Understand the relationship between Science and Rhetoric

Language is not a transparent medium of thought, and effective communication is more than just transmission of information. Rather, communication is a complex and interactive dance between sender and receiver working together to interpret a message. The study of rhetoric starts by considering the context, called exigence – the situation, problem, or issue that creates the need to communicate.

Know the Contents of the Rhetorician's Toolkit

Cicero’s five canons of rhetoric

Cicero found it useful to use a five step process to build communication:

1. **Invention:** Brainstorm rhetorical strategies you can use to reach and persuade your audience.
   - The rhetorician’s toolkit includes many modes of persuasion, such as Aristotle’s three modes; *kairos* involves appeals to urgency; you can find examples of 60 more techniques [here](#).

2. **Arrangement:** Organize the ideas into a coherent structure.
   - Structures are context-dependent. Academic papers expect writers to use a rigid standard template; storytelling allows more flexibility, but also uses a small set of templates such as “hero’s journey” and “start in the middle of the action.”

3. **Style:** Package the ideas for your audience with word choice, sentence structure, figures of speech, and tone

4. **Memory:** Consider how to make your message memorable – perhaps with an outline, repeating key ideas, or verbally signposting your structure.

5. **Delivery:** Align your nonverbal communication with your message, considering body language (stance, gestures, eye contact) and vocal aspects (volume, pace, emphasis). In written communication, this includes visual layout, formatting, and typography.

Three modes of persuasion

Aristotle developed a theory in 4th century BCE that that humans are persuaded in three modes:

1. **Ethos** involves establishing authority, credibility, and trustworthiness. Ethos comes from being introduced or recommended by other authorities, reputation, or demonstrating mastery of the community’s language.

2. **Pathos** involves evoking strong emotions in your audience. Pathos can be achieved through emotionally charged stories, passionate delivery, or evocative metaphors. It is most effective when tapping into shared values between the speaker and the audience.

3. **Logos** involves appealing to rationality through logic, facts, and data.

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Ask questions to uncover how a message works

One of the best ways to learn is to analyze masterful communication:

**Exigence:** What is the rhetorical situation?
- What occasion created the need or opportunity for persuasion?
- What limitations are imposed by the immediate context on the speaker or audience?
- Are there limitations from a larger context such as historical, social, political, economic trends?

**Rhetor:** Who is the speaker?
- What is the speaker’s goal in communicating?
- *Ethos:* What does the speaker do to establish trustworthiness, authority, and a sense of goodwill among audience members?
- What does the speaker do to appeal to pathos? How do they connect with the audience and what values do they share?

**Content:** What persuasive strategies are used?
- What is the primary argument?
- How is the message structured?
- What kind of style and tone is used and why?
- What figures of speech are used? Are they appropriate to the audience and context?

**Pathos:** How does the speaker consider the audience’s values, attitudes, and beliefs to construct arguments?
- **Pathos:** How does the speaker use language and create images to evoke emotional responses in the audience?

**Audience:** Who is the target?
- Who are the likely recipients of the message and what is known about them? What are their demographics, shared values, personality, learning styles and communication preferences?
- **Logos:** How does the speaker draw on facts, statistics, research, observations, and experiments to reach conclusions?