Stalking Beasts, but Swatting Flies: The Teaching of Critical Thinking

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This article takes a critical look at what is called "critical thinking," and it shows how this notion is typically confused with such notions as "reasoning ability" and "argument analysis." Moreover, it is argued that the confusion of these notions often forms a large part of the justification for programs in critical thinking. The role of critical thinking in "everyday problems" is also discussed, and the author presents an hypothesis that knowledge and training in the traditional disciplines has more potential transfer than direct training in "critical thinking skills."

Cet article est une observation critique de ce qu'om appelle "la pensée critique." On nous montre comment cette idée est typiquement confondue avec celles de "l'habileté du raisonnement" et de "l'analyse de l'argument." De plus, on soutient que la confusion de ces idées forme souvent une grande partie de la justification pour les programmes de pensée critique. Après une discussion du rôle de la pensée critique dans les "problèmes communs de tous les jours", l'auteur nous présente une hypothèse que les connaissances et la formation des disciplines traditionnelles ont plus de potentiel d'adaptation que la formation directe dans "la technique de la pensée critique."

On the subject of critical thinking, every book or paper I have read and every person consulted has claimed that critical thinking strives toward an improvement of day-to-day reasoning ability. This aim, indeed, would appear to be straightforward enough, and given the complex world we live in, few educational goals could be more laudable. But as simple and straightforward as the goal sounds, confusion exists concerning its exact meaning. In particular, the basic notions of "reasoning ability" and "everyday problems" permit more than one interpretation. How one interprets these notions determines in large measure the type of instruction necessary to promote critical thinking. I, for one, continue to be surprised at how much the standard approaches to critical thinking seem designed more to fit the ready-made solutions than the solutions being made to fit the problem.

The standard approaches to critical thinking, and this includes the work of Robert Ennis (1962), Howard Kahane (1976), Johnson and Blair (1977) and Scriven (1976), *all* reduce the notions of "reasoning ability" and "everyday problems" to what have come to be called "argument analysis" or "everyday argument." More often than not they go on to collapse these distinctions by simply talking about "everyday reasoning" – a euphonous phrase if only for its suggestion of clarity and intellectual accessibility. And on the face of it, what could be more useful? Thus, it is not surprising that students should flock to courses in critical thinking or

informal logic after reading the enticing notes contained in course descriptions. Indeed, there is a burgeoning cottage industry in textbooks and materials promising to improve everyday reasoning – as though this merely required a few special methods and skills. I suspect, in fact, that "argument analysis" has just the right amount of technical connotation, mixed with an intriguing jargon, to lend it the required air of legitimacy for commercial appeal. Perhaps, indeed, we are not far from the radio call-in show that offers psychological help and counsel to all who would avail themselves. Unwittingly, no doubt, such courses entitled "Speed Reasoning" and the like, come dangerously close to this kind of merchandising.

To underscore this trend, notice how far we have come: from the long-standing and legitimate need to improve reasoning about complex social problems to the quick-fix course in "everyday reasoning" and "argument analysis." Surely things cannot be so simple. We have not, to my knowledge, recently discovered any new miracle cure for the longstanding frailty of human judgment. And no quantity of courses in critical thinking is likely to overcome this known deficiency in the educational process. Where did we go wrong? What accounts for the boundless enthusiasm for critical thinking courses as the hope of the future? Have we begun to believe our own promotional literature and taken its claims too seriously?

REASONING ABILITY

As already noted, the standard approaches to critical thinking tend to fuse the notions of "reasoning ability," "argument analysis," and "everyday reasoning," using these terms almost interchangeably and treating them as one homogeneous entity. But it is precisely at this point that we begin to go wrong, and this partially explains why we have been duped into taking our own rhetoric more seriously than is justified.

The notion of "reasoning ability" introduces several difficulties that are not immediately discernible. For example, even the use of a phrase like "reasoning ability" suggests the existence of a single underlying capability. That is, the phrase "reasoning ability" is referred to much as one would refer to the ability to speak English; either one does or does not possess the skill. For example, statements like "Richard Nixon *does*, but Alexai Kosegin *does not* speak English" accentuate this binary conception of language skill. Despite the fact that we can (and do) speak of a person using English more or less well, we still tend to think of it as an either-or skill. But what leads us to think that the phrase "reasoning ability" similarly denotes a singular skill? It could be that we have been led astray by the grammar of the phrase, thinking (uncritically!) that it too must denote some ontological reality. (Gilbert Ryle, where are you?!) Whatever the reason for such beguiling usage, "reasoning ability" covers all manner

of cognitive phenomena, scarcely any cluster of which resembles another. Just as chess and cross-words require reasoning ability, so does finding one's way home, investing money, fishing, driving a car, doing sums, shopping, playing hopscotch, intelligent voting, building math models, writing poems, and countless other classes of activities. Thus the phrase "reasoning ability" does not denote any particular skill, nor indeed any particular *kind* of skill. About all that these activities have in common is that they are all done by conscious beings, and they require reasoning of some sort.

