

**Rhetorical Features of Galileo's *Two New Sciences*:**

In modern discourse, people frequently use the word “rhetoric” in a derogatory or at least inaccurate manner. Politicians attack their opponents by bringing to light the “vicious rhetoric” of the other side. The average person seems to think that rhetoric is only used when you are trying to duplicitously influence someone’s position on something. In reality, however, rhetoric is simply the art of persuasion. It is indeed impossible for it not to factor into practically any type of communication, whether it be about politics, law, or even natural and mathematical science.

A proper balance of ethos, pathos, and logos plays a significant role in the rhetorical quality of an argument, and is what this paper focuses on. Ethos refers to the author/speaker himself. Someone with a “good” ethos would have a reputation and attitude that the audience finds attractive and respectable. The pathos of an argument is the feeling and passion with which it is delivered and that it stirs in its audience. Finally, logos relates to the factual and empirical evidence used to support an argument. Logos is clearly the most important in scientific writings, but ethos and pathos also play a role, though perhaps a less obvious one.

The ethos of *Two New Sciences* is in many ways hidden and depends in part on what the reader already knows or thinks of Galileo himself. Most modern readers (unlike those of his day) recognize Galileo to have been a brilliant man who was ahead of his time. Thus, when we see his name on a work, we are likely to immediately take it seriously and expect it to be trustworthy. But the ethos of Galileo (and the work itself) can be found within the actual writing as well. Because Galileo conducts himself in a straight-forward and empirical

manner, we recognize that his arguments are likely going to be based on actual observations rather than arbitrary opinion. Also, whenever he refers to other scientists, he does not behave in a haughty or condescending manner. The following sentences are found in the first paragraph of page one: “[Properties of motion] which have not hitherto been either observed or demonstrated,” “Some superficial observations have been made,” and “to just what extent this acceleration occurs has not yet been announced.” In each of these instances, Galileo uses the passive voice in order to state truths without directly stating who has done (or not done) the action. He therefore evades the need to state that “other scientists have not hitherto observed...” which could come across as critical or prideful and thus hurt his ethos.

Even less obvious than ethos in *Two New Sciences* is pathos. Because objective truth forms the basis for science (or at least is supposed to), opinions and emotion are hard to find. This does not mean that pathos is nonexistent, but simply that the work has an unemotional and to-the-point pathos. Even in the discussion portion, the most “controversial” statements are formatted in a very calm and reserved way. For example, when Sagredo says “I believe that you’re a mistaken and that this distinction between cases which you make is superfluous or rather nonexistent” (5), he is stating his difference of opinion but does so in a manner which is least likely to generate hostility. The pathos of *Two New Sciences* and scientific treatises in general is subdued and lacks emotion.

Unlike ethos and pathos which are generally not as pronounced in scientific treatises, logos is of utmost importance in this genre of writing. Because science is based upon observation and experimentation, it is necessary to have factual and empirical evidence to attest to their veracity. Scientific theories live and die by this evidence, and therefore Galileo’s arguments would not have survived a moment’s scrutiny had he not provided

plenty of specific observations that supported his claims. Logos is found not only in the treatise portion of Galileo's work, but also in the conversation. "Place a heavy body upon a yielding material, and leave it there without any pressure except that owing to its own weight; it is clear that if one lifts this body a cubit or two and allows it to fall upon the same material, it will, with this impulse, exert a new and greater pressure than that caused by its mere weight..." (4). Without such an emphasis on logos, the entire treatise would be baseless conjecture. With this emphasis, however, Galileo is able to make a compelling case.

By employing an ethos, pathos, and logos that make his work acceptable and influential in the scientific community, Galileo has demonstrated an understanding of his targeted audience. He behaves in a respectable manner and does not invite confrontation in his writing. He prevents emotion and strong feelings from hijacking what should be a calm and straight-forward piece. Finally, he includes plenty of evidence for his arguments that make them reasonable and convincing. By balancing each of these aspects, Galileo has created a persuasive scientific treatise.