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# Industrial Design at General Motors

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Patrick /  
interesting premise,  
but it needs lots  
(ass. how do we  
involve manufacturing  
functions w/ R&D)  
capabilities? (we  
processes, new position, personnel)  
new position, personnel (we  
know few problems). we  
have perspective, how to cope  
to carry out (we know few problems)  
say to upper management  
this is what needs to be done  
by 20/50

# Introduction

- In February 1998, GM reported a 28.6 percent share of the North American car and light truck market - only slightly above a 71 year low of 28.4 percent reported last June. With no labor problems restricting supply and a wide range of new models introduced over the past 2 years with competitive pricing and quality, we must examine product design as one possible cause for this erosion in market share. This report:
  - *Evaluates the state of design at GM today*
  - *Describes the nature of industrial design in general and at GM*
  - *Identifies where design happens at GM*
  - *Investigates the role of design in other companies and industries*
  - *Lists recommended actions*

# Background

- To many in the United States and around the world, General Motors was the company that invented automotive styling. GM models in the 50's and 60's set the pace in terms of design and clearly contributed to the success of the company. Automotive design at GM was a powerful force within the company that led engineering and manufacturing. Anything that was drawn by a designer could be built in this time of seemingly unlimited resources. In addition, the GM Technical Center in Warren was an architectural achievement in its day - a futuristic corporate campus that was built with a vision of unlimited possibilities. It was here that the entire automotive industry looked for the latest design and styling trends. And to protect that expertise, GM kept its designers in isolation believing that external influences such as engineering and manufacturing would somehow dilute the level of their art.

# Background (cont.)

- The situation today is quite different. That same technical center and its design facility appear drab and run down (although a renovation of the entire site is planned.) The worldwide design community now looks elsewhere for the latest trends in automotive design. And at GM, Design struggles to better integrate itself into an engineering and manufacturing led process.

# Current Situation

- The evidence clearly shows there is a problem at GM. Market share for GM has gradually dropped from 44 percent in 1980, to 29.4 percent for the first two months of 1998. Ford by comparison has 24.9 percent share of the U.S. car and light truck for 1998. Market share for GM has improved slightly in March due to increased incentives. For example, GM announced incentives on its minivans and full-size SUV's. And it has broadened the discounted employee purchase program making it available to a wider range of family members.
- Of course, there are many potential explanations for this erosion in market share:
  - *Quality*
  - *Price*
  - *Availability*
  - *Product mix*
  - *Product Development Time*

## Current Situation (cont.)

- Another important factor is design. Although GM has received positive reviews of its new products in terms of value, performance and quality especially when compared to previous generation models, one area it has not done well in is design. Recently GM has been receiving strong criticism from the press (news, business, and automotive enthusiast and trade) about the acceptable but uninspiring look of its new models:

# Current Situation (cont.)



- *"The new models this year are neither the best nor the most beautiful products in a crowded marketplace."*
  - » Time Magazine, April 14, 1997
- *"The redesigned Pontiac Grand Prix, the first solid hit among the new cars when it was introduced in summer, 1996, slipped 23 percent in January and February. The sad conclusion: GM's new models are disappointments."*
  - » Business Week, March 23, 1998
- *"It's a perfectly nice car. What it isn't is sensational."*
  - » Road and Track on the new 1997 Cadillac Catera
- *"It's a good van, but it has nothing on the Chrysler vans in terms of styling."*
  - » Automotive Industries on the new 1997 Chevrolet Venture
- *"It's a nice car, but not a great car."*
  - » The New York Times, Feb 15, 1998 on the new 1998 Cadillac Seville STS
- *"Sure there were some neat GM concept vehicles... But my overall impression is that GM, the outfit that invented automotive styling, has become far too conservative."*
  - » Ward's auto World, Feb 1998 on the 1998 North American International Auto Show

## Current Situation (cont.)

- Despite new and available product with competitive price, performance and quality, GM products are not winning over the press or customers due in part to design.

# What is Industrial Design?

- In the simplest way, design is a designer's answer to the following questions:
- **How will a product be used ?**
- How can I make that use enjoyable ?

# Noted Industrial Designer Henry Dreyfuss answered these questions as follows:

- "We bear in mind that the object being worked on its going to be ridden in, sat upon, looked at, talked into, activated, operated or in some other way used by people. When the point of contact between the product and the people becomes a source of friction, then the industrial designer has failed. On the other hand, if people are made safer, more efficient, more comfortable- or just plain happier- by contact with the product, then the designer has succeeded."
- Design is everything that feeds into the development of a product and its manufacturing: it embraces technology, functional performance, appearance and management of the design and development process.
- Since design is such an integrative activity, it is best to answer the question of what is an optimal design by looking at model for consumer responses to product form (Figure 1. from Bloch). A successful design is one that is the most effective in evoking positive beliefs, positive emotions and approach responses among target customers.
  - *This model helps illustrate the following key points about successful design:*

# Design is Integrative

- From its inception in the design goal stage to the finished product, design involves input from not the designer only but from marketing, production, finance, engineering and legal. All these parts must contribute for the design to be successful.