Elsewhere I have suggested that the concept of "reasoning ability" functions something like the concept of "speed" (see my *Critical Thinking and Education* (1981)). If, just out of the blue, someone offered to improve our *speed*, the first thing we would properly ask is "at what?" We'd probably all like to be speedier at running, or reading, or typing, or even changing mufflers, but we know that no single course could improve our speed at all things. Given that the range of things over which we'd like to improve our "reasoning ability" is perhaps even wider than the range of things over which we desire to improve our speed, then the prospects for improving our general reasoning ability are even dimmer. And the reason they are dim, I'm suggesting, is that the very notion of "general reasoning ability" is, upon reflection, incoherent.[1] At the very least, intellectual clarity would be much improved by our dropping the phrase "reasoning ability" from our critical thinking lexicon. We are not in the business of improving reasoning ability *simpliciter*.

ARGUMENT ANALYSIS

When the literature in informal logic and critical thinking uses the phrase "reasoning ability" it is usually referring to the reasoning involved in argument analysis. Indeed "reasoning ability" and "argument analysis" are sometimes used interchangeably. Again, however, these two notions are hardly equivalent.[2] In fact, I would argue that "argument analysis," as such, comprises only a very small portion of reasoning ability. Scriven (1976) points out that there is no a priori reason to believe that animals do not reason, since some clearly manifest behaviour which should count as reasoning. Without quarrelling with this observation, I question whether he means that they reason in that they analyze arguments. Argument analysis, after all, has to do with assessing relations between propositions, and not only do animals not do this, but they would have little use for it if they did. I say this with confidence about animals because I'm convinced that the value of argument analysis has been greatly over-sold to humans.

If one could calmly and objectively determine how much of an intelligent person's reasoning is actually spent analyzing arguments, as such, I would be surprised if it reached 5%. (My social science friends, by the way, are always dazzled by the statistical rigour with which I arrive at such figures!) In reasoning our way through the day, month, or year, the

bulk of our mental effort is spent choosing and deciding, solving problems, learning *how to do* things, interpreting meanings (e.g., complex statements or concepts, train schedules, tax laws), and perhaps most importantly, determining the *truth*, not the validity, of various statements and putative evidence. Argument analysis, on the other hand, as we have come to know it, is quite beside the major point of such reasoning. While it is true that argument analysis can sometimes play a role in some (though not all) of these reasoning tasks, it is of limited value because: (1) argument analysis is always an *ex post facto* reconstruction of past reasoning, neither positing alternatives nor hypotheses for future consideration; and (2) the major focus of argument analysis is to determine the validity of arguments, not the truth of premises or evidence. And the truth (of premises) is more difficult to determine, but unquestionably of more value in practical affairs.

When one stops to think about it, the differentiation of validity from invalidity, as such, is a nearly exclusive preoccupation of logicians – and a fairly specialized or esoteric preoccupation at that. But when non-logicians (e.g., business executives, artists, or average citizens) express an interest in improving their reasoning ability, I doubt that the systematic study of validity or soundness of arguments is what they have in mind. And as interesting a pursuit as argument analysis is, it remains little more than an article of faith that it provides the kind of reasoning improvement required for our complex social world. Moreover, this is as true of informal logical analysis as it is of the deductive variety. I agree with the view that effective reasoning is perhaps more important now than it ever was, but the study of argument analysis, formal or informal, seems an unlikely means for achieving that goal. As a philosopher, I have as much respect and appreciation for argument analysis as anyone, and I am aware of its obvious utility. But I do not think we are doing anyone a service, by regarding it as the equivalent to, or a substitute for, general reasoning ability.

By liberally reinterpreting the general problems demanding reasoning, we have twisted the problem to fit our ready-made and cherished solutions – informal logic and argument analysis. We have mistaken the most visible tip of the iceberg (i.e., argument analysis) for the entire object. On the rare occasion when this view of reasoning is seriously questioned, we comfort ourselves with accepting the answer: "Oh well, even if argument analysis isn't the whole of reasoning, it's clearly the most important part of it." I think a more likely conclusion would be: "Since argument analysis is the only way that we philosophers know to describe reasoning, it must be synonymous with reasoning itself."

EVERYDAY ARGUMENT

In addition to the notions of "reasoning ability" and "argument analysis," yet another troublesome term remains requiring scrutiny. That is the

recurrent notion of "everyday argument," which is meant to circumscribe the domain of informal logic. Johnson and Blair suggest (perhaps correctly) that the phrase is meant to cover all those arguments which we might think of as "practical," "everyday," "ordinary," and/or "mundane," as distinct from "formal" or "mathematical" arguments. Perhaps the longer phrase "ordinary everyday arguments" captures this domain best. The literature and textbooks on informal logic do gloss over and abuse this notion more than any other idea or concept in the area. Indeed, a much needed paper still waits to be written on the concept of "everyday argument" and all that the phrase entails.

