COMMENT AND RESPONSE

A CRITICAL RESPONSE TO MATTHEW C. ALLEN

Megan Huey
Furman University

Matthew Allen's essay "The Rhetorical Situation of the Scientific Paper and the 'Appearance' of Objectivity" in Volume 2 of *Young Scholars* explores the idea that rhetoric is at the center of the scientific article. Allen bases his argument primarily on the definitions and theories of contemporary rhetorical scholars, including John Schuster and Richard Yeo and Lloyd Bitzer. Building on Allen's application of contemporary rhetorical theory, I would like to suggest that an Aristotelian model of rhetoric further supports the idea that the scientific paper is persuasive.

In his work *On Rhetoric*, Aristotle defines rhetoric as "an ability, in each [particular] case, to see the available means of persuasion" (36). Aristotle's rhetorical model splits an argument into proofs and topics, both of which can be seen in the scientific paper. Topics can be described as the line of argument or place where the argument begins (45). As Allen points out, in the scientific paper there are special lines of argument that are appropriate for the subject matter. Basing his analysis in the work of Lawrence Prelli, Allen describes these special lines of argument as the exigence or the new knowledge that the scientist acquires to fill in the "gap in the collective body of knowledge" (qtd. in Allen 97). In Aristotle's model, there are both common and specific topics. Common topics are not limited to a specific genre, which means they can be applied to science. Common topics such as argument by definition, argument by comparison, and argument by contradictions can be used in the scientific paper to create an exigence.

Further, rhetorical proofs in the scientific article more effectively reveal its persuasive aspect. Aristotle stresses the use of proofs because, in his system, claim and support are central to persuasion. He says, "persuasion occurs through the arguments [*logoi*] when we show the truth or the apparent truth from whatever is persuasive in each case" (39). A scientific article must persuade the audience that experimental evidence either supports or does not support a hypothesis. This is done under the guise of "explaining" or "reporting" how the evidence relates to the hypothesis. Aristotle explains that proofs can be either artistic, creatively from within the speaker, or inartistic, found outside of the speaker. The scientific paper uses both artistic and inartistic evidence. By definition, if a proof is "invented" by the speaker, then it cannot be completely objective. As Allen tells us, scientists must choose what they are going to study, find an area of science that can be called into question, create a hypothesis that can be tested, and write an article that clearly explains why their data resolve the problem at hand. All of these steps involve artistic invention because they must be "prepared by method and by 'us'" (Aristotle 37).

One dimension of the Aristotelian idea of the artistic proof is the use of rhetorical argument, often called *logos*, which is an argument based on reason or logic (39). Allen specifically notes the process of inductive reasoning in the scientific article (99). Similarly, Aristotle explains that there is a type of inductive reasoning in rhetoric: *paradeigma*, or example (40). In scientific papers, experiments are

used to reach general conclusions. Scientists use the artistic proof called *paradeigma* to persuade readers that their conclusion is significant.

Scientific papers also use inartistic or preexisting proofs to persuade. Allen stresses that there is a part of the report that is "designed to emphasize the relevance and necessity of the particular findings to preexisting scientific evidence" (99). In the Aristotelian model, the use of expert evidence or statistical evidence to support a claim is a form of inartistic proof. Many scientists draw from the works of other scientists to make their article appear more relevant or to explain the basis of their research. Moreover, some scientists must refute old scientific knowledge through persuasion. An obvious example of this would be Darwin's *On the Origin of Species*. This book, while not exactly like the modern scientific journal essay, is an example of an instance where a scientist seeks to persuade his readers that his evidence disproves an older theory. If Darwin's evidence was completely objective and unequivocal, then his work would not continue to generate controversy (see Campbell and Meyer).

Allen's use of contemporary rhetorical models is well grounded. However, as we continue to explore the rhetoric of science, we should not ignore the rich theoretical basis on which contemporary rhetorical theory stands. Aristotelian rhetorical theory can complement the contemporary model, and criticism based on Aristotle's topics and proofs can deepen our understanding of the rhetorical dimensions of the scientific essay.

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