

Book Review

Aristotelian Logic by William T. Parry and Edward A. Hacker

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First the good news. There are still logicians who are interested in giving serious attention to the kind of logic Geach says is only taught in "Colleges of Unreason". That logic is traditional Aristotelian syllogistic. Such logic has been out of favour for about a century now. The hegemony of Fregean first order predicate logic has left little room for traditional logic to have more than a tenuous toe-hold on the field. Geach and other champions of the new logic feel little has been lost and much gained by the Fregean revolution in logic. But the fact is that Frege's new world is not paradise. An increasing number of philosophers are recognizing this fact. A logic built initially to account for inferences made in the medium of a mathematical language has turned out to be a poor fit for inferences made in the medium of ordinary language. What is wanted of course is a logic of natural language. Today's standard logic may claim to be the (hidden, underlying) logic of natural language, but even its friends must concede that in playing such a role either the logic or natural language must be compromised. For all its shortcomings traditional logic was at least *natural* (i.e., a logic of natural language). And that old logic, in spite of the awesome

power and prestige of the new logic now in place, still has friends. The authors of the present book, Edward Hacker and the late William Parry, are friends of Aristotelian logic.

Now for the bad news. No logic will ever be considered a serious alternative to the standard mathematical logic which cannot, at the very least, come close to matching the standard logic's inference power. In fact friends of traditional logic must be able to offer a greatly strengthened version of their logic which gains that strength without compromising on its algorithmic simplicity and its naturalness. An unaugmented Aristotelian syllogistic, while far more natural than Fregean predicate logic, is simply too weak to warrant candidature alongside its rival. For, as it stands, none can gainsay the fact that most of what was of value in the old logic has been incorporated into the new. Friends of syllogistic would do well to look to a future strengthened syllogistic while preserving the glories of the pre-Fregean past. Parry and Hacker have done a good job of retrieving and re-presenting the old Aristotelian logic. Unfortunately, that's not enough anymore.

Of course, it's not nothing either. *Aristotelian Logic* is a step in the right direction. It is meant as a textbook for a first year course in logic. This means that what the student is given is training in the use of a system of logic which is natural, close to the language used by the student himself or herself. The text is divided into five parts

(the sixth part, on the development of today's logic, is too brief and superficial to count for much at all). Part I introduces basic, general logical concepts, Part II introduces basic concepts in Aristotelian logic, Part III is on immediate inference, Part IV on syllogisms, and Part V on informal fallacies. This is not a bad structure for such a text. Indeed, it's fairly standard. However, there are a couple of anomalies. A chapter on negative terms (in Part III) and one on singular propositions (in Part IV) deal with topics which are basic and general enough to warrant a much earlier treatment. Their natural home should have been in Part I. And this is not just a trivial matter of organization, for, as we will see below, there is more than a little confusion surrounding these two issues (especially negative terms), which could have been reduced or even avoided by treating them clearly and thoroughly at the outset rather than in *medius res*.

While I have complaints or reservations concerning most of the thirty-five chapters, this is a big book and limitations of space dictate that I confine my remarks below to only some of the more important issues. I divide my comments into five parts, corresponding to the five parts of the book mentioned above.

Part I. The authors claim (11) that whether an argument is valid or invalid is an objective matter. On the other hand, whether an argument is deductive or inductive is subjective, "depending upon the intention of the maker of the argument". This simply will not do. The student is told that whether or not an argument is deductive depends upon the intentions of its maker and then throughout the book is offered a huge number of sample arguments which he or she is expected to take as deductive without knowing the intentions of their makers. Moreover, the student will be tempted to wonder just what kind of intentions are the ones which render an argument deductive. Are there many such kinds or only one? The safest way here is simply

to tell the student that there is an implicit claim made whenever an argument is used deductively (viz., 'If you accept my premisses you *must* accept my conclusion'). The authors have, however, preempted such an account by equating asserting a proposition with asserting its truth (160).

The discussion of terms (chapter 4) is loaded with traps for the uninitiated. Some of the kinds of terms defined here (56) are far from clear. The definitions shed no light. Thus: "A plural discrete term is a discrete term that names a collection of objects taken as explicitly plural"! And: "A non-collective term is a term that is non-collective"! If the definitions of types of terms are less than helpful the account of the semantics of terms (59ff) is worse. Here the student learns that a term can *name* an object or objects, *apply to* an object or objects, *denote* an object or objects, denote the *class of real* objects which it denotes, and *extend over* the class of objects to which it applies. Moreover, a term is said to *intend* a property or set of properties, and such an intension may be *conventional*, *subjective*, *analytic*, or *total objective*. Oh yes—it has a *connotation* as well. Getting clear about the semantics of terms is an essential part of introducing traditional logic (which is, after all, a logic of terms) to students. But it must be done in such a way that it appeals to some common intuitions and understandings already held by the student and builds upon these a simple but systematic account of term-meaning. This chapter can do nothing but confuse the student.