For the present let us ignore the definitional question, accept Johnson and Blair's characterization of "everyday argument," and begin the necessary considerations for an analysis of everyday argument. Let us focus more closely than usual on the actual ingredients of an everyday argument. As we proceed, we should remember that the truth of the premises is every bit as important as the validity of the argument. This point is worth repeating not only because the analysis of real argument requires it, but also because informal logic distinguishes itself from formal logic in its preemptive concern with *soundness* in contrast to simple *validity*. Let us further agree (with the standard approach) that everyday argument is typically concerned with public issues of the sort that informed citizens must decide upon. Recent examples of such issues might include Reagan's economic policies, American intervention in El Salvador, economic sanctions against Poland, creationism vs. evolution in science classes, nuclear disarmament, minority and women's rights, gun control, plea bargaining, nuclear power stations, etc. Several things can be safely observed about such issues. First, the survival of a healthy democracy requires public debate about such questions. Second, our public schools would like to prepare people to make intelligent decisions about such questions. Third, such questions anticipate honest and intelligent disagreement. Finally, these are *complex issues* in that they typically encompass a substantial amount of information or putative facts, some of which are likely to be independently contentious.

Now the standard informal logic approach to such issues is to take an existing argument and examine it for any fallacies, formal or informal, that might affect its validity. This, in fact, is the strength of the standard approach. Failing that, or when fallacies are not found, then the standard approach suggests a search for unstated assumptions and/or the questioning of the truth of the given premises. If fault can be found in any of these facets of the argument, then one has objective grounds for rejecting the argument. This, admittedly, is a thumbnail sketch of the procedure, but a reasonably faithful characterization of the overall strategy.

Several serious short comings of this strategy deserve attention. Notice first that even if a bona fide fallacy is discovered in a given argument, one still cannot infer from this that the opposite point of view is correct. To so

infer would be a clear case of "affirming the consequent." At best, all that one can infer is that *this* particular argument is fallacious, but for all that the general point of view might be true (or preferable). Therefore, in this type of public issue, one cannot intelligently decide on the question simply because of knowledge of the fallaciousness of a particular argument. Thus detecting fallacies is not as useful (or practical) to the decision maker as some might assume. One still does not know what is right, true, or correct. I do not mean to suggest that validity, as such, is irrelevent to weighty public issues, but merely that its usefulness is quite limited in deciding such questions.

With respect to that phase of argument analysis called "assumption hunting," proponents of informal logic are already painfully aware of the difficulties inherent in this task. I do not, therefore, want to dwell on these problems here beyond making two points which have not received sufficient attention. First, it should be recognized that by making suitable assumptions it is *always* possible, in principle at least, to make a given argument as strong (or as weak) as one wants. For example, if the "principle of charity" is taken far enough one could take any abysmally weak argument and nurse it back to health: it simply requires positing suitable assumptions for it. Conversely, practical syllogisms which are otherwise strong can be weakened if suitable contexts, conditions or assumptions are brought to bear on them. What is to be regarded as "suitable" in either case will be determined by contingent contexts, beliefs, values, and judgments which go beyond any set of rules, formal or informal. This is because rational judgment is distilled from a matrix of values and beliefs with infinite combinations.

The second point about looking for "unstated assumptions" is that when a single argument is being examined, such as one finds on an editorial page, there is no method for determining what assumptions the author might actually be making. And short of being psychic, there *can be no such method.* This is because there is potentially an indeterminate number of possible assumptions underlying any given premise. Moreover, each of these possible assumptions may have an indeterminate number of assumptions underlying them. The various suggestions we have seen in the literature, from Scriven and others, for avoiding a "straw-man," using the "principle of charity," and making "minimal assumptions" are all designed to *create* assumptions about the argument. I wish to stress the point that these new assumptions are *created for* the argument, rather than *found* or *discovered* as the phrase "assumption hunting" might suggest. As 'unstated assumptions' they do not come as part of the original argument. The analyst simply *infers* certain assumptions even though they are not necessarily *implied* by the argument. When one does this, however, one is no longer analysing the actual argument given but an altered or preferred interpretation of it. And this, I would suggest, is very dangerous indeed, not only because it can easily harness

someone into an assumption that they were not in fact making, but also because it threatens to strip argument analysis of its objective integrity by encouraging subjective interpretations.

