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from the editors

In this first number of Volume II of the ILN, we are pleased to introduce two new features: short articles and discussion notes. The first article is a timely analysis of the inductive-deductive dichotomy by Perry Weddle. This doctrine still captivates the minds of many logicians--a fact evident at the Carnegie-Mellon Conference on "Logic and Liberal Learning", a report on which is included in this issue. The second article is another installment in their continuing series of studies on the fallacies by John Woods and Douglas Walton. This time they've trained their sights on the argumentum ad verecundiam. The discussion note is an intriguing attempted solution to the "Surprise-exam Puzzle" by Harry Nielsen.

In publishing these articles and the discussion note, we hope to stimulate not only thought, but written reactions. One of the more attractive features of this newsletter is its flexibility. Our format is adjustable, and lead time is not that great. This means that we can, and we will, print interesting responses to either article or to the discussion note, together with responses from the authors, if that is appropriate, in the next number of ILN.

Another innovation in this volume will be critical reviews of books on, or related to, informal logic--including textbooks.

Now if we may look back for a moment, to the supplementary number of Volume I, which consisted of a collection of examples of arguments from various sources, that issue was greeted with much enthusiasm. We are minded to do it again this year. But whether we can do so depends on whether we receive enough submissions from you, our readers. If each subscriber were to send us one good example during the course of the year, we would have an abundant supply to share.

We remind our readers that ILN is planned primarily as a clearing-house, for which we editors collect and dispense the material sent to us by our readers. Please: submit to us articles, discussion notes, critical reviews, reports of conferences (past and upcoming), announcements, comments, and queries. We are in this venture to provide a service, but we depend on your support.

articles

"Inductive, Deductive"

Perry Weddle (California State University, Sacramento)

In introducing Prof. Trudy Grovier's comments (ILN i, no. 2, p. 4, "Alternative to the Inductive-Deductive Paradigm") ILN's editors mention "some doubts," which some of us who teach informal logic have, "about the adequacy of the inductive-deductive paradigm and the idea that all arguments fit one or the other of these two paradigms." Grovier mentions a possible third paradigm, Carl Wellman's "conductive." As welcome as controversy over the question of paradigms beyond the traditional pair would be, there exists a prior claim on our energies. For until we become clear that deduction and induction merit classification at all as paradigms of the reasoning we encounter in daily life, we cannot very well debate whether they constitute the only ones, or merely the ones which happen to have been discovered first.

Tradition decrees deduction and induction to be not just two argument paradigms--as silk screen and lithography might be said to be two color print paradigms--but rather to be opposites which bisect all arguments by

means of a single distinction. What the distinction is, however, is not entirely clear. Aristotle (An. Post. 71a 5-8, 71b 15-19) opposes epagoge, "proving the universal from the self-evidence of the particular," and syllogismos, sometimes rendered "reasoning" but by which here he has in mind the syllogism. Possibly adequate for Aristotle's purposes, this characterization cannot stand the general duty to which later generations have called it. It omits much reasoning which has come to be placed on either side of the distinction, and would seem to admit as induction many an argument which fits certain (albeit invalid) forms of the traditional syllogism--any mood claiming a universal conclusion from a premiss pair containing a particular. According to another version of the traditional distinction (e.g., Dr. Whewell, History of the Inductive Sciences, New York, Appleton, 1858, vol. I, pp. 43, 48; e.g., James Edwin Creighton, An Introductory Logic, 4th edn., New York and London, Macmillan, 1922, p. 384), induction draws a universal conclusion from particulars while deduction draws a particular conclusion from the universal. Forecasts, for instance "that an eclipse of the sun will take place on a specified day and hour" (Creighton, p. 385), thus classify as deductive, the opposite of the category in which many others authors place them. (E.g., Bertrand Russell, The Problems of Philosophy, Home University Library, 1912, pp. 60ff; e.g., Irving M. Copi, Introduction to Logic, 5th edn., New York, Macmillan, 1978, p. 378.) Possibly adequate for what interests its exponents, the formation and application of scientific laws, the universal-to-particular versus particular-to-universal version fares no better than its Aristotelian predecessor at the test of general duty, succumbing to certain complaints against the Aristotelian version and omitting from the deduction side of the distinction (as Copi notes, p. 33f.) arguments drawing conclusions from particulars, or drawing universal conclusions.

