Reviews


Reviewed by Joseph Williams, University of Chicago

Nothing is more useful than a well-written textbook that seems to lay out in eminently teachable detail an account of those intellectual skills that every teacher wants to develop in his or her students. Such a book is David Kelley's *The Art of Reasoning*. Kelley provides an accessible and impeccable account of the principles of formal logic as they apply to classification, definition, and deductive and inductive reasoning. In Part One, he covers "Classification," "Definition," and "Propositions." In Part Two, "Arguments," he addresses "Basic Argument Analysis," "Fallacies," and "Advanced Argument Analysis." In Part Three, "Deductive Reasoning," he lays out with great clarity principles of "Categorical Propositions," "Categorical Syllogisms," "Disjunctive and Hypothetical Syllogisms," and "Syllogisms in Ordinary Reasoning." In an especially practical Part Four, "Inductive Reasoning," he devotes chapters to "Inductive Generalizations," "Argument by Analogy," "Statistical Reasoning," and "Explanation." He includes a glossary and answers to practice quizzes, which are abundant, interesting, and, unlike the ones in so many other textbooks of this kind, realistic and challenging.

A particularly useful part of his exposition is a way to anatomize arguments by means of a notational device that encourages the critical reader to identify logical steps and their kind. To put it in oversimplified terms, it allows readers to distinguish multiple premises that must be taken as a set (he calls them "additive" premises) and multiple premises that are not necessarily related ("non-additive" premises). He also distinguishes between explicit premises and implicit premises and illustrates how to diagram the steps in argument and counterargument in a debate.

Particularly useful are the last two chapters; one is on statistical reasoning and the other covers the differences between explanation and argument. It is in these two chapters that Kelley makes the closest connections between logical formalism and everyday reasoning, an issue that I will address at greater length in a moment.

One can always quibble. For example, Kelley may obscure a useful distinction between abstract and general when he distinguishes Love as more "abstract" than Romantic Love. It might be more useful to say that "Love" refers to a concept that is not more abstract than Romantic Love, but more
Elsewhere he argues that the two clauses in "Society has an obligation to support the needy because people who cannot provide for themselves have the right to the resources of the community" are logically synonymous and therefore have the logical structure "P because P" (124). If we considered for a moment the distinction between "X has a right to Y's resources" and "Y has an obligation to support X," we might decide that the two clauses are not functionally synonymous in all contexts—at least they weren't for a long time in our legal history when "an accused has a right to the legal community's resources of representation by counsel" did not entail "the legal community has an obligation to provide the accused with representation of counsel." (I understand that some would argue that the legal community was wrong.) These quibbles aside, The Art of Reasoning is a clearly written, engaging, and useful book for those who believe that one can teach thinking by teaching the formal principles that those in the philosophical tradition believe constitute good thinking.

But that second quibble—an appeal to a historical context to disagree with a formal principle of logic—leads us to a series of questions that go beyond the clarity of Kelley's text, because this kind of formal analysis raises some serious problems for those who take a different view of what counts as skilled thinking and how it is done. Kelley takes the view that good thinking has a universal structure (probably true) that can be taught generically (probably false). In light of the now abundant literature that explicitly questions Kelley's philosophical tradition that the structure of good thinking is in fact captured by the principles of formal logic (setting aside the question of whether it can be taught), there are three questionable assumptions that we must now recognize, if only so that those in the philosophical tradition can reject them: (1) how does language relate to whatever counts as the world?; (2) what constitutes thinking—formal processes or pragmatic schemata?; and (3) can "good thinking" be taught generically? I understand why those who write textbooks on critical thinking do not address these issues. When paradigms begin to change, the business of writing clear and unambiguous textbooks becomes very difficult. And if issues such as these cannot realistically be raised in textbooks (publishers and teachers having a low tolerance for cognitive dissonance), I think that they have to be raised in reviews, not to discredit a book but to provide a context in which to understand it.