# Design is dependent on situational and personal factors

- The individual or target audience will influence design by its innate design preferences, cultural and social contexts and personality. Design preferences lie on an aesthetic continuum between order and familiarity and disorder and novelty. Correct interpretation of where one's target audience lies is critical for one's success. For example, the new Ford Taurus design was clearly too aggressive for its target audience while the more conservatively designed Toyota Camry was a much better fit. In addition, situational factors such as social pressures and marketing will also influence the design. The "Buy American" campaign is one example of this. Also, customer will be more likely to buy a product if it fits in with other goods. Furniture is purchased which "goes" with furniture already owned

# Consumers react to a product on two levels

- There is a practical feature driven level and an aesthetic one. This can be an important point of differentiation. For example, 30% of IBM's think pad purchasers bought the computer because of its design.

# Correlation with Profitability

- In a study by Roy of over 100 Japanese, European and Canadian companies, he found that 'design-conscious' firms, those that had won design awards or were considered by competing firms to produce well designed products, were more profitable. Further a recent study by the London Business School found that for an increase of 1% in design and productive development sales expense, sales increased 3 to 4% over 5 years.

# Lower Costs

- The design is critical because it largely determines the production process, the materials and suppliers. Estimates place design's influence on cost at between 70 to 80 percent.

# Time to Market

- A company that has a well integrated design process will be able to bring its product to market faster. Studies by Arthur D. Little have shown that launching late will often be more damaging financially than launching on time with increased development costs.

# Ability to provide a vision of the future

- Design alone can provide a vision of the future by questioning how products may be used in the future. Although Marketing research can be effective in discovering what the customer wants now, it can not tell the company what the customer will want tomorrow. Bob Lutz of Chrysler puts it this way, "Customer-driven is certainly a good thing. But if you're so customer driven that you're merely following yesterday's trends, then ultimately, customers won't be driving your supposedly customer-driven products." It is also useful to remember that the first focus group results for the original Taurus were disappointing. Similarly, engineering and quality efforts are too narrowly focused on technical issues to provide a holistic answer to what does and will the customer want. A recent Delphi study of automotive dealers found that quality no longer differentiates a company, it is a "given". Design alone acts as a visionary, integrative voice of the future. This ability coupled with a proper design process's ability to shorten the time to market are invaluable for a company in the midst of change and uncertain times.

## Ability to provide a vision of the future (cont.)

- Design is managed as a central activity with equal status given to designers. Michael Baker's study of 90 successful British exporters helps provide support for this element. He found that 80 percent of these companies put the design function at 'top-management level'. Nearly 60 percent "encouraged designers to see new products through to commercialization."

# Ability to provide a vision of the future (cont.)

- Management attitude towards design is one of flexibility and freedom tempered by well-understood and well-managed development process. Empirical evidence exists to support this as well. A 1993 study by the Design Council of England of companies renowned for their design excellence found that the key to these firms' success was combining a regular reviewing and monitoring system with a flexible, conducive corporate culture.
- ***In later sections of the paper, we will look at specific examples of successful design cultures and how GM can use these examples to develop its own design culture.***

# GM Design Process

- Low emphasis on design
  - *GM has acknowledged that they know their cars need more style, but that they feel GM must establish its reputation for quality and reliability first. Further, CEO Smith repeatedly has avowed the company's priorities as "Run lean, get common, and compete locally." High ranking officials still speak of "moving metal". Both these comments reflect GM's cultural emphasis on quantitative measures. An objective such as delighting the customer seems not to be in GM's vocabulary.*

# Designer Status

- The following was found on Chadwick's page. "For over two decades now, Chadwick has had a partner in recklessness. ""Herman Miller isn't afraid to take chances on new ideas. That's why the company's been successful for so long, and that's one reason why it's challenging to work for them."
  - <http://www.hermanmiller.com/design/biographies/chadwick.html>
- George Nelson's philosophy can also be found on his designated web page: "1 . What you make is important, 2. Design is an integral part of the business, 3. The product must be honest, 4. You decide what you want to make, 5. There is a market for good design.
  - <http://www.hermanmiller.com/design/biographies/nelson.html>

# Product Myths

- Herman Miller has created a design culture where designers strive to create products that will be remembered and studied. The best design innovations receive acknowledgement by the design community.
- Herman Miller has several products on display in museums such as the New York Museum of Modern Art, the Whitney Museum and the Smithsonian Institution. In addition, the Henry Ford Museum has an exhibit that traces Herman Miller's product history.
- Herman Miller has links on its web site to web pages that describe award-winning products. These pages describe the product briefly, list the awards received and give credit to the designers responsible for the product. For example "The Equa chair, introduced in 1984. is another ergonomic seating design. The chair was designed by Don Cadwick and Bill Stumpf to provide comfort and support to the user without complicated knobs and adjustments."
  - <http://www.hermanmiller.com/products/seating/index.html>
- Herman Miller achieves multiple benefits by marketing the accomplishments of its designers both within the company and externally. Thus, Herman Miller builds a reputation as a "design" focused company.
- From a marketing perspective, customers gain an appreciation of Herman Miller products. From an organizational perspective, Herman Miller has an easier time attracting the best designers in the industry. Once designers are hired, they are inspired by a company culture that values and recognizes their work.

- **Healthy work environment**
- Information Resources