These distinctions, attempted on the basis of logical form, err basically by omission. Augmented and somewhat redefined, one of them might be made to yield two accurate argument paradigms, deduction and induction, among others, probably many. If so, however, we will have lost the traditional opposition--unless another principle can be found which bisects the paradigms into inductive ones and deductive. Copi (p. 32) offers such a principle. His statement, if I may generalize from my own case, and from the passage having remained virtually intact through all editions, resembles what many of us raised on Introduction to Logic, or living in the shadow of the problem of induction, have said or heard on the subject. Copi writes:

> Arguments are traditionally divided into two different types, deductive and inductive. Although every argument involves the claim that its premisses provide some grounds for the truth of its conclusion, only a deductive argument involves the claim that its premisses provide conclusive grounds...A deductive argument is valid...when premisses and conclusion are so related that it is absolutely impossible for the premisses to be true unless the conclusion is true also. Every deductive argument is either valid or invalid...
>
> An inductive argument, on the other hand, involves the claim not that its premisses give conclusive grounds for the truth of its conclusion, but only that they provide some grounds to support it. Inductive arguments are neither "valid" nor "invalid" in the sense in which those terms are applied to deductive arguments. Inductive arguments may, of course, be evaluated as better or worse, according to the degree of liklihood or probability which their premisses confer upon their conclusions.

The principle has changed from the traditional one of logical form to an epistemological one. Upon this principle deductive arguments are seen to be "radically different from the inductive variety" (p. 378). Copi thus not only escapes the difficulties springing from the profusion of logical forms; he liberates induction from its bastard kinship to deduction, thus allowing induction a full treatment on its own terms.

That Copi's version improves overall on the traditional ones, however, is doubtful. There is, firstoff, that phrase, "involves the claim." A found scrap of paper containing some sentences and then the transition, "therefore, it absolutely must be the case that," followed by another sentence, involves the claim that its premisses provide conclusive grounds for the conclusion. But what precedes and follows the transition could be virtually anything: arguers, not arguments, make claims about their conclusions. (Although arguments may exist without proponents--as in, "There is an argument in what they say, only they don't see it"--that existence is too derivative to include in a general introductory account.) So if arguers make the claims, then claim strength certainly does not separate deductive inferences from inductive ones--as the half-ventured, hyper-qualified demonstrations of the world's Casper Milquetoasts, or the thundering, Q.E.D.-certain generalizings of its Archie Bunkers, need but remind.

The ambiguity about claims is not the only one. Copi seems to intend by "involves the claim" not that an arguer claims something about the conclusion but that the premisses and conclusion just are related in a certain way--a funny sort of thing to be called "claim," granted, but something which does accord with his treatment: if an argument has the relationship then it is deductive; if it falls short then it is inductive. The trouble with this interpretation is the way Copi, far from alone among logic book authors, proceeds when evaluating supposedly deductive arguments. Do the invalid ones become inductive? Of course not, but their status seems to be a limbo. (More about this

presently.)

Copi separates arguments which claim conclusive grounds for the truth of their conclusions from those which claim to provide "only...some grounds." The "some" translates into "liklihood" or "probability." Liklihood and probability also seem poor criteria by which to distinguish deductive from inductive reasoning. The inference, "It is likely that all A's are B's, and X is an A; hence, it is likely that X is a B" seems deductive. And that inference differs little from many which tradition (some tradition) has dubbed inductive, for example, "When a low pressure ridge moves down from the Gulf of Alaska (etc.) we usually get rain the next day, and a low pressure ridge is moving down right now (etc.); hence, it is likely to rain tomorrow." Either inference can be recast as a categorical syllogism according to Copi's directions in the deduction part of his book ("Arguments in Ordinary Language," pp. 224-237).