By now, only one seventh of the way through the book, the student has already been given eighty-one formal definitions. He or she now faces an entire chapter (chapter 5) devoted to defining definition—in no less than thirty-seven ways! At the very least one could say that the treatment of definition here is complete. But it is pretty much a matter of overkill. Can the student seriously need this: "A facetious (or humorous) definition

is a definition or pseudodefinition that is not intended to be taken seriously and literally, but is intended to amuse" (97)?

Most books on traditional logic do not even mention the topics of division and classification. Parry and Hacker have chosen to include a discussion of these (chapter 6) because (i) division is a formal process, (ii) division and classification must be involved in any exposition of logic, (iii) division is related to definition, and (iv) historically, the method of division led to the syllogistic. However, if all this is so (and it is), making division and classification logically important topics, one wonders why division and classification are never heard of again in the remainder of the book.

Part II. The chapters in this part deal with some of the basic concepts of traditional logic: categorical forms, the square of opposition, existential presupposition, distribution and conversion. Much of this is good and clear (especially chapter 8 on the square of opposition). Still there are problems, some of which are the result of the authors' failure to get clear about negation until it's too late. The account of the parts of a categorical (145-48) in chapter 7 is very tangled. On the standard account a categorical consists of a subject and a predicate. A subject consists of a quantifier (universal or particular) and a term. A predicate consists of a qualifier (affirmative or negative) and a term. Part of the standard account also involves taking the qualifier as a copula (though this is a mistake introduced by Abelard; see G. Englebretsen, "A Note on Copulae and Qualifiers," *Linguistic Analysis*, 20 (1990)). Parry and Hacker only deviate from the standard account with the O categorical. Here the authors take the 'not' to be part of the quantifier rather than the qualifier (145). This is necessary because they take the copula (i.e., qualifier) to consist only of forms of the verb 'to be' (146). So there are two particular quantifiers: 'some' and 'some ... not' (148). Moreover, the authors insist on taking 'no' (as in the

E categorical) to be a universal quantifier along with 'all'. This is a common, but nonetheless erroneous, move. 'No' is no quantifier. It is simply a contraction of 'not some', where 'not' is a mark of sentential negation and 'some' is the (only) particular quantifier. This confusion comes back to plague the authors in their discussion of obversion in Part III (chapter 13). Failure to be clear about 'no' has been the source of many wrong ideas about term logic (on the part of both its enemies and its friends).

Chapter 10 offers a fairly good account of distribution. However, the definition of a distributed term (193) means that a term, T, will be distributed in a proposition, p, if and only if an infinite number of propositions having a subterm of T substituted for T in p are true (since for any term there are an infinite number of subterms). But it is the second appendix to this chapter which is most disturbing. There Parry and Hacker offer an account of distribution in terms of identity. The historical precedents for this are found in Leibniz and Hamilton. The idea is to give the predicate-term of a categorical proposition a quantifier so that its distribution value (like that of the subject-term) can be immediately determined by the quantifier (universal = distributed, particular = undistributed). The trick is to read the qualifier (viz., Parry and Hacker's copula) as an expression for identity. Thus '...is P' becomes '...is identical with some P'. But there are two bad things about such an idea. First, '...is identical with' is itself a (relational) predicate, so that its copula can also be replaced to yield '...is identical with some (thing which) is identical with' *ad infinitum*. Second, identity itself, when viewed as a relation, has no place in a genuine logic of terms. This point has been argued extensively by other contemporary friends of syllogistic logic (see especially F. Sommers, *The Logic of Natural Language*, Oxford, 1982).

Part II ends with chapter 11 on conversion. Here the authors raise the question (207) of whether an O categorical has a

converse. This will depend upon whether its predicate-term is taken as negated or not: 'Some S aren't P' or 'Some S are not-P'. Only the second form yields a converse: 'Some not-P are S'. But this entire business can only be straightened out, and make sense to the student, *after* negative terms have been dealt with.

