

Conference proceedings are a rich source of literature. The *International Society for the Study of Argumentation* (ISSA) has published six massive volumes of proceedings, one for each of its quadrennial conferences held since 1986. The *Ontario Society for the Study of Argumentation* (OSSA) has held seven conferences, and its proceedings are available on CDs.

Monographs on critical thinking include: Robert J. Swartz and David N. Perkins, *Teaching Thinking: Issues and Approaches* (1989), Alex Fisher and Michael Scriven, *Critical Thinking: Its Definition and Assessment* (1997). See also Richard Paul's collection of essays, *Critical Thinking* (1990).

Those interested in the literature on this topic of the effectiveness of instruction in formal logic might consult Richard E. Nisbett's *Rules for Reasoning* (1992). On the value of using fallacies in teaching such courses, there is a pair of papers on opposing sides in Hans V. Hansen and Robert C. Pinto (1995): David Hitchcock's "Do the Fallacies Have a Place in the Teaching of Reasoning Skills or Critical Thinking?" and J. Anthony Blair's, "The Place of Teaching Informal Fallacies in the Teaching of Reasoning Skills or Critical Thinking."

On fallacies and fallacy theory, we recommend for starters a look at Hans V. Hansen and Robert C. Pinto (Eds.), *Fallacies: Classical and Contemporary Readings* (1995), which has an excellent bibliography. Also see any of the many monographs on fallacy theory or on individual fallacies by Douglas Walton. For the former, see for example *A Pragmatic Theory of Fallacy* (1997). For the latter, for example, see *Ad Hominem Arguments* (1998) or *Appeal to Popular Opinion* (1999). For a more complete listing, see his website: [www.dougwalton.ca](http://www.dougwalton.ca).

On creative thinking, see David N. Perkins, *The Mind's Best Work* (1981) or Sharon Bailin, *Achieving Extraordinary Ends: An Essay on Creativity* (1988).

On informal reasoning: James F. Voss, David N. Perkins and Judith W. Segal (Eds.), *Informal Reasoning and Education* (1991).

A few theoretical works on argumentation from an informal logic perspective are: Trudy Govier, *Problems in Argument Analysis and Evaluation* (1987) and *The Philosophy of Argument* (1996); Ralph H. Johnson, *Manifest Rationality: A Pragmatic Theory of Argument* (2000); and Robert C. Pinto, *Argument, Inference and Dialectic* (2001).

## 5. *Conclusion*

We have written this paper out of concern for the academic integrity of the introductory course offered by most if not all, philosophy departments in the United States and Canada that focuses on some mix of reasoning, argument analysis, introductory formal logic, informal logic, inductive reasoning, critical thinking, problem-solving and/or decision-making. This “dog’s breakfast” of topics and objectives to be found in a good many of such courses are evidenced by the overly ambitious agendas offered in many of the textbooks, a state of affairs that we surmise is both the effect and the cause of confusions about the nature of these topics and the relations among them. We are also concerned that philosophy departments expect especially junior faculty to be prepared to teach these courses by virtue of their graduate training in formal logic, with complete disregard for the voluminous and sophisticated scholarly literature in *each* of these topic areas. Based on our own experience and knowledge of several of these fields, we think that a great many of these courses would benefit from being rethought and redesigned with a clear conception of the subject matter being taught and of the outcomes being claimed.

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### NOTES

<sup>1</sup> The first-year course in critical reasoning, informal logic, critical thinking, elementary logic, etc., etc.

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