Rhetoric and Technology: A Case Study

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Abstract

Technological colleges are normally market-oriented. Programs offering majors in computer science and technology in general do not, by definition, place emphasis on teaching humanities. Most of those programs, however, encourage students to include non-technical courses in their academic plan of study. At one particular technological college, computer science students can enroll in a one-semester course called Communication and Expression. Topics covered include a solid review of grammar and punctuation, as well as specifics in business communications. The introduction of rhetoric in those classes has met a response far more enthusiastic than expected. Those improvements were measured in a controlled experiment: students were required to produce texts on the same subject before and after classes on rhetoric — the balance between ethos, pathos and logos was measured in both instances. The results demonstrate the whole point of teaching humanities to technologists-to-be: they will be working for corporations, environments that comprise a complex set of activities requiring human interaction. Technical sales are just one example. Furthermore, they will be — like anyone — living in society, and these tools are needed to successfully play a role in societal development.

Introduction

The objective of this research paper is to report methodology, results and findings of an ongoing experiment in teaching rhetoric to technology majors. These classes are offered in a community college setting. Technological courses in Brazil are, in general, market-oriented: the student is expected to leave college with the full ability to perform their professional responsibilities, without additional training. The typical class used in this experiment has 30 to 40 Systems Analysis students. These students are preparing to be database programmers, software developers or computer network professionals. The students anticipate that the degree program will help them develop professional IT skills and competencies and, in general, consider classes out of such scope as a waste of time. However, any professional must have the ability to communicate. The set of competencies required in real life (and real life is supposed to be what the degree pursued is all about) includes, besides the mere capacity to exchange information, the possession of argumentation skills. Moreover, such skills, along with other non-technical abilities, grow in importance as the technologist's career progresses and responsibilities increase.

The experience observed over the course of the experiment presented strong indications that rhetoric can be taught to computer science, engineering and exact sciences students as part of a language course, and that it does foster the development of capacities necessary for a professional career. This text provides a concise explanation on the concepts taught in these classes, followed by details on the profile of the audience under analysis (Perelman & Tyteca, 1999). It will then show: how college authorities were convinced that rhetoric is compatible with the standardized syllabus, what was the methodology employed and, finally, the results of the experiment.

Rhetoric: A Useful Tool for Technology Professionals

All generally accepted rhetorical concepts remain applicable in our lives today. This is true even of conceptual models that were created thousands of years ago. Rhetoric has been defined as the art of good speaking, meaning the talent — natural or acquired — for utilizing all the resources of language in order to produce some effect on an audience. For the sophists (utilitarian, pragmatic thinkers), such an art was related to argumentation skills — debating for or against any opinion, and pursuing one's own advantage (*physis*) rather than the advantage of others (*nomos*).

Socrates (quoted by Plato) argued that such posturing would be legitimate only if it engaged in on the quest for truth. Plato once wrote that rhetoric could even be used to convince the gods of one's position. Aristotle reported that the discussion among the philosophers was then on the utilization of rhetorical resources in order to *obtain compliance by the souls.* Aristotle (ca. 320 BC/2003), when he outlined the basics of rhetoric, defined it as "the ability to devise what theoretically, in each case, may be able to generate persuasion." Aristotelian rhetorical proofs are particularly important as concepts: ethos, which refers to the image or character the orator conveys through his discourse (I); pathos, connected to the emotions aroused in the audience through discourse (you); and logos, associated to the orator's knowledge.

Cicero (ca. 50 BC) adapted those conceptions hitherto only accessible in Greek to fit his concerns as a Roman leader. In three treaties, considered that, in order to be the perfect orator, one would have to be the perfect man. Quintilian (ca. 60/1975) had the same point of view. Quintilian studied rhetoric in a way more complete and structured than anyone before him. He deemed rhetoric as the way of discussing civilian affairs and raising problems in a persuasive way.

James Herrick (2012) wrote in his book "The History and Theory of Rhetoric: An Introduction" that during both the Medieval Period and the Renaissance, rhetoric shaped education and civic administration in a number of ways. It was taught in universities, alongside logic. In the 16th and 17th centuries, the Jesuits were great masters of rhetoric. The positivism of the late 19th century, however, led rhetoric to be considered as non-scientific, and rhetoric courses were eliminated from the universities.