Part III. It is only here, in chapter 13, that the student finally is introduced to the important topic of negative terms. The whole topic of logical negation is complex (see L. Horn, *A Natural History of Negation*, Chicago, 1989), so that it is critical that special care be taken when introducing negation to the novice. Modern mathematical logicians take all negation to be sentential. But the fact is that in natural languages terms as well as sentences are negated. Indeed, a term logic cannot possibly avoid recognition of at least term-negation. Aristotle recognized two kinds of negation: terms can be negated and predicates can be denied (of their subjects). While a given term may have any number of terms corresponding to it which are contrary to it (thus corresponding to 'red' are 'white', 'blue', 'green'..., and corresponding to 'male' is 'female'), every term has exactly one logical contrary ('red'/'nonred', 'male'/'nonmale'). This distinction accounts for the traditional distinction between the logical contrary of a proposition and its logical contradiction. For example, 'Every S is P' and 'Every S is nonP' are logical contraries. Two propositions are logical contraries if and only if they are exactly alike except that the predicate-term of one is the logical contrary of the predicate-term of the other. On the other hand, 'Every S is P' and 'Every S isn't P' (= 'Some S is not P') are contradictories. Two propositions are contradictory if and only if they share a common subject but one affirms while the other denies a common predicate-term of that subject. And to deny a term of all/some of something is to affirm its negation of some/all of that same something.

To be fair to Aristotle, he never actually held a theory of logical syntax which parsed propositions as subjects and predicates. He usually read categoricals as follows: 'P belongs to every S', 'P belongs to no S', 'P belongs to some S', and 'nonP belongs to some S'. Here a pair of terms is connected, joined by an expression whose only logical duty is to connect, i.e., literally a logical copula.

The proper way to view logical syntax for a term logician is to see all terms as coming in *charged* pairs (positive/negative); complex terms are seen as pairs of charged terms connected by a logical copula. Complex terms are themselves terms and thus charged. Compound terms, relational terms and sentences themselves are complex terms. Sentential negation, then, is simply the negation of a (sentential, complex) term. Two sentences which differ only in charge are contradictory.

Getting clear about logical contrariety (in terms of term negation) and contradictoriness (in terms of sentential negation) are essential first tasks in getting clear about any logic of terms such as Aristotelian syllogistic. Parry and Hacker offer an account of negation which not only comes too late but is unacceptably muddled. They begin with a distinction between what they call "contradictory terms" and "contrary terms" (216). A pair of terms is said to be contradictory "if and only if by virtue of their meaning alone each and every entity in the universe must be named by one or the other but not both". (Note that neither naming nor the concept of a universe of discourse have yet been introduced to the student.) The term 'non-T' is the contradictory of the term 'T'. And two propositions are contradictory whenever their predicate-terms are contradictory. Thus 'John is a mathematician' and 'John is a non-mathematician' are contradictory. But what about 'Some man is a mathematician' and 'Some man is a non-mathematician'?

Aristotle said in *On Interpretation*, 23b23-24, that "contraries belong to those things that within the same class differ most". He had in mind there lists of non-logical contraries (e.g., 'red', 'white', 'green'...) arranged so that the members that differed the most were at the extremes (in this case, for him at least, 'black' and 'white' were the extremes). But in *Metaphysics*, 1055a34, he said that "the primary contrariety is that between a positive state and privation". It is only the "primary contrariety" (what I called "logical contrariety" above) which is of logical import. Parry and Hacker seem to be defining Aristotle's earlier, nonprimary contrariety when they write: "Two general terms are contraries if and only if, by virtue of their meaning alone, they apply to possible cases on opposite ends of a scale. Both terms cannot apply to the same possible case, but neither may apply" (216). But their example, 'kind'/'unkind', seems to answer to primary, logical contrariety. The whole business about opposite ends of a scale, etc., is confusing and, as Aristotle saw, has no place in logic.

The student looking for light here will be disappointed. For the confusion only increases. "Inconsistent terms" are introduced (these simply seem to be nonlogical contraries), and later, after introducing the notion of a universe of discourse, "complementary terms" are defined (in effect as contradictory pairs of terms over a given universe). Parry and Hacker have confused the syntactic criterion for contradictoriness (viz., presence of an explicit sign of negation, 'non') with the semantic one in terms of truth (i.e., set complement). In effect they distinguish two kinds of term negation: contrariety (un) and contradictoriness (non). What is needed instead is a systematic theory of negation in general which will then allow (i) term negation (logical contrariety), (ii) sentential negation (contradictoriness), and (iii) denial, thus distinguishing between (a) 'x is nonP', (b) 'Not: x is P', and (c) 'x isn't P'. This would then

be supplemented by rules governing the logical relations among such propositions (e.g., rules governing double negation, entailment—of, say, (b) by (a), etc.).

