

points of interest. One significant drawback is that the book is often disorienting. Precisely because Fuller ranges widely from a novel point of view, it is easy to lose track of his line of argument, and of what is at issue at any specific point in the book. Careful reading and reflection can usually overcome these problems, but it is a pity that Fuller didn't use the new edition to provide more guidance to readers in situating each section within the overall argument.

The new edition does include an entire new chapter that provides a helpful introductory "map of the field" in philosophy of science, and a brief coda responding to some critics' questions about the original argument. The main text has also been slightly revised and expanded.

Notes

¹Ronald Giere, *Explaining Science: A Cognitive Approach*. Chicago: University of Chicago Press, 1988.

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Dialectic and its Place in the Development of Medieval Logic

ELEANORE STUMP

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For anyone concerned with the history of Medieval logic, particularly early Medieval logic, this book is indispensable. It deals with areas of Medieval logic that have typically been neglected. Eight of its twelve chapters are devoted to the doctrine of the topics or places of invention. This doctrine was central to logic in the early Medieval period, until about the end of the twelfth century, declining in importance during the later middle ages, when interest shifted to the doctrine of the properties of terms, and in particular to supposition. The topics were to become a principal concern in logic again during the Renaissance, but that is beyond the scope of Stump's book. The topics or places of invention are part of informal logic, arguably an unjustly neglected part, concerned with how reasons to support or oppose a given thesis are to be found. Those interested in informal logic would likely find it profitable to become more familiar with this subject. Three of the four remaining chapters in Stump's book are devoted to the theory of obligations, a subject of great theoretical interest, at once puzzling and fascinating, but of little practical significance. The last chapter is a brief account of Ockham's views on a number of the principal subjects of the book.

Throughout this book is a collection of papers most of which have been published

in some form previously, it is nonetheless remarkably unified. It is notable both for showing extensive historical knowledge and for treating historical issues with great sensitivity. Yet this is a book which is clearly in the analytic tradition, as noteworthy for the acuity of its philosophical analysis as for the depth of its historical insight. Also, though the material dealt with is often quite difficult, this book is striking in its clarity of presentation. Finally, while one would not necessarily endorse all of Stump's interpretive conclusions, her views are consistently well considered.

The first chapter concerns Aristotle's account of the topics. The chapter has two objectives. One is to explain what a topic is for Aristotle; Aristotle himself says very little about what he supposes the nature of a topic to be. The other is to answer a common criticism of Aristotle account, that his list of topics is long, disorganized and ultimately unmanageable. She argues, persuasively, that topics for Aristotle are basically strategies or blueprints for argument. Also while Aristotle recognizes hundreds of topics, they are organized around the predicables, constituting, as it were, a theory of the predicables. So that the aim of the topics is to provide a thorough understanding of the predicables, and therefore of predication, enabling the reasoner to increase his skill in argumentation. This does seem to make more sense of Aristotle's treatment of the topics than any other account we know.

The second chapter is devoted to Boethius, whose view of the topics is very different from that of Aristotle. Boethius was the principal ancient source for knowledge of the topics during the early Medieval period, at which time Aristotle's account was imperfectly known, if known at all. Boethius recognized two kinds of topics. The first are called 'maximal propositions' or, more simply, 'maxims', the function of which is, according to Stump, to validate inferences by producing belief with respect to what is in doubt. She also suggests that they could be used to guarantee the soundness of inferences, but, except in trivial cases, this seems to be a mistake. A maxim guarantees the soundness of an inference if and only if it guarantees the truth of all other premises of the inference, making them all logical consequences of the maxim and so unnecessary to the inference, with the result that the conclusion is a logical consequence of the maxim alone. The topics of the second kind are *differentiae* of maxims or maximal propositions. These topics are very general attributes, such as 'genus', 'whole', 'effect', and so forth. By considering these attributes, we are able to come up with arguments to support or oppose a thesis. There will be arguments from genus, from the whole and so forth, each validated by some appropriate maxim. The purpose of the *differentiae* is to organize thought in such a way as to enable us to find such arguments.

The doctrine of the topics, we learn, was a central concern in logic in the early Medieval period. The principal representatives of this period, in Stump's book, are Garlandus Compotista and Peter Abelard. Garlandus, Stump indicates, sees all arguments as instances of modus ponens or modus tollens, its premises consisting of a conditional proposition and one that is categorical, yielding a categorical conclusion. The role of the topics is to furnish the conditional proposition. The conception of the topics which Garlandus uses is that of Boethius with its two kinds of topics, maxims and *differentiae*. The conditional premise is found by consideration of the *differentiae* and justified by an appropriate maxim. Thus one might show that a wall of a house is white by the following argument from the integral whole: if the whole house is white

the wall is white (because what is true of an integral whole is true of its parts); the whole house is white; so the wall is white. Abelard does not hold that all inferences involve the topics. Perfect inferences, basically categorical syllogisms, are purely formal and have no need of the topics; the topics are needed to justify imperfect inferences, whose necessity depends upon the nature of things. Some differentia must apply and the inference must be justified by some maxim. Thus the topic 'from the genus' justifies the conditional 'if something is a man, it is an animal', because (1) 'animal' is in fact a genus of 'man' and (2) whatever the species is predicated of, the genus is predicated of as well.

Interest in the topics appears to wane during the thirteenth century, when, Stump argues, topical inferences come to be seen simply as enthymemes, syllogisms with missing premises, it being the role of the topics to provide these premises. There would be no revival of interest in the topics in the remainder of the Medieval period. During the late thirteenth and early fourteenth century Stump argues, there was what she characterizes somewhat strangely as a "decline in Aristotelianism," but she means by this only that during this period there was a decline of the status of the syllogism in favor of the more general notion of valid consequence. The rest of Stump's book is largely concerned with quite a different subject, the theory of obligations.

Obligations are disputations in which the respondent is required to maintain as true a position which is in fact contingently false, maintaining as true every consequence of this position and as false any proposition inconsistent with it. Propositions which are irrelevant are to be granted if known true, denied if known false and doubted if not known either to be true or false. There is no record of any actual disputation ever carried out under these rules, so this subject does not seem to have been studied for practical purposes. Like the study of sophisms and insolubilia with which it was in fact connected, it seems to have been an important tool for the development of logical theory. As it stands, if one proposes the right false proposition, then the conditions specified above can be shown to be inconsistent. This led to a revision of the conditions. At any rate, the subject is fascinating and one could not ask for a better introduction to it than Stump here provides. In fact, although the book is by no means introductory in nature, because of its lucidity and its non-technical nature, it could serve as an excellent introduction to Medieval logic in general. Certainly, anybody interested in Medieval logic should read this book.

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