Clearly, something is wrong in this business of "assumption hunting," and that is the belief that assumption hunting is necessary for argument analysis. I submit that assumption hunting is neither necessary nor desirable in argument analysis. It is undesirable for the reasons suggested above. The only reason assumption hunting might *appear* necessary in the first place rests on confusing an *assumption* with *presupposition*. But these are both logically and psychologically distinct. To wit: an assumption of an argument can be false yet the argument itself remain sound. By contrast, if a presupposition of an argument is false, then the argument *cannot* be sound.[3] Assumptions, after all, have more to do with the contingent belief state of the arguer than with the objective validity of an argument. So, unless we are more interested in showing that some individual happens to be making a mistake (as one might in a debating society) we would be better advised to seek out false presuppositions, and treat assumption hunting as largely beside the point.

This whole tactic of assumption hunting points to the larger question of the ultimate purpose of argument analysis and critical thinking. Is the purpose essentially to refine *disputation*, or to pursue *truth* through rational inquiry? If its purpose is for disputation, then it is difficult to see how this differs from classical rhetoric where "winning" takes precedence over knowledge and truth; it is similarly difficult to believe that schools and colleges intend argument analysis for this purpose. If, on the other hand, its purpose is to pursue truth, as I think it should be, then the emphasis upon "everyday argument" not only creates the wrong impression about its purpose (suggesting rhetoric and disputation), but it seriously restricts its potential for finding truth. For the complex issues which generate public argument, and where rational disagreement is possible, truth is more evasive than the simple tools of everyday argument imply. Emphasizing everyday argument, as such, yields little more than "everyday" solutions. This is because the tools suited for everyday argument (e.g., informal logic, etc.) are no match for the complexities of everyday controversial issues.

By the phrase "everyday argument" no one, to my knowledge, means the kind of argument possible concerning whose turn it is to walk the dog after dinner, whether the family garden is going to need two rows of carrots this year, or whether the new weather man represents an improvement over the old. Rather, we are all, philosophers and educators alike, concerned about those public issues that might seriously affect the well-being of society in some way. And these public issues move us into the arena of complex information where the lion's share of the difficulty comes from the intelligibility and reliability of this information. The major deficiency, as I see it, with the standard treatments of everyday

argument is that they depreciate the important and complex role of information by positing an equivalence between "everyday argument" and "everyday problems." However, everyday argument is no match for the complexities of everyday problems. Thus, even where the standard approaches to everyday argument purport to be at their best, namely in the context of "everyday problems," they fall far short in their own chosen domain. To appreciate this, let's look at some everyday problems.

EVERYDAY PROBLEMS

Typical classroom examples of everyday problems are taken from various public sources such as printed speeches, editorials, or media accounts of various social issues. Arguments either for or against something are isolated and examined for their validity and soundness. The techniques, strategies, and rules of formal and informal logic are the major tools employed to perform these analyses; students are taught to become proficient in the use of these tools through drills, practice, and discussion. However, I contend that this approach to everyday problems is largely a waste of time, money and effort, because the real difficulty in assessing these questions has little to do with fallacies and validity, and almost everything to do with understanding complex information.[4] In the language of informal logic, the problem is not with establishing *validity* but *soundness* – both the soundness (i.e., truth) of individual premises and of entire arguments.

One need look no further than the nearest newspaper or television to find typical issues. For example, in his recent State of the Union Address, President Reagan defended his economic policies by claiming that "inflation is coming down and things are getting better. And if we simply stay on this track things will continue to improve." This was the gist of his position, which as far as it went sounded coherent and plausible. Inflation, after all, is not easy to lick, and West Germany and Japan have had to bite the bullet for five years to bring theirs under control. However, immediately following Reagan's speech, the Democrats aired their own views which spelled out the adverse effects of Reagan's economic policies. They pointed out that unemployment, bankruptcies, and interest rates were at record highs, and that all of their indicators suggest, contrary to Reagan's claims, that things will continue to get worse.

I listened carefully to both presentations, and afterwards to several commentaries and heated journalistic exchanges. What struck me about this "everyday problem" was that there were no obvious "fallacies" committed in either presentation. Indeed, both sides *seemed* to build a reasonable case. Since I could detect no fallacies, my years of teaching logic, both formal and informal, were of discouragingly little use to me. What I needed to know was whether the various premises offered were in fact *true*. In subsequent days, as I sought out the truth of these premises, I

found myself immersed in Laffer curves, zero-sum systems, monetary vs. fiscal policies, and various other concepts that I was incapable of understanding, let alone of determining their truthfulness. In short, what I needed to know was more economics, not more logic. This problem, let us not forget, is one of those common, mundane, "everyday" problems commonly discussed, argued and voted upon by average citizens. It is precisely in dealing with this kind of problem that the standard approach to informal logic and critical thinking *purport* to be most useful. Indeed, the standard approach to critical thinking justifies its existence on the grounds that it enables people to make more rational judgments about "everyday problems" of just this sort. However, the reason that the standard approach cannot deliver what it advertises is that the standard approach can only examine and pass on *validity* relationships, being ill-equipped to determine *truth*. But in most everyday problems worthy of public debate our quandry is seldom about validity, and almost always about the truth of complex information, concepts, and propositions. We are not analyzing arguments so much as evaluating data, information, and putative facts.