I will not examine the confusion in this chapter on negation about universes of discourse, but the whole discussion of negation is far from helpful. The confusion manifest here has subtle but important consequences for Parry and Hacker's entire theory (cf. the later account of term reduction (321)).

Chapter 13 is on obversion. Here (228) the authors hold that A and E propositions are not to be obverted as 'No S are not P' and 'All S are not P' respectively. Their claim is that these latter forms are "not standard forms"; the 'not' in each case must be replaced by 'non'. Yet their definition of contradictory terms in the preceding chapter seems to allow both forms. Moreover, the student needs a better reason than "it's not standard form" for not taking E to be obverted to 'All S are not P' and A to be obverted to 'No S are not P'. The problem again is the word 'no', which is no quantifier.

Chapter 17 considers relationals. The charge that traditional logic offers no means of adequately analyzing inferences involving relational expressions was one of the main reasons used to replace the old logic with mathematical logic. The fact is, however, that Leibniz and De Morgan both made serious, and partially successful, attempts to incorporate relationals into syllogistic. The essential requirement for such an expansion of syllogistic is a way of logically parsing relational statements as categorical. This can be done (and has been done by Sommers, *op.cit.*). Parry and Hacker see no way to do this systematically. They are particularly worried by what linguists now call "passive transformation" (e.g., from 'Brutus stabbed Caesar' deduce 'Caesar was stabbed by Brutus'), which holds when the subject and object terms are singular, but may not hold when these are quantified (general) terms. At this

point the curious student would naturally suspect that there is an importance to the singular/general distinction which has not been fully revealed. The wise choice for one introducing traditional term logic to the novice is either to take the bull by the horns and try to give a systematic account of how relationals are incorporated into the rest of the logic, or to concede relationals as beyond the scope of the exercise. Parry and Hacker have not made this choice, offering instead a brief, unsatisfactory account of relationals, which raises many questions but answers few.

Part IV. The chapters in this part cover syllogistic arguments. What is amazing is that for a book called *Aristotelian Logic* only about one-fifth (one hundred pages or so) is devoted to syllogistic inference.

Parry and Hacker attempt to incorporate singular propositions into syllogistic in chapter 24. But, again, the result is less than satisfactory (either for the student or the logician). The full incorporation of singulars requires an account of two things: (i) the quantity of singular subjects and (ii) the predication of singular terms. Scholastics generally accomplished the first of these by taking such subjects to be implicitly universal in quantity (since singular subjects are distributed). Leibniz suggested that singular subjects be taken as implicitly both universal and particular. Parry and Hacker take the scholastic position, but try to rationalize it by parsing such expressions in terms of identity. Thus 'Socrates is running' becomes 'All objects identical with Socrates are running'. Identity is a concept still in need of explanation for the student. Moreover, when it comes to formulating propositions which are, on today's analysis, overtly identity statements (333), e.g., 'Tully is Cicero', the parsing of singulars in terms of identity simply compounds confusion. 'Tully is Cicero' becomes 'All objects identical with Tully are all objects identical with Cicero'!

The proper way in all this is to (a) follow Leibniz's suggestion about the

quantity of singular subjects, allowing them what has been called "wild quantity" (Sommers, *op.cit.*), and (b) deny any logical (syntactic) distinction between singular and general terms, allowing singulars to be predicated without first turning them into generals (either by Parry and Hacker's method or by Quine's "pegasizing" method). (See Englebretsen, "Singular/General," *Notre Dame Journal of Formal Logic*, 27 (1986).) The authors come close to recognizing the wild quantity of singular subjects several times (especially in notes 4, 5, and 6 of this chapter), but they do not, in the end, even see that it is a viable option. A sentence like 'some philosopher is not Socrates' (335 and note 6) illustrates the need for (a) and (b) above. The sentence explicitly denies a singular predicate-term of the subject. It is equivalent by conversion to 'Some (one who is) not Socrates is a philosopher' (i.e., 'Some one other than Socrates is a philosopher'), whose singular subject is particular.