After a century of confinement to the study of figures of speech, rhetoric was reborn, the milestone being the Treatise on Argumentation, by Perelman and Tyteca (1958/1999). The basis was Aristotelian: rhetoric, according to those authors, is associated with logic as "the art of thinking correctly" and to dialectics, "the art of good dialogue." According to Plantin (2005):

> …one of the essential merits of Perelman and Tyteca's Treatise on Argumentation is the study of argumentation by way of the study of argumentation "techniques" […] and to be the source of an empirical base of schemes.

When Perelman and Tyteca indicated that efficient argumentation is verified through agreement by listeners, they introduced audience (universal or specific) as another important concept. Yet another important (and very useful) notion brought by the Treatise is the possibility of rational or passional agreement, which distinguishes convincement from persuasion. It is necessary to pay attention to the fact that, in rhetoric, rational is not the same as demonstrable, since rhetoric only exists in the realm of the likely, the possible, the consistent.

Once something can be demonstrated to be right, you do not have an argument. You have a demonstration, as in mathematics or physics. Persuasion and convincement, though different, are only showed as separate for pedagogical purpose since, in real life, they are imbricated in discourse

to the point of posing difficulty in classifying rhetorical statements. It must be said, however, that the separate study of convincement and persuasion was crucial to generate the interest of Systems Analysis students in rhetoric.

Systems Analysis Course: Student Profile

The increasing popularity of two- and three-year technology programs is a worldwide phenomenon. Enrollment is growing in the U.S., especially in community colleges; in France, in institutions that offer the BTS (Brevet de Technicien Superieur); and in China, in the so-called vocation-oriented technological colleges, explicitly modeled after American community colleges. The chief feature of these higher learning institutions is their primary purpose: to prepare in two or three years market-ready professionals who can quickly find jobs.

The State of Sao Paulo Technological College, where the rhetoric-teaching experiment is underway, has 54 campuses, each with programs designed according to the peculiarities of the specific area where it is located. There are degrees, for example, in textile production, of pulp and paper technology and in mechatronics. Business Administration and TI degrees are offered on just about every campus. The employability rate is an astonishing 93 percent.

The professional profile for the Systems Analysis professional as published by the college is:
> The Systems Analysis technologist analyzes, designs, documents, specifies, tests, implements and maintains computerized information systems. Such professional also works with computational tools, hardware, and project methodology. The skills required are logical reasoning, knowledge of programming languages, project development methodology and concern with quality, usability, integrity and security of data and systems (State of Sao Paulo Technological College, 2012).

Language abilities are not explicitly specified. Yet the development of those abilities are nevertheless needed by any professional. Linguistic capacity is, in fact, particularly important to anyone who has to interact with the public, internally or externally to an organization. Should the professional become a manager (normally a goal), the need for a good grasp of the language is obviously amplified. The process of acquiring technical prowess in computer science is, in general, quite straightforward — exercises, for example, in programming do develop both specific technical skills and logical reasoning. The students, however, face difficulties to, as they usually say, "put the ideas on paper," and do not know how to improve on the quality of their communication. Although language problems may have a number of origins, including deficiencies in basic education, there are ways to help the students. Our study has shown, so far, that teaching rhetoric in Business Communication courses may be one of them.

Rhetoric and the Syllabus

In the Systems Analysis program at The State of Sao Paulo Technological College, there is a one-semester mandatory Business Communication course (it is actually called Communication and Expression). The objectives are quite specific, and relate to the production of business documents.

Objectives: identify specific linguistic processes and establish connections between discursive genres in order to elaborate written texts for use in a business environment; develop habits of critical analysis of text production in order to be able to assure coherence and cohesion. Contents: text as a concept; differences between speech and writing; reading, analysis and production of text of general interest and in the interest of the administration: letters, reports, e-mail messages and other written and spoken communication formats; text cohesion and coherence and different discursive genres (State of Sao Paulo Technological College, 2012).

Though some freedom is allowed to the teachers (for example, class rhythm, or when and how many times to give exams), both the objectives and the contents of the curriculum cannot be modified. It does not require a lot of analytical effort to recognize the weakness of that agenda. Teachers usually end up repeating what is taught in high school, in part because they realize that students did not learn enough in high school, in part because of the way the syllabus is set.