This observation is quite general. One could pick virtually any "everyday problem" and find oneself falling into similar quandaries. For example, the nuclear disarmament debate quickly brings one into the technical arena of I.C.B.M.s, MERVS, cruise missiles, MXs, first-strike capabilities, deterrence, so-called "windows of vulnerability," "zero options," and many others complex considerations which might significantly influence whether or how disarmament should proceed. Also in foreign and defence policy, most of society's decisions concern what is *undesirable* and what is *unacceptable*, and before understanding which is which you must possess much information and accept certain judgments of prognostication. In the end, either choice is awkward and unpleasant since few pure and untainted decisions exist in such matters. Even the "everyday problems" closer to home, such as the rights of minorities, affirmative action, nuclear power plants, tax proposals like "Proposition 13," product safety and the like require the possession and comprehension of large amounts of complex information. There simply is no avoiding this brute fact about the complexities of what are misleadingly called "everyday problems." Moreover, most of our mistakes in rational judgment originate in this *informational* domain – either because we don't have enough of it, or our sources are unreliable, or just as often because we do not understand the empirical foundations and meaning of the information we do have.

At my university, for example, the department of budget and finance has created a new sub-branch called the "Information Analysis Office." Its purpose is to assist university financial specialists in understanding the implications and significance of their own data. It is clear to me that if we are serious about getting at the *truth* of a particular "everyday problem"

we would be similarly well advised to spend most of our effort on "information analysis." But in doing this, notice, we move directly into specific domains of *expertise*, or what Kenneth Strike has called "specialists' guilds."

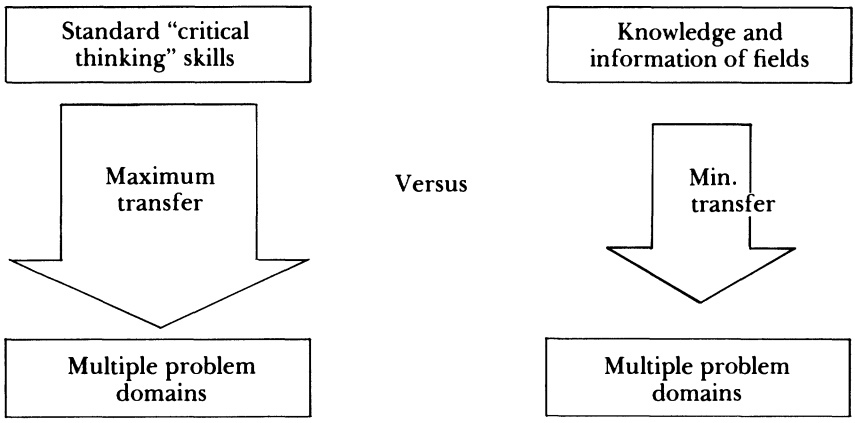
This suggestion is anathema to the standard approach to everyday argument since the standard approach attempts to bypass these problems by assuming that the requisite information is usually "common knowledge." But when and if the requisite information is in fact "common knowledge," then I would argue that "common sense" can handle it – indeed this is what "common sense" *means*. However, my point is that the type of social problem concerning us all in everyday argument is nearly always complicated, because the requisite information is also complicated. As suggested earlier, such notions of "everyday argument" and "everyday problem" are not at all clear, since when you approach them you see nothing particularly mundane, ordinary or simple about them.

It seems to me that the major flaw in the standard approach to everyday argument is its tendency to make the complex seem relatively simple and straightforward. Indeed, there is an interesting parallel here with certain tendencies of television news broadcasting. Many critics of television news have pointed out how that medium can be used to distort or manipulate public opinion, reflecting the biases of the press corps at times, and thus magnifying the importance of the events in question. Still others have pointed out how stories with a strong visual aspect command more coverage than stories of a lesser visual dimension, even though these latter stories might be more important. Whatever the truth of these various criticisms, a still more insidious effect of television news is worth considering – the fact that viewers typically get their knowledge and opinions of complex human events from three-minute "spots" on television. It is as though "everyday reality" comes packaged in three-minute bits, and anything beyond that is either esoteric or not particularly significant. We have become quite used to boiled-down versions of truth, as though you might come to know the real Joe Di Maggio from information provided on bubble-gum cards. This is a dangerous trend that fosters superficiality. And in so far as the standard approach to critical thinking typically reduces the necessary information to "common knowledge," as though this were all that was required, it also tends to foster the same kind of superficiality. The result is a caricature of critical thinking, not the genuine item.