There are other difficulties. Copi's "only some" category fits many a traditionally deductive inference, for example an invalid syllogistic jump to a universal conclusion from a premiss pair containing a particular. In the syllogism, "Some elms in the County are infected ["at least one," the ones examined], and all infected elms ought to be removed; hence, all elms in the County ought to be removed," the premisses, though failing to provide conclusive grounds for the conclusion do provide some, perhaps the beginnings, of such grounds. The "only some" category, which for Copi includes arguments from analogy, fits other syllogistic forms, too. Barbara in her second figure encompasses many an analogical inference. That Walter Raleigh and whoever wrote the material known as Shakespeare's plays were alike, both being Elizabethan, English, educated, Latin-reading, worldly-wise geniuses, is some grounds, and could lead reasoners, probably has led some, to conclude that Raleigh is the author of that material.

We have yet to inquire what sort of shortcoming prevents inductive inferences from providing the conclusive grounds of deductive arguments. Now of course poor arguments called inductive, based on insufficient evidence, will give only some grounds for their conclusions. But is the same true of the careful ones? Arguers advancing the sorts of analogical, generalizing, causal and authority arguments encountered in daily life will, or should, be careful in (what might be summarized as) two ways. They hedge the conclusion, or they "fill out" the premisses.

When an arguer properly hedges the conclusion of a traditionally inductive argument, the result assumes the role held to belong exclusively to deduction. The meteorological inference above stated a probabilistic connection between its premisses and rain. But the arguer only said that it was likely to rain. The connection between those premisses and the liklihood of rain is not similarly probabilistic. We could not reasonably grant those premisses, understanding meteorology, and yet deny that it is likely to rain. In other words, "it is absolutely impossible for the premisses to be true unless the conclusion is true also."

Perhaps something similar could be said, though less firmly, of a category of inferences which do not exactly hedge their conclusions but whose conclusions are a sort of contingency-situation hyperbole. Consider the following bit of election-day-morning paranoia: "With yesterday's polls showing her maintaining her 18 percentage point lead, with good weather, with nearly all the papers endorsing her, and with interest in the election running high--in other words, with nothing to stop her--March is a cinch to win." The arguer concludes not that March will win but that March is a cinch (a shoe-in, a sure thing...) to win. Being in March's position is being a cinch to win, is just the sort of thing we mean by "a cinch to win." The relationship between premisses and conclusion is tight. Even were March somehow to lose, it would be at least unclear, if not false, that March had not been a cinch to win. Post mortems would contain lamentations like, "Gee, March was a lead-pipe cinch," or "And we had a sure thing, too." Though loaded with irony, such talk nonetheless could be reasonably denied only by doing just what we do in the case of a fizzled valid deductive argument--discovering false premisses. If upon having reasoned that A being older than B and B older than C, A must be older than C, we find that A is not older than C, we check our information. A premiss or more will turn out to be false and the inference itself will remain structurally unscathed.

When a careful arguer "fills out" the premisses of a traditionally inductive argument the result also commonly assumes the characteristics of deduction. "Cinch," "shoe-in," "sure thing," "sewed up" and the like, usually slang or informal, are shaped by environments notorious for the contingency of their outcomes--horse races, athletic contests, elections. The possibility of losing being built into the logic of sure things and the like, their turning out to share territory with obviously hedged terms is not surprising. But suppose that the arguer had said instead simply, "March will win this election." Now the conclusion is clearly shown false by March's losing. Now, at least, it is not "impossible for the premisses to be true unless the conclusion is true also." Or is it? That depends on how the premisses are "filled out." Election outcomes being notoriously contingent, perhaps no set of sufficient conditions can be supplied. But comparatively few results are elections or horse races. Bread rising, roof trusses holding, crops growing, engines running--countless technological familiarities --are so well understood that the conditions guaranteeing outcomes can be fully specified. Occasionally, of course, despite best-laid plans, bread fails to rise, trusses collapse, crops and engines fail. But failure does not show the conclusion and the premisses which

predicted it not to have been watertight. Either a premiss will have been falsified (just as one will have been when the conclusion of a valid traditionally deductive inference turns out to have been a best-laid plan), or else, as occasionally happens, the fizzle will remain a paradox: "Conditions abcd yield e, and though we ascertained abcd, no e! Something must have gone wrong somewhere, but we can't figure out what." That careful investigators never attribute unexplained fizzles to poltergeists or the suspension of the laws of nature is an important feature of the technological stance. This feature, ingrained by experience, far from being dogmatic, embodies a sort of scepticism--not about the certainty of outcomes, as Humean scepticism is, but about procedure. With well-understood technological familiarities, nature is not loose, the inference is not loose; the slack lies in the human component. So this large proportion of arguments called inductive also merits treatment as claiming that it is "impossible for the premisses to be true unless the conclusion is true also."