However, some phrases in the syllabus, like discursive genres, linguistic processes and critical analysis of text production, can be legitimately interpreted in a way to allow the introduction of rhetoric in the language course.

Contents of the Rhetoric Classes

In order to provide a solid basis for the teaching of rhetoric and to demonstrate compliance with the official syllabus, it was decided that the syllabus would have to be deepened. For that, the work by Brzovic, Fraser, Loewy and Vogt (2006) on core competences in business writing was adapted. The adaptation mostly consisted in introducing a larger number of rhetorical issues into the syllabus, and placing them mostly at the intermediate level (see Table 1). The classes aimed to reach the intermediate level to motivate the students to reach the advanced level through other courses or on their own.

The tables below show the competencies aimed by the whole course and show how rhetoric fits into the modified Business Communication program. It is reminded that competencies are behavioral traits (difficult to acquire!), while competences are functional /technical traits.

Table 1.
Formal Competencies

Competency	Basic	Intermediate	Advanced
Written Communication	Create, proofread and edit routine business documents — in response to short, information-based situations — that are clear, courteous, concise and yet both complete and correct, i.e. workplace acceptable.	Compose, revise and edit business documents — in response to topical case studies — that are informative and well organized. Use rhetorical tools to make them at the same time logical and persuasive.	Select appropriate rhetorical strategies and communication channels to persuade multiple target audiences to accept a business decision.
Oral Communication	Give a brief, informal business presentation.	Design a formal business presentation, based on a report or proposal, which is articulate, intelligible, rehearsed, organized, dynamic and visually appealing. Balance ethos, pathos and logos adequately.	Create and deliver executive presentations and moderate discussions using appropriate rhetorical strategies and visual support.
Information Competence	Write a memo report in which information	Write a persuasive recommendation	Write an analytical report on a chosen

obtained from multiple sources, including electronic databases, is summarized and documented	report in which information gathered from multiple sources, including articles from electronic databases, is selected, documented, analyzed, organized and rhetorically balanced.	and narrowed topic: select, document, evaluate, synthesize and communicate complex information retrieved from various sources, including peer-reviewed articles from electronic databases.

The detailed competency inventory clearly shows that not only is it possible to introduce concepts of rhetoric and argumentation in Business Communication classes, but they also may be valuable in enhancing the understanding of communication processes on several levels (see Table 2).

Table 2.
Philosophical Competencies

Competency	Basic	Intermediate	Advanced
Critical Thinking	Identify key elements of short, information-based business situations.	Define a problem, formulate company objectives, propose and analyze reasonable solutions, and make a rhetorically balanced recommendation in response to a business case.	Evaluate crisis situations in terms of an organization's strengths, weaknesses, opportunities and threats.
Ethics	Use unbiased language, avoid exaggeration and logical fallacies, and acknowledge unethical business practices.	Devise appropriate business solutions to ethical dilemmas posed by competing stakeholder interests. Understand that company ethos shall be constructed through ethical behavior	Apply accepted principles of business ethics to the assessment of corporate decisions and the probable consequences of those decisions for multiple constituencies.
Decision Making	Identify the basic cause and effect scheme of a simple business decision.	Use arguments of fact, policy, worth, and expediency logos), pathos (emotions) and ethos (image) to defend a business decision.	Apply an explicit set of criteria to the evaluation of a management problem and to the recommendation of a first-best option. Rhetorically balance the recommendation.
Problem Solving	Discuss the benefits of a product, service or policy.	Describe the value to an organization of adopting a given	Assess organizational requirements or potential internal and

		solution by analyzing costs and benefits.	external barriers to implementation of a proposed business project.
Application of knowledge to real world	Apply relevant knowledge of consumer needs, organizational interests and government regulations to reality-based correspondence.	Determine how to address ethical, global, political, technological and/or cultural constraints that impinge on a company's license to operate. Devise ethos, logos and pathos involved in each issue.	Define, evaluate and solve communication problems that affect multiple management functions, such as production, finance, marketing and public affairs.

Source. Brzovic, Fraser, Loewy & Vogt (adapted by the author).