GENERAL SKILLS FOR CRITICAL THINKING

So far, it may seem that I am implying that the standard approach to critical thinking (like pornography) has no redeeming social value. This is not the case. The standard academic disciplines can profit considerably from much of the material in critical thinking courses. And conversely,

FIGURE 1



the standard approach to critical thinking has at least as much to learn from the traditional academic disciplines – perhaps more. It might be fair to say that my disagreement with the standard approach to critical thinking is largely pedagogical in character, but this difference, I contend, is significant.

The general rationale which lends plausibility to the standard approach is straightforward enough. Since no one is capable of knowing everything about everything, and because we cannot predict what kinds of knowledge one might require for specific problems in the future, the standard approach chooses to teach certain *general principles* which apply to all (or most) areas of human knowledge. An impressive economy of effort would be gained if these general principles could be mastered since they apply to almost all problem areas. The standard approach assumes these principles to be those of applied logic, both formal and informal.[5] Thus, the strategy is to maximize transfer by providing students with the general skills for using these logical principles whenever they are needed.

This strategy obviously contrasts with any approach which attempts to teach from established fields without looking beyond the narrow problem areas of the field's specific knowledge and information. In short, from the "critical thinking" point of view there are two separate arguments against a "knowledge and information" approach. First, knowledge and information lack the transfer potential of general skills. Second, one cannot predict what knowledge and information an individual may need for the future. The general skills of critical thinking, then, are seen to *maximize transfer* while a "knowledge and information" approach is viewed as "minimizing" transfer. The standard approach views these transfer relationships as shown in Figure 1.

This view is indeed plausible, and no doubt accounts for much of the widespread acceptance of the standard approach to critical thinking.

There is in fact *a kind* of "transfer" that takes place between the critical thinking skills and multiple problem areas. However, it is important to look closely at the different senses in which transfer *does* and *does not* occur in this view of things, because if my suspicions are correct, the sense in which these skills apply to multiple problem domains would still not support them (or argue for them) as a means for promoting critical thinking in our schools.

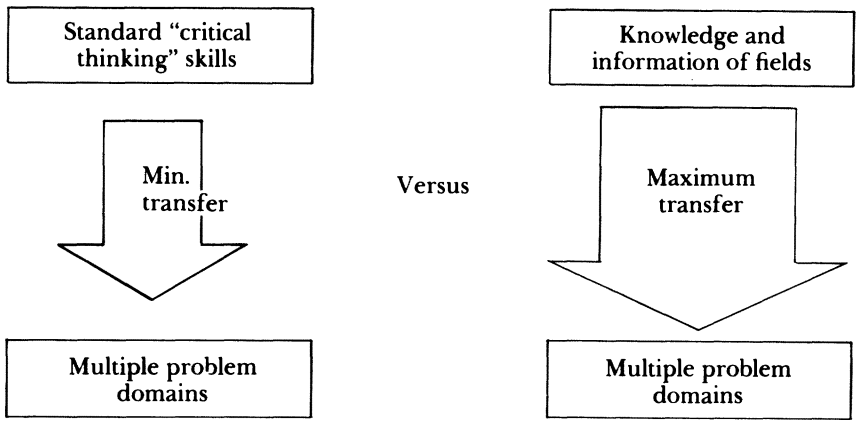
Most important in mastering the general principles of applied logic, or argument analysis, is the maximization of the number of problem areas in which a person can be rationally competent. This goal of maximization, however, is both the major appeal and the major weakness of these general skills. Often, as decision theory predicts, when you attempt to *maximize* one outcome you inevitably *minimize* another. In this sense, the general skills approach to critical thinking represents a classical trade-off. In its effort to maximize the number of areas its general principles apply to, this approach must sacrifice genuine effectiveness in all of them. While its prescriptions are generally true, they are also hollow, more truistic, than true, for example: "Make sure the conclusion follows," "Look out for tautologies," "Is a fallacy being committed?" "Don't contradict yourself." Such sage advice resembles a baseball manager exhorting his pitcher to "throw strikes"!

The ineffectiveness of the general skills approach (i.e., applied logic, etc.) to critical thinking is identical to an endemic difficulty in general problem solving from Artificial Intelligence research. In designing computer programs to solve "ill-structured" or "open-ended" problems, one strategy is to employ certain heuristic devices, or rules-of-thumb, which will suggest plausible solutions. It is axiomatic, however, that the more *general* a given heuristic is, the less *useful* it can be for solving any particular problem. Conversely, the more specific a given heuristic device is, the more likely it is to guarantee solutions for specific problems. Here, perhaps, we have the paradigmatic trade-off relationship. Like the general principles of the standard approach, general heuristics are also hollow and virtually useless for specific problems. Such general heuristics as "Seek plausible hypotheses" are the equivalent to urging the pitcher to "throw strikes!" And heuristic programmers know it. It is time that the so-called "general skills" of the standard approach were recognized for the same deficiency, and for the same reasons. Giving people very general principles for solving problems, even with extensive training in them, is like giving people a language with a *syntax* but no *semantic*. It is functionally meaningless.

