Session Number: 1461

Classic Rhetorical Pedagogy as a Model for Interdisciplinary Design/Engineering Instruction.

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Engineering, Industrial Design, and Business are three disciplines that work together in the world of product development. Power struggles exist over who is most important. Because of these struggles, ultimate success is often difficult to achieve. These struggles exist because of a general lack of understanding between each of the disciplines about how they relate to one another in a larger picture.

In the spirit of interdisciplinary product development, students in the College of Engineering and Technology at Brigham Young University participate in a "Capstone" experience that is meant to expose them to the comparative peculiarities of the three disciplines of Manufacturing, Engineering, and Industrial Design. Despite the success of various individual team projects, a general dissatisfaction exists in the ranks of the students about what the actual benefit is for all their collaborative effort.

Interdisciplinary Product Development efforts (both in and outside of industry) suffer from one sided biases based on the discipline of the sponsoring body. Engineering based programs neglect Business, Manufacturing, and Industrial Design. Business based programs neglect the needs Engineering and Manufacturing programs.

Successful product development teams realize that true success and innovation comes from the overlapping of the disciplines where they rely on each other for their individual strengths. This is the overlapping sweet spot - the "Nexus of Product Development." (Figure 1)

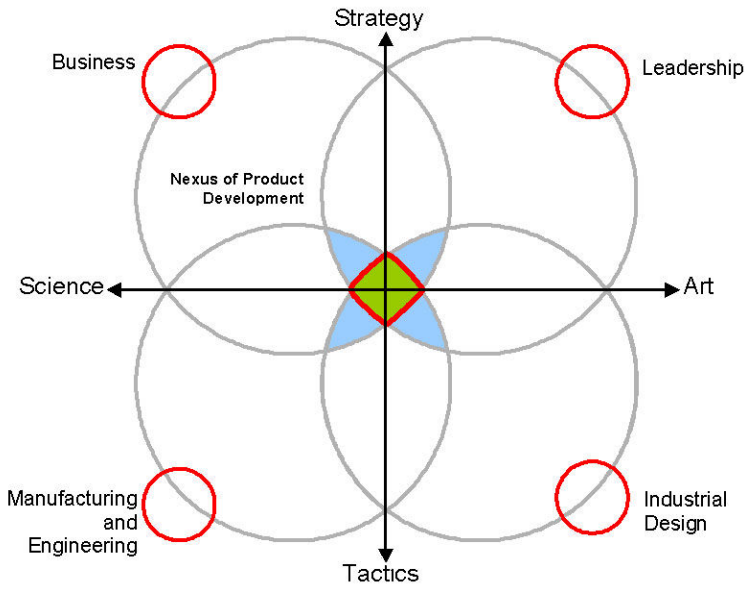
However, most of the time, each discipline struggles to put for the argument that:

1. Their discipline carries the biggest burden
2. Their discipline addresses the issues that are most important to the consumer

What is missing is a larger framework of understanding to show the interdependence of the three disciplines for success.

This paper will suggest how an understanding of classic rhetoric could provide the unifying framework for bringing together the disparate disciplines of Engineering, Industrial Design, and

Business. The main focus of the paper will be on an introduction to the overarching themes of rhetoric (Kairos, Audience, and Decorum), a description of the three classic appeals of rhetoric (Logos, Ethos, and Pathos), and a proposed broader definition of product development using the described rhetorical terms. Through historic examples, this paper hopes to show how an understanding of rhetoric helps to clarify and focus the contributions of the three disciplines (Engineering, Business, and Industrial Design) towards the success of their product development efforts.



(Fig. 1)
Nexus of Product Development

Introduction to Rhetoric

Although Rhetoric often gets the blame for being superficial ("mere rhetoric") it is more than just speech making. In Rhetoric an adequate amount of time is spent on both FORM and CONTENT in order to assure success. CONTENT is the study of WHAT is to be communicated, and FORM is the study of HOW it is to be communicated. Both are necessary for a complete message. Rhetoric (as opposed to Oratory) demands that there is a much deeper process behind the development of the content and the form that leads to a final presentation.