Other than specifying the sufficient conditions for a well-understood piece of technology, a further way in which so-called inductive arguments assume the characteristics called deductive is by means of the sort of subargument which concludes in effect that what holds for the premisses of the parent argument holds for the conclusion. Such subarguments occur in virtually every carefully-drawn inference called inductive. Consider, for instance, the pollster's claim, "This national sample is representative, for though randomly chosen it breaks down as to age, religion, ethnic background, party affiliation etc. exactly as the nation as a whole." Such subarguments double-check one very specific slice of experience (the sample here) by appealing to a different very specific slice (Census data)--as fundamental and harmless a procedure as backing what was caught in a glance (using eyesight) by looking closer (still using eyesight). The subarguments have the effect of underwriting their parent inferences, which then assume the characteristics of deduction. The polling argument, for instance, could be abbreviated, "Sample S exhibits xyz, and S is representative of the nation, so the nation exhibits xyz," which is deductively valid. In carefully-drawn analogical, causal and authority arguments, too, such subarguments are commonplace; for example, "Watt's recommendations can be trusted, for the people we know who know Watt either professionally, personally or both all attest to his extraordinary integrity," or, "For this class of toxins, reactions in the white rat and in humans, allowing for differences in metabolism and body weight, have been shown to be closely comparable."

Do the subarguments underwrite their parent arguments at the cost of begging the problem of induction? Possibly, since should the problem of induction turn out to be a genuine problem, then all outcomes would be contingent. These pages not being the place to discuss the problem of induction, let it merely be noted that the subarguments differ radically from the so-called premiss of induction, which states in general that unexamined cases will always turn out to be like examined cases--a claim which (if it can be understood) is false. (In fact the premiss looks suspiciously like something cooked up by inductive sceptics precisely to beg the question.) In any case, should the problem of induction turn out to be for real, it will not effect the inductive-deductive distinction for us. The arguments encountered in daily life, the ones in which the truth of the premisses matters, draw on general premisses. And how does one arrive at those? Indeed, premisses like "All men are mortal," which numberless generations have invoked to underwrite the mortality of poor Socrates, would seem to furnish prime examples of the sorts of propositions which require the so-called inductive leap.

But not all deduction is categorical. Given that the problem of induction is genuine, however, even hypothetical deduction, in which, if anywhere, we would see deduction pure, would be infected with inductive "assumptions." For if such matters as the sun's rising tomorrow, or terra remaining firma beneath our next pace are contingent, then would not, say, the coupling condition in deduction also be contingent? If without begging the question we cannot demonstrate that the sun will rise tomorrow, then without equally begging it we cannot demonstrate that "mortal" keeps the same meaning from its occurrence in the antecedent of the Socrates argument recast in the hypothetical mode, to its (its?) occurrence in the conclusion: if tomorrow's sunrise requires the inductive leap, then so would today's demonstration.

So if the foregoing remarks come close to the mark, then some traditionally inductive and some traditionally deductive arguments provide conclusive grounds for their conclusions and some do not. Relative claim strength fails to distinguish. It is tempting to say that what distinguishes deductive from inductive arguments is the sections of logic books in which they happen to be found. Wild though that exaggeration may be, it conceals a measure of truth, for if a distinction must be made it would be in the way arguments are treated. Rather than examining two batches of arguments, the deductive ones and the inductive, we examine two aspects of a single batch. If arguers sometimes err by affirming consequents, not distributing middles, or misreading a sample's mathematical probabilities, then we must examine the proper relation of premisses to conclusion. And if they sometimes err by misrepresenting the facts of the case, or proceed as if what is controversial is settled, or as if what has little bearing on the issue has great bearing, or build on prejudice, then we must

examine the relation of the premisses to the world which occasioned them. To call the difference between these two ways to examine reasoning the difference between formal and informal logic might be useful. But doing so would oversimplify and risk another troublesome distinction or variant of an old one. And with 2,000-odd years behind it our craft already has distraction enough.