The first problem involves principles of classification and definition. Not to overgeneralize too much, Kelley, like most objectivist philosophers, seems to want readers to believe that there is not merely a privileged way to categorize and define words, concepts, individual referents, or classes of referents, but that things have essential attributes that are fundamental to their kind, and those essential attributes determine natural categories (19-20). As might be expected, Kelley's initial examples are from biological taxa, where for biologists the color of a creature is not essential to its kind; for biologists,
what is essential is its line of descent, its ability to mate with others. But Kelley quickly proceeds to less clear-cut cases: in regard to classifying people, he says that "our standards for what is essential are too complex even to summarize" (21), an acknowledgment that ought to suggest that "essential" attributes may be less than entirely stable in the real and messy world of real and messy classification. He continues:

Standards for what is fundamental or important vary from case to case. Identifying essential attributes may take years of research (as in science), and it always takes a good deal of thought. . . . There is no simple, mechanical rule we can follow in distinguishing essential from nonessential principles of classification . . . Nevertheless, the examples . . . indicate the value of looking for essential attributes: they bring clarity and coherence to the organization of our knowledge. (22)

That is, if we look hard enough, we will find the essential attributes that will define natural categories that constitute the structure of the world and by inference our knowledge of it. Kelley takes the same position about definition: "We do not have to settle the theoretical issue of whether concepts can—or should—have completely sharp borders. The important point is that there are degrees of precision in understanding a concept's boundaries, and definitions help us become more precise" (33). He does not suggest that if we are more precise about why we want to define things in the first place, that if we understand the end to which we will put the definition, then we will create better—that is, more useful—definitions. It is out of the activity of specific intention and general cognition that we construct definitions. We do not use definitions to define edges, nor do we see edges that delimit definitions unless we have already decided (explicitly but more often implicitly) that some one definition is going to be more useful than another. Kelley likens definitions to the search for essential criteria: "It won't always be easy to find a definition—in the case of ART, people have been trying for a long time—but even the effort to find one can clarify our understanding of a concept" (35; emphasis added). Kelley writes as if he believes that out there in the world, waiting to be found, is the definition of ART. In fact, we construct definitions to serve our ends. Is a picture of the late Mayor Harold Washington in women's underwear art? Is an American flag on the floor art? Questions like these don't get settled by aestheticians, no matter how rigorously they reason.

If we adopt the objectivist approach, we find ourselves in the paradoxical situation in which we can agree that a word has an entirely acceptable meaning, even though we would never use the word to refer to a referent that meets the criteria of meaning associated with it. After much analysis, Kelley defines GAME as "a form of recreation constituted by a set of rules that specify an object to be attained and the permissible means of attaining it"
This definition describes what runners and weight lifters do, yet no native speaker of English would ever congratulate the winner of a race with "Good game!" But wait, these activities are included in the generic term *Olympic games*, so in that context, weight lifting must officially be a "game," even though we never use the word "game" to name the sport of weight lifting. In short, we may not assume in principle that there is some naturally given pattern to the meanings of words and their right use in regard to their range of referents. Kelley, I think, might argue that behind these inconsistencies is some ultimate epistemological consistency, if people would just get their categories and definitions straight: our problem is to correct our language to fit the world, the very objective of this book. Others would argue that categories and definitions are the products of human cognition and practice, and so to ask for natural rather than arbitrary consistency is to contradict the nature of human thought.

The second problem is more abstract: is the structure of thinking best described in terms of formal logic ("if p, q," and so on) or do we think by means of pragmatic schemata deeply embedded in experience? If the former, then we ought to be puzzled why people cannot answer questions based on problem A below as consistently as they can answer a series of questions based on problem B, even though the two problems are structurally identical:

(A) If a card has an "A" on one side, then it has "4" on the other.

(B) If one is in the Armed Forces, then one must vote in the elections.

The difference between the two problems is that the first is arbitrary, while the second is part of the familiar schema of "obligation." Patricia Cheng and her co-authors argue persuasively in "Pragmatic Versus Syntactic Approaches to Training Deductive Reasoning" that our ability to work out problems of this kind depend more on pragmatic schemata than on abstract structures of logical syntax. They also explain why training students to answer questions based on even arbitrary problems through training in "obligation" schemata is more productive than training in abstract formula (Cognitive Psychology 18 [1986]: 293-328). Now, I am not claiming that on the basis of one bit of research we should reject everything we have been doing for the last few hundred years in teaching thinking and logic. I am suggesting that the matter is less clear-cut than the best textbooks might make them seem.