Overarching Definitions

Rhetoric is defined by three main overarching terms: KAIROS, AUDIENCE, and DECORUM.

KAIROS is defined in rhetoric as "the opportune moment", or the "opportunities of the moment". AUDIENCE refers to the fact that in all acts of persuasion, there is a specific target group of listeners which come to the table with their own set of unique requirements. DECORUM highlights the higher probability of success when the content of the message is tailored to the specific needs of the audience.

These three terms, when taken together, provide the following description of the goal of Rhetoric.

> *The speaker, sensitive to the contingencies of the moment, tailors words to specific contexts and audiences towards some discernable result or effect.*[1]

In order to achieve this goal (i.e. persuading an audience to a particular opinion), the rhetorician relies on three main methods of appeal – LOGOS, ETHOS, and PATHOS.

LOGOS is the appeal to Logic; ETHOS is the appeal to character; and PATHOS is the appeal to emotion. All three of these need to be present to maximize the opportunity for success.

Rhetoric as a definition of Product Development

Rhetoric is the act of persuasion. So is product development. Recently, MSN.com highlighted the "eGO", a new electric bicycle concept that is just going to market.

> *"The eGO might catch on because its designers seem to realize that the worthy idea of energy conservation* ***is not on its own sufficient*** *to wean us from our petroleum addiction. Something else is required.*
>
> *Might that something else something be fun? If so, the eGo people appear to have got the patent, marrying a futuristic aluminum front end with a fat, retro rear fender (in "Very Well Red," "Caribbean Sky" (blue), "Wasabi" (green) and "Chutney" (orange).). The result: your dad's old Schwinn bike on steroids."*[2] [emphasis added]

Without realizing it, the author(s) of the above passage make the connection between Rhetoric and successful Product Development. Designers, Engineers, and Marketers are engaged in the act of persuasion. Ultimately, their hard work must persuade a consumer to purchase or use the product that they developed. During the process, each partner in the team is trying to persuade his or her superiors and/or peers that their solution is the correct one.

The three overarching components of Rhetoric (Kairos, Audience, and Decorum) clearly apply to the product development process. In fact restated, the above definition of the goal of rhetoric provides a good definition of product development:

> *Successful product development is a process which, sensitive to the constraints of the project (price, materials, distribution, manufacturing process, user preferences, etc), develops products for a specific user group or context (age, lifestyle, user preference, aspirations) towards some discernable result or effect (purchase of the product, increased safety, decreased manufacturing costs, etc.).*

In order to accomplish this, all three of the classic appeals of Logos (Logic), Ethos (Character), and Pathos (Emotion) are needed. In translating the idea of rhetoric to product development, the three classic appeals change to *Function*, *Form*, and *Value*.

Function comes from Logos, or Logic. This is under the main control of the Engineering and Technology disciplines. This is the aspect that is needed to make something work.

Value comes from Ethos, or Ethic (Character). It can also be thought of as "Brand". This is the character of the company providing the good or service. This is the relationship between the customer and company. Marketing is the champion for this part of the equation. How does the product reinforce the issues of brand? What is the Brand Promise?

Form comes from Pathos, or Emotion, and is related to the appearance or product aesthetic. Industrial Design has primary responsibility for creating a form that is appropriate to the context of a given product.

These are indeed simplified stereotypes of the basic components of product development, but they provide a level clarity that leads to a better understanding of the overarching goals of the product development process.

Each group - Engineering, Industrial Design, and Business - has primary ownership of one of the three main appeals of the Product Development argument. However each area must still deal with the demands of the other areas. For example: within Pathos (the primary area of the industrial designer) there are still issues of Logos and Ethos. Does the form contribute to the usability of the product (Logos)? Can the form of the product actually be manufactured (Logos)? Does it reinforce the message and goals of the Brand (Ethos)? Similarly, within Logos (the primary area of the Engineer), there should still be considerations of Pathos and Ethos.

Balance between the three appeals

Often, we see failures in the market place because one of the classic appeals (Function, Form, Value) has been left out, neglected in some way, or thought to be not important. Similarly, we see failure when one area is over emphasized. To check their relative importance, what happens when one (or more) of these categories is overemphasized?