Chapter 25 deals with how to standardize propositions to yield canonical categoricals. What is required here, and is missing, is a systematic explanation for the standardizations which Parry and Hacker offer (e.g., of such expressions as 'none but', 'only', 'unless', 'not all', 'not only', 'not any', etc.). Just one example (343): 'Not only S are P' is standardized (without explanation) as 'Some P are not S'. A rational standardization would, however, go something like this: 'Not' here is a sign of sentential negation; 'only' is brief for 'no non'; in turn, this 'no' is brief for 'not some', where 'not' is again sentential negation. This yields: 'Not (not (some nonS are P))', i.e., 'Some nonS are P', which can be converted to 'Some P are nonS'. But such an explanation would require a clear account of sentential negation and a recognition of the proper syntax of O categoricals—two things not found in *Aristotelian Logic*.

I must not leave Part IV without mentioning that chapter 20 offers exceptionally

clear and useful discussions of reduction, counterexample and mnemonic names. Chapter 21, on the rules of standard syllogisms, is also quite good. However, the introduction of the distinction between the antilogism and the antilogistic triad is unnecessary and confusing for the student. Indeed, the student is never given any motivation for ever opting to test an antilogism rather than the syllogism itself.

Part V. Chapters 31 to 34, consisting of about eighty pages in all, constitute perhaps the best brief introduction to the topic of informal fallacies now available.

Arguments represent attempts to prove a conclusion to a given audience. Failure to so prove is due to some kind of error or fallacy. Parry and Hacker give (411-12) five criteria for a successful argument: (1) it must be intelligible to the intended audience, (2) its validity must be recognizable by the intended audience, (3) its premisses must be acceptable by the intended audience, (4) the audience must be able to recognize that the thesis being argued for follows from the argument's conclusion, and (5) the frame of reference of the argument must remain constant throughout the argument (where the frame of reference consists of (a) the presuppositions, prejudices, knowledge, etc. of the proponent, (b) the presuppositions, prejudices, knowledge, etc. of the audience, and (c) the domain of discourse, viz., the realm of learning upon which the argument depends).

An unsuccessful argument is one that goes wrong in failing to satisfy one of these criteria. Thus there is a kind of fallacy corresponding to each criteria. This way of classifying fallacies is not perfect, as Parry and Hacker admit, but no such classification is. It has the advantage of being a reasoned classification and preserving much of the tradition (e.g., Aristotle's division between linguistic and nonlinguistic fallacies, though the class of linguistic fallacies becomes quite fragmented in Parry and Hacker's theory).

Arguments which fail to satisfy either criteria (3), (4) or (5) commit contextual fallacies. Arguments which fail to satisfy criterion (2) commit fallacies of validity. Such arguments are either invalid or their validity is unrecognizable. If they are invalid then they either commit a formal fallacy or one of two kinds of linguistic fallacy: (i) fallacies of ambiguity: equivocation, amphiboly, division, composition, stress, and qualification; and (ii) fallacies of grammatical analogy (figure of speech). Arguments which fail to satisfy criterion (1) commit a kind of linguistic fallacy: either one or more of the sentences in the argument is not a proposition (in which case the argument is a "pseudoargument"), or the argument is unintelligible to its audience (though not necessarily its proponent).

Contextual fallacies include those due to unacceptable premisses (question begging, unsupported premisses), those due to a conclusion-thesis gap, and those due to illicit metabasis, or shifting frames of reference.

In the first three chapters of Part V Parry and Hacker have offered a classification of fallacies in terms of the kinds of criteria for successful argument which are violated. In the final chapter of this part they provide a second classification based upon the recognition that every use of an argument is an attempt on the part of the proponent to persuade the intended audience. "Every attempt at persuasion is based on an appeal to some authority, principle, or psychological faculty that the persuader thinks will prove effective" (463). Some appeals are legitimate. Parry and Hacker classify the ones which are not, the illicit appeals. The broad classification is into five kinds: appeals to adverse personalities (e.g., charges of bad motive, charges of personal defect, *tu quoque*, etc.), appeals to authority, appeal *ad ignorantiam*, appeal *ad misericordiam*, and appeal *ad baculum*. There is also a nice brief appendix on the history of *argumentum ad hominem*.

Before concluding I must say something about the editing of this book. First, it needs a bibliography. There are a dozen or more citations in the Notes which are incomplete in one way or another. Indeed, there are some notes which are just confusing, absent, incomplete, or misplaced. Also, there is a large number of printing errors (though perhaps not more than one would expect for a book this size). There are lots of good, well thought out exercises at the end of each chapter. And in spite of the generally negative tone of my remarks

above, the book is generally well written and lively. Still, in the context of today's logic, an attempt to lead students to an older, more traditional system of logic (even if it enjoys certain advantages over the one now in place) must be better than this if it is to be taken by logicians and teachers of logic as a viable alternative.

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