PHILOSOPHIES-OF AND CRITICAL THINKING

What strategy, then, might be more conducive for developing the capacity for critical thinking? It was previously said that there is much merit in the standard approach, but that this material might require a significantly

FIGURE 2



different pedagogical approach. First, I would suggest that we discard all talk about "general skills" of critical thinking since it turns out to be a false hope. Second, we need to reconsider the transfer potential of "knowledge and information" to critical thinking. Contrary to the received opinion, it is not at all obvious to me that selected knowledge and information has any less general transfer than the putative skills of the standard approach. Figure 1 presents this view of transfer for critical thinking, while Figure 2 suggests my own converse hypothesis for critical thinking pedagogy.

I have already argued ad nauseum that the standard critical thinking skills cannot be effectively transferred to any significant degree. Specifically, what seems wrong in the standard view is its confusion of "logical subsumption" with "psychological transfer." That is, while it is quite true that the various logical principles "apply," in some sense, to multiple problem areas, we should not infer from this that psychological transfer must therefore take place between these principles and domains. As Scriven once commented about the "new math": one should not confuse the order of logic with the order of pedagogy.

With respect to my hypothesis that knowledge of fields can transfer to multiple problem areas, this is true depending on *what kind* of knowledge one has, and in *what fields*. Clearly, some kinds of specific knowledge and information will have far more transfer capacity than other kinds. For example, understanding that "politicians are sensitive to voting pressures" will have far more transfer than understanding "the cat is on the mat." And one can generalize further that certain fields of knowledge will possess more general transfer than others. The problem, then, is not *whether* specific knowledge and information can transfer, since careful reflection shows that they do, but rather, *what knowledge and information will have the most transfer?*. This question, indeed, is a classical one asked by

philosophers of education since the time of Plato, and it remains as crucial today as it did in the past.

From the point of view of developing critical thinkers, my answer to this question has two distinguishable parts. The first concerns the kind of knowledge likely to be the richest or most powerful from the point of view of transfer. The second, of equal importance, concerns the perspective or attitude taken with respect to that knowledge. This latter dimension is required of critical thinkers because it distinguishes those who merely possess knowledge, in that they might be trained in it, from those who reflectively appreciate the strengths and limitations of their own knowledge – in other words, comprehend all of its tentativeness. Rational beliefs as well as rational methods are fallible, after all, and the critical thinker is acutely aware of how and why this is so.

As to the first part of my answer, then, regarding what particular knowledge is the richest and potentially most powerful, my answer may strike some as insufficiently exciting – such is the grip of our need for novel solutions to old problems. At the moment, however, I see no substitute for a liberal education. In particular, I am discussing the rational perspective which comes from an informed study of the natural and social sciences, together with history, mathematics, literature, and art. We have yet to devise any comparable package yielding the same breadth of cognitive perspective. Whether by design or by folly our education system has been more or less on the right track. In its own stumbling, bumbling bureaucratic way it may be trying to do the right thing. Its failures should not blind us to the potential for success.

This educational point of view is hardly new. I refer you to the work of R. S. Peters, Paul Hirst, and perhaps Jerome Bruner, for a sustained defense of it. What I do want to draw your attention to, however, is the second part of my suggestion for developing critical thinkers, because I think it can go some way toward improving upon our past educational efforts while at the same time establishing a crucial role for philosophy to play in this process.

One of the most pervasive shortcomings of traditional pedagogy is that the material in each discipline is presented in a way that makes facts and methods appear nonproblematic. It is as though the foundations of each discipline were chiseled out of epistemic bedrock, and one need only learn the so-called "facts," and how to use the discipline's methods for finding more of them. Mastery of these disciplines is too often measured in terms of how many "facts" one has learned, and how proficient one has become in using its "method." Both of these are regarded by teacher and student alike as more or less sacrosanct. The all-too-frequent result of such teaching is that we produce technicians at *X* and specialists of *Y* with hardly an educated soul among them. A plausible solution to this problem is to make the philosophy of *X* and the philosophy of *Y* an integral part of what it means to "learn *X*" or to "learn *Y*." Thus, the philosophy of natural

science would be as much a part of science education as Newton's laws. And the insights of the philosophy of history should be as much a part of history as the details of the Monroe Doctrine. If I may use a few personal examples, individuals like R. G. Collingwood, Michael Oakeshott and William Dray might be said to have contributed as much to the study of history as did Samuel Eliot Morrison or Henry Steele Commager. Similar points could be made about the philosophy of art, mathematics, and social science. It should be clear that the philosophy-of approach should not be considered a mere topping-up exercise for the otherwise well-socialized specialist in these disciplines. Rather, the problematic nature of the putative facts and methods of these disciplines should be consciously woven into the fabric of its courses, even at the undergraduate level. In doing so, we would be providing students with the major prerequisites for critical thinking.