Logos over Pathos and Ethos: One particular example of function dominating over form and value that was pointed out by David Hill, Director of Design (Personal Computing Devices) at IBM, was the telephone pole[3]. Highly functional, but something that we all wish was buried in the ground rather than up in the air where we have to look at it.

Pathos over Logos and Ethos: This is the artistic statement. This is the Harley Davidson with a perpetual oil leak. This is the Apple "Cube" computer. There is strong emotional appeal in this category. It may be love at first sight, but because a product lacks depth, and long lasting appeal, the relationship soon wears thin.

Ethos over Logos and Pathos: This is an emphasis on brand. This is where the user asks the question "What does this product say about me because I am using it?" When brand is placed over everything, we get image and fashion type products. Products with Nike swooshes and Tommy Hilfiger logos. Henrik Fisker, head of Design Works in California, recently told a group of students that from a technical/functional standpoint, there is no need to buy a car that costs over $15,000. Those types of cars provide us with everything we need for transportation from A

to B in terms of reliability, gas mileage, etc. But the reason we buy more expensive cars is because of what those other products say about us as individuals.

Historical Case Studies: Putting it all together

Products that put one of the three aspects of design at the expense of the others have a strong tendency to fail. What happens to a product when the three aspects of design are balanced?

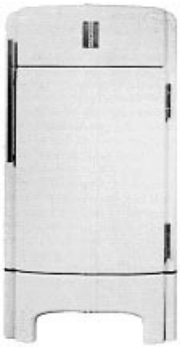
Volkswagen Beetle

An example of the melding of all three criteria is the new Volkswagen beetle. The Aesthetics of the car are very well refined. The Technical aspects of the car are good (the car was listed in a recent list on MSN of the top 10 cars for gas mileage). And there is a strong, recognizable ETHOS (Value) component which helps toward the success of the car. People relate to the car for nostalgic reasons that give it the added value that made it such a success. If the car had good design and good engineering but didn't have the emotional appeal of the original it wouldn't have been such a success. Likewise, try to imagine the new Beetle being a different shape. Would people give it the same amount of credibility? Would it be as successful?

(fig 2)

Coldspot Refrigerator

The Coldspot refrigerator was built and sold in the 1930's. Sales were slower than anticipated and general acceptance of the product was lower than hoped. There were only minor issues related to the technology of the product – there was minor rusting of the interior shelving. This didn't account for the lackluster sales. Raymond Lowey, an industrial designer "re-designed" its appearance, and changed out the steel shelving for Aluminum shelving. Sales for the Coldspot jumped from 65,000 units/year to 275,000 units/year.[4]



(fig 3)

PalmPilot vs. Palm V

Everyone was excited about the Palm Pilot. Earlier, similar products had been unsuccessful in the market (i.e. Apple Newton) because of technical failures (weakness in the appeal to LOGOS). Despite these failures, the idea of a small electronic organizer still held value (ETHOS) in the mind of consumers. With the creation of the simplified Palm OS and a smaller physical package, the original Palm Pilot had proved itself to be a success. However, like the Coldspot, there was room for improvement. IDEO, an product development firm in Palo Alto, California worked to slim the package down, and with the increased emotional desirability (PATHOS) of the new, sleeker Palm V all the pieces were finally in place. Sales began to climb.

(fig 4)

Conclusion

The majority of the friction in interdisciplinary teams happens when the team members have neither an understanding of nor appreciation for the vital role of the other team members. Each team member thinks that their role in the process is the most important, and that the others are just the icing on the cake. This is due to a lack of a unifying model for product development.

Rhetoric, with its emphasis on both FORM and CONTENT, its recognition of CONSTRAINTS (Kairos), a USER (Audience), and the need to deal with those aspects (Decorum) provides an historic framework rich in the tradition of integration.

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Richard Fry is currently an Assistant Professor of Industrial Design in the School of Technology at Brigham Young University where he specializes in Product Design. Previous to entering the education field, he worked professionally in the areas of Appliance, Aerospace, Exhibit, and Home Fitness design. He received his MFA from University of Illinois at Urbana-Champaign in 1994.