The Business Communication program comprises 80 hours of classes, four hours a week. Twenty of those hours are dedicated to rhetoric. Rather than displacing contents, rhetoric permeates the whole course and makes easier, for example, to teach presentation techniques.

The Theoretical Basis

The topics that follow concisely describe the theoretical basis of the program. The concepts are selectively presented to the students as deeply and carefully as possible, in a vivid way and in words they can relate to.

In the second half of the twentieth century, researchers of language deepened the notions of text and discourse, as well as the theories involved. The difference between text and discourse did not come up easily. As a starting point, one can consider that man, in order to become an agent of a communication process, elaborates texts by making choices among alternatives and combinations of elements offered by the language system. The orator implements his discourse and becomes motivated to act in the social milieu through a complex process of textualization (placing ideas in the text) and intertextualization (reference to other texts), plus the construction of argumentative coherence and cohesion (allegiance to grammar rules).

Therefore, discourse, commonly related to speech, had its meaning expanded to encompass processes of production and interpretation of meaning and the interactions between speaker and receiver, writer and reader. Such meaning also takes into account the situational context. Text, as a result, is a dimension of discourse, its materiality. The idea of discourse as a process has been confirmed by Maingueneau (1997) when he stated that discourse is an association between text and its context. The distinction between text and discourse, however, is about more than just the commonly known one between product and process. It also depends on the process itself and on the way it is looked at both by speaker and by listener. Furthermore, the way texts are organized depends on the social practices of the groups within which those texts are generated and on the discursive objectives, which may be scientific, academic, literary, advertising, organizational or belong to some other discursive domain (Bakhtin, 2003).

Another concept that has a place in the program is subjectivity, since every discursive construction is subjective (Benveniste, 1974) because it is performed by a subject and, as such, does bear his inherent subjectivity. Even the scientific genre, which is generally considered subjectivity-proof,

carries, according to Benveniste, an important mark of subjectivity: the capacity of the orator to position himself as a subject. Still, according to Benveniste, "it is in language and through language that man establishes himself as a subject."

This is the context in which rhetoric and argumentative issues are studied. Perelman's new rhetoric — although it does maintain aspects of the Isocratic and Aristotelian models of rhetoric — is made modern in that it interacts with disciplines closely related to communication, i.e. that either support or are supported by it, making for a decidedly interdisciplinary framework. Such is the case with linguistics, semiotics, semiology, information theory and pragmatics. A side phenomenon is the degree of integration between humanities and exact sciences, under development since the last quarter of the twentieth century. One example can be found in studies done by Alain Berthoz (2008) on the neurophysiology of rhetoric. This environment makes the theories of argumentation develop in accordance with democratic postulates, depend on values, preferences and decisions and, more than that, accept shortcomings and imperfections. In short, argumentation must consider the universe of both orator and audience.

Persuasion is also considered in the context of negotiation: one part strives to induce the other to acceptance of a point of view by means of logic (logos), emotion (pathos) and character, or image of the orator (ethos). Perelman, like Aristotle, defines rhetoric as the technique of persuasion. This means that the object of the theory is the study of discursive techniques aiming to produce attachment of hearts and minds to a cause (Perelman, 1999). Rhetoric, therefore, is the art of communicating with multiple objectives: persuasion; convincing; pleasing; seduction; the manipulation of ideas aiming at acceptance; fostering verisimilitude, opinion and likelihood with good reasons and arguments; suggesting inferences; insinuating the explicit through the implicit; utilizing language figures; and finding out the intentions and reasoning of a person who speaks or writes.

Meyer (2007a; 2007b) associated the parts of discourse (invention, disposition, elocution, action and memory) to Aristotelian rhetorical proofs: the discursive ethos introduces itself to the audience and aims to get its attention about an issue, following this introduction with an explanation of the logos of that issue, while at the same time presenting pros and cons. Finally, it acts on Aristotelian passions when appealing to the feelings and emotions of the audience (pathos). Meyer, in other words, summarizes the parts of rhetoric as contributing to one goal: to reduce or annul the problematization that the audience can always effect. In short, discourse wants to position the audience in its favor and, for that, uses ethos, pathos and logos.