This is, of course, only a very general outline of the strategy I suggest for developing critical thinking capacities. Its three major features are: 1/ it does not presuppose any abstract or general reasoning skills; 2/ the employment of the power of the disciplines in order to understand complex concepts and information; and 3/ the dependence upon the philosophy of these disciplines to provide the required critical dimension to one's understanding.

A more detailed implementation of this proposal would point out how each discipline's philosophy could be used to inform the teaching of each discipline. Indeed there are a few (alas too few) works (Scriven, 1966; 1972) which tacitly employ this strategy already. By contrast to Scriven's book *Reasoning* (1976), *these* works properly affix critical reasoning to specific kinds of knowledge and information.

One final feature of my proposal is that the standards and rules of logic, both formal and informal, would play a vital role in the philosophy of each discipline. That is, when the philosophy of *X* is integrated into the subject matter of *X*, a substantial portion of the philosophic insight would consist in commenting upon and criticizing the patterns of reasoning peculiar to the given discipline. Thus the tools and rigour of logic are a major bulwark in coming to a critical understanding of each discipline.

It should be expected, however, that certain types of logic, indeed different insights from logic, will have a greater or lesser role to play depending upon the subject in question. In some instances, formal logic may be virtually irrelevant; in others, understanding certain kinds of fallacies may prove invaluable. But in all instances, the appropriate logic will be a meaningful part of the form of knowledge in question. From this perspective, the use of logic is not an abstract skill, but an integral part of what it means to think rationally in the different fields and disciplines.

It would be fair to say that most of this essay has been spent criticizing the standard approach to critical thinking, especially for not giving due recognition to the complexity and importance of knowledge and information, particularly the knowledge and information derived from the

classical disciplines. If space permitted, one could equally show the many ways in which we could profit from the insights of logicians, both formal and informal. I would like to make it clear, therefore, that I believe the disciplines have as much to learn from the standard approach to critical thinking, as the standard approach has to learn from the disciplines. But unless each camp starts taking the other seriously, we will all stalk our respective beasts, but continue to swat flies.

NOTES

[1] To those tempted to maintain that the phrase "general reasoning ability" is at least *coherent*, possibly on grounds that it remains a perfectly good English phrase, I would argue that: (1) it is so systematically vague that it fails to discriminate any particular cognitive function; and (2) it does not denote any particular skill nor any denumerable set of skills.

[2] For documentation and further discussion of this point see my *Critical Thinking and Education* (Oxford: Martin Robertson, 1981), p. 85.

[3] For example, an assumption of the proposition "Some of us will go home in automobiles" might be that many of us arrived here that way. This *assumption* could in fact be false (e.g., if we took a bus, walked, or biked) yet the proposition is still true. But if the *presupposition* that some of us do in fact go home is false, then the proposition cannot be true.

[4] There are also significant psychological and/or emotive difficulties associated with getting students to be self-critical about their own beliefs and prejudices. However, I am here restricting myself to considerations which fall more directly into the *cognitive* domain (in contrast to the *affective* domain).

[5] Scriven's "principles" are different, but his general strategy is the same.

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Dieser Aufsatz ist eine kritische Betrachtung des sogenannten "kritischen Denkens" und zeigt wie dieser Begriff auf typische Art und Weise mit den Begriffen "Fähigkeit vernünftig zu denken" und "Analyse des Arguments" verwechselt wird. Es wird außerdem bewiesen, daß die Verwechslung dieser Begriffe oft eine grosse Rolle in der Rechtfertigung für Programme in kritischem Denken spielt. Die Funktion des kritischen Denkens in "Alltagsproblemen" wird auch diskutiert, und der Autor bringt die Hypothese hervor, daß das Wissen und die Ausbildung in den traditionellen Unterrichtsfächern mehr mögliche Übertragung hat als direckte Ausbildung in der "Gewandtheit in kritischem Denken".

Este artículo estudia críticamente a lo que se llama "pensamiento crítico", y muestra cómo esta idea se confunde típicamente con ideas tales como "habilidades de razonamiento" y "análisis de argumentos". Además, argüimos que la confusión que existe a este respecto a menudo forma parte de la justificación de los programas de pensamiento crítico. Se discute también el papel del pensamiento crítico frente a los "problemas de todos los días", y el autor presenta una hipótesis de que conocimiento y formación en las disciplinas tradicionales tienen mayor potencial de transferencia que la formación directa en "habilidades de pensamiento crítico".

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