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"What Type of Argument is an Ad Verecundiam?"

John Woods (University of Lethbridge)
Douglas Walton (University of Winnipeg)

Elsewhere[1] we have stressed the need, in teaching informal logic, to include in the logical repertoire the skill of discerning the type of argument that the student is to evaluate. For if there is more than one type of argument, as we believe, the correctness or incorrectness of an argument may vary with the factor of type. For example, if there are inductively correct arguments, some of them (perhaps even all of them) may be deductively incorrect (invalid). Consequently, neglecting this type of distinction could spawn many a fallacy. For example, a systematic sophist might take one's correct inductive arguments and rule them deductively incorrect, ergo bad arguments. For all their deductive incorrectness they may be perfectly good arguments, taken as what they were meant to be, i.e. inductive arguments. Thus the sophist's ploy is based on a true premiss of deductive incorrectness, but it is a sophistical refutation because it equivocates on the factor of type.

This factor of type is particularly critical in teaching the evaluation of arguments ad verecundiam. It has sometimes been thought reasonable that appeals to authority can be a legitimate type of argument--that is, not always fallacious--but rather fallacious only given that certain conditions of the appropriateness of the appeal fail to obtain.[2] Even so, one may ask--what type of argument is involved? Hamblin (1970, p. 218) suggests that we could start from the valid argument, "Everything X says is true, X said that p, therefore p," and expect to find weaker but still not fallacious forms of argument where premisses of the form "X is an authority on facts of type so-and-so" lend some support to p. Salmon (1963, p. 64) asserts however that the appeal to authority is not deductively valid, for the premisses could be true and the conclusion false--no authority, by these lights, is infallible or omniscient. Rather, according to Salmon the appeal to authority may be inductively correct if it has this form: "The vast majority of statements made by X concerning subject S are true. p is a statement made by X concerning subject S; therefore p is true."

Who is right? Is the ad verecundiam a type of argument that can be either deductive or inductive, is it perhaps inductive but never deductive as Salmon urges, or could it be something else altogether, neither deductive nor inductive in character? These are fundamental questions for anyone who would want to find ways of teaching students to identify and evaluate the ad verecundiam.

Two fundamental characteristics of appeals to authority should be brought forward at this point. First, ad verecundiam, like its partner in crime ad hominem, is subject-based. That is, what one authority X asserts may in general be different from or even contradictory to what is asserted by another authority Y. Second, ad verecundiam is subject-matter-sensitive. That is, an authority's pronouncement that p may be correct or not depending on whether or not the subject-matter of p is one in which the putative authority is indeed a legitimate expert. Since neither the subject-based or subject-matter-sensitive characteristics are true of the standard or classical approaches to the logic of either deductive implication or inductive conditionals, it seems reasonable to think that there may be some deeper reasons why the ad verecundiam can be neither deductive nor inductive as a type of argument. But how could it be proved?

We would now like to introduce the thesis that arguments ad verecundiam could be of a type that is neither inductive nor deductive, and suggest that the required type is that of the plausible inference of Rescher (1976). Plausible reasoning comes to bear on cases of informational-overdetermination, e.g. inconsistency, where we have too much information and have to decide what must be given up. Characteristic therefore of the case of plausible reasoning is the less than total veracity of our sources, for in an inconsistent pair of pronouncements, one source must be wrong. In this climate, neither deductive nor inductive inference is à propos, and in fact Rescher proves that the required type of argument can be neither deductive nor inductive.

Here are the essentials of the proofs given in Rescher (1976, p. 2ff.). If the inference "X (a generally veracious but imperfect source) maintains p, therefore p" were deductively valid, then so would the following inference be deductively valid for some other generally veracious but imperfect source Y: "Y maintains $\neg$ p, therefore $\neg$ p." But if both inferences are indeed deductively valid then from "X maintains p" and "Y maintains $\neg$ p" it follows that p $\wedge \neg$ p is true. Clearly this consequence is absurd however, for merely because authorities maintain