Class Methodology

These concepts of text and discourse by, among others, Greimas and Courtes (1994), Koch (1998), and Maingeneau (1997) are explained and exercised in class soon after the competencies are discussed. The concepts that make up the core of the program are: objectivity and subjectivity, the main references being Benveniste (1974) and Kerbrat-Orecchioni (1994); argumentation (persuasion and convincing) and the study of the three rhetorical proofs according to Aristotle (ca. 320 BC/2003), and Perelman (1999). They are widely discussed and exercised through their application in different genres (Bakhtin, 2003): legal, journalistic, literary, advertising and organizational.

Each class lasts three and a half hours, with a 10-minute break in the middle. The way to present and exercise the rhetorical concepts varies from class to class. For a particular group of students, it may be more convenient to present and discuss concepts first and assign exercises later, and for another audience it can be more effective to start with the presentation and discussion of a text and then to show the concepts. There are also cases where it is better to start from experiences undergone by

the students. In short, it always depends on how the audience reacts, and the teacher must establish this within the first lecture.

Each concept is presented in a number of ways and discussed a number of times, since repetition is crucial to solidify understanding. The Socratic Method is often employed with good results (ex. how would you define rhetoric; how would you describe the context in which this word is used; what is argumentation, persuasion, convincing; is there a difference between convincing and persuading). The students express themselves freely and the teacher writes the answers, correct or not, on the whiteboard for discussion. Since the issues are complex, there is always a considerable amount of debate, with a lot of student participation. During the debate, the answers get refined and, only after that, the concepts are explicitly articulated. Following that explanation, the students are asked to illustrate these concepts, with real life instances or cases out of their own experience. These are also debated.

The subject remains central in the classes that follow. During, for example, the explanation about journalistic language, the students are required to use rhetorical concepts and theory of argumentation learned whenever they are applicable. The same scheme is utilized when advertising language is studied, and gets to a climax when the subject is corporate language, which is what Business Communication is all about. Care has to be exercised in the repetition process in order for the classes not to become tedious. At a certain point, for example, ethos, logos and pathos are shown as vertices of a triangle, and the metaphor exploited. Short texts are projected so everyone in class can read and participate in the analysis. As a rule, there is an exercise, oral and/or written, for every topic covered.

A Sample of Exercises and Activities

One of the exercises engaged in is the writing of an official statement about a real environmental accident. A written description of the incident is given to the students who, with no further instruction, are told to write an official company statement in the wake of the accident. The texts produced are kept by the teacher for later reference. After classes on rhetoric, persuasion, convincing, subjectivity and the three rhetorical proofs and other related concepts, the students are asked to rewrite the statement, using what has been learned. The new texts are then compared to the previous ones, and the differences discussed. This was, in fact, one of the sets of results used to evaluate student progress.

Another activity starts with the division of the class into three groups. Selected excerpts of the court transcripts of a real trial are given to the students for careful reading. Each group gets a different task: one group represents the claimant; one represents the defense; and the third studies both sides: they will act as the jury, A simulated trial takes place as follows: the prosecution talks, the defense replies, the prosecution comments on the defense's arguments and the defense presents a final summation. The jury analyzes the arguments presented and then indicates which side they believe to have provided better arguments. The teacher directs the trial and, at the end, evaluates the arguments and performance of all three groups. This is an example of a very dynamic class, with a lot of participation by the students.

The reading of a mystery tale by Edgar Allan Poe — one with only a few characters — has also been found useful to enhance understanding of the concepts of ethos, pathos and logos. After careful reading and discussion about the plot, the students are asked to orally express the ethos of the discursive actors. After that, the students verify the arguments utilized by the characters, comment on whether there is a predominance of persuasion or convincing and if there is more passion or rationality. In the next class, the students are briefly taught the fundamentals of story writing

(character profiling, conflict construction and 36 basic plots), and receive an assignment: writing a mystery of their own, showing the instances of pathos and logos occurrence, constructing the ethos of each character and including argumentation. The stories are corrected in writing, individually, by the teacher.