This brings me to the third problem, perhaps the pedagogically fatal one: after decades of teaching thinking in the way Kelley suggests—as a set of generic skills describable by the principles of formal logic—there is slight evidence (anecdotes aside) that such teaching makes students think better, and there is a great deal of evidence that it does not. Rather than go into this research in detail, I simply refer readers to the surveys in the literature, one of which is James McMillan’s "Enhancing College Students’ Critical Thinking: A Review of Studies" (Research in Higher Education 26.1 [1987]: 2-29). I understand how deeply those in the philosophical tradition distrust social
science research, and I do not want to seem to accept that research as gospel. And to be fair, there is some evidence that in a few cases some change has been observed. But given the multitude of courses in logical thinking and the decades during which these courses have been taught, we should be able to find more evidence than we have that these courses succeed. We cannot just wish away a longstanding and widespread failure to demonstrate a connection between formal instruction in reasoning and the ability to reason well thereafter.

Much of the evidence now available suggests that whatever counts as good thinking is inextricably bound up with a rich experience in a particular field. That is, good thinking depends on extensive knowledge and practice in a particular area, and that while experts do think in generically identifiable ways, what counts as skilled thinking is inextricably located in experience about the object of thinking. This dependency on experience is obvious in those sections in which Professor Kelley deals with inductive thinking. He argues—correctly—that inductive thinking requires "enough" data on which to base an inference. In my judgment, what he does not sufficiently emphasize is that "enough" is a term wholly relative to the field and to the problem. Before suggesting that drug A cured acne with no serious side effects, a reviewer would insist on a very large number of cases—thousands, perhaps—showing a high rate of cure, more than, say, 15%, with no serious side effects. But if it were found that after taking drug A 10% of those in the terminal stages of liver cancer recovered but went blind in one eye, and those figures were based on only 200 cases, it is fair to say that physicians would consider an apparent 10% cure rate based on 200 trials "enough" for them to make drug A available to those suffering from terminal liver cancer; or at least it would be for those physicians treating patients in the terminal stages of liver cancer; or, in any event, it would be more than enough for those physicians who were themselves in the terminal stages of liver cancer. The point is that what counts as "enough" depends not just on a statistical formula, but on social, political, and human issues, as well.

Here's a small example of a problem with Kelley's reasoning based on insufficient knowledge:

Suppose you wanted to know which is the safer form of travel, commercial airlines or automobiles. You might compare their fatality rates. But which rate—deaths per vehicle mile, or deaths per passenger mile? Planes carry many more passengers than cars, so more people are likely to die in a single plane crash than in a single auto accident. For the same reason, though, a safe flight logs many more passenger miles than does a safe auto trip of the same distance. To compare overall safety, therefore, we should use fatalities per passenger mile. (312)
But since most air fatalities occur just after takeoff or before landing, the critical factor in fatalities is not miles traveled but the number of takeoffs and landings. In this particular case, am I thinking about flying fifteen thousand miles a year in two 7500 mile segments? If so, I probably should fly rather than drive. Or am I thinking about flying three-thousand five mile segments? Maybe I should drive. Or maybe not. Maybe I’ll die in an airplane crash, but I’ll just get hurt in a car crash. Or maybe. . . . You get the idea. Kelley’s reasoning is impeccable, but it is based on insufficient knowledge. The obvious response is that good reasoning assumes sufficient knowledge, that Kelley just made a mistake in the relevant data. On the one hand, that is an entirely legitimate response. But at some point, it may be that what counts as the ability to think well is inextricably dissolved into (not intertwined with) sufficient experience. And so it makes no pragmatic sense to distinguish them.

I want to be clear: Professor Kelley has written an excellent book about thinking well based on the philosophical tradition of logical analysis. But there is more than one school of thought about what it means to “think well” and what it means to teach others to “think well.” It is in no sense intellectually or pedagogically inappropriate to write an excellent textbook within a single tradition and not to address other schools of thought. But if to whatever degree the “Art of Thinking” in fact depends not on our finding categories and definitions but on our constructing them in ways that we and others find useful, if knowing how is inextricably bound up with knowing that, then in addition to understanding the formal principles that philosophers believe underlie good thinking, we ought to appreciate that what the thinker brings to the process of thinking may be at least as important.


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In Reading Capital Louis Althusser cogently observes that only since Marx have we begun to suspect what reading and writing really mean. That, in short, is Ohmann’s challenge in this collection of some twenty previously published essays: to help us re-see reading and writing in the complexity of their historical and socio-political context, to problematize the hundreds of ordinary transactions of reading and writing that make up academic life, to look deeper for “alignments of interest and power.”