The results were somewhat surprising. In a previous assignment, the students had been required to write a short story. They produced, in general, one-page narratives, superficial and almost childlike. For this particular assignment, which took place after the rhetoric classes, the stories, to the amazement of the teacher, were elaborate and well done, the characters well constructed and the plots far more sophisticated.
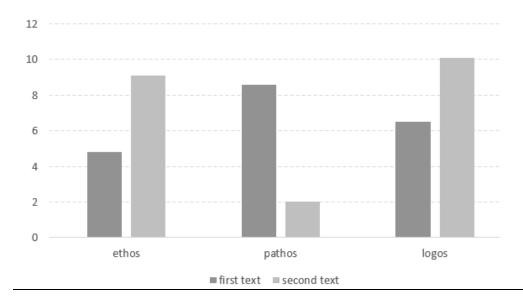
Results

Notwithstanding the fact that the major is technological and that the subject taught in those non-technological classes is complex, students have demonstrated interest in language and rhetoric and have even shown some degree of enthusiasm when working on the exercises. Learning is certainly very difficult to measure, but certain parameters can be computed. Two instances are shown here.

The capacity to apply the concepts learned was assessed using the results of the official statement exercise mentioned before. Logos is expected to be strongly present in an official statement on an accident. This is in order to strengthen the credibility and image (ethos) of the organization. Pathos is to be kept to a minimum in order to avoid the impression of willingness to manipulate the readers.

The students were required, during the first week of class, to elaborate on an official statement with three paragraphs of approximately 10 lines each. The exercise was repeated after the lessons on rhetoric. The plot shows the average number of times ethos, logos and pathos were identified in each instance of the exercise. It is easy to observe a considerable rise in ethos, some in logos and a decided drop in pathos, as shown in Figure 1.

Figure 1.
Average number of identifiable instances of logos, pathos and ethos in an official statement elaborated by the students before and after rhetoric classes.
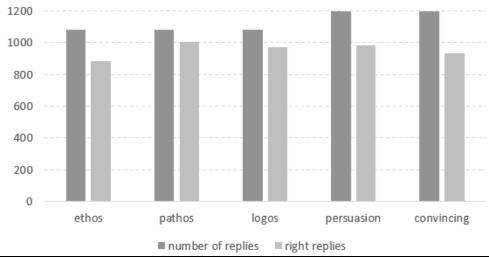

The other verification is also shown using a plot, the one shown in Figure 2. A surprise quiz consisting of two parts was applied to 60 students. In the first part of the quiz, students were asked to identify

ethos, logos and pathos in 18 statements. The second part of the quiz required students to identify rational and passional arguments, and persuasion and convincing, in 20 sentences. Fifteen minutes were given to complete the test.

Figure 2.
Total number of replies and number of right replies to questions of the surprise quiz (first and second parts considered).

Conclusion

The program herein described very concisely is an ongoing experiment that started five years ago. The business communication course lasts one semester. It is taught, in each semester, to four different classes, with 30 to 40 students each.

At first, rhetorical concepts were introduced, along with some examples. Since the response was good, text analyses by the students were added. With time, additional exercises were included, with more and more writing. Other theory had to be taught, and the product, to this date, is the course described.

There is some evidence (not delved into here) of improvement in general writing by the students. Students also come to perceive the different types of argument very easily. In addition, there are signs of progress in linguistic, non-technological reasoning. Students who already have jobs do recognize that the understanding acquired can be utilized in everyday workplace situations. Some of these job-holding students reported instances of successful application of that knowledge.

More than training on job skills, the objective of the classes covering rhetoric is to provide argumentation capabilities, a specific category of interpersonal skills. To argue, in short, is to prove points of view in both logical and emotional bases and such abilities do enhance competitiveness in the work market. This does not only apply to managers (though specially to them) since anyone in the workplace needs, all the time, to convince and persuade coworkers that there are problems to be solved and that there are good ways of answering to specific needs. That is, in fact, one of the foundations of professional progress.

Rhetoric provides special abilities that go beyond dexterity in interpersonal communication techniques or generic job skills. Rhetoric, if well learned and well used, becomes part of the individual mindset, since it develops a complex set of competences, which, together, mature analytical reasoning.

In the five years during which this project has been going on, the overall results of the program provided strong indications that the learning of rhetoric can improve general writing. A carefully designed controlled experiment can be used to obtain data to confirm this hypothesis.

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