Chapter III
The Design of Engineering

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ABSTRACT

The purpose of this chapter is to define the roles of engineering and design within the product development cycle looking at both the scientific and artistic methods used by the creators of new ideas. With the vastly different philosophies of product development between the engineer and the designer, the production manager is often faced with an ubiquitous tension that is frequently misdirected and mismanaged. The disparate design philosophies tend to force companies to pick either “science” or “art” in their development cycles which in turn creates either products that have no connection with human beings or products that cannot conceivably be produced on this planet. This chapter addresses these concerns and suggests methods in managing the creative insanity of successful product design.

INTRODUCTION

In the last fifty years, the developed world has seen a considerable increase in not only material wealth, but also in the choices and lifestyles provided by products and services that are a staple of our everyday lives. The increase in product choices, specifically “designer” product choices, has bred a new type of selective consumer who uses the goods and services in their life as a medium to convey a “personal brand” to the world through their selected experiences with the products they buy (Brettell, 2007).

This increase in the self brand has left many companies scrambling to connect with people on deeper levels that go far beyond function and possession. In the 21st century, many high-tech, engineering based companies have come to the realization that, if they want to compete in the global market, they have to integrate human centered design somehow into their core competency (Hoover, 1991). Basically, they realize that they need design, but don’t know why. Business is just starting to grasp the emotional value of life and this shift from the analytical to the artistic is especially showing up in product and user-interface (UI) design.
The focus of this chapter is to define the engineer and the designer, highlighting their strengths and weaknesses in the product development cycle and then outline a way in which the two different personalities can be combined together to create a collective genius within companies through the role of a manager. The first part of the chapter discusses the history of the development of both engineering and design and then goes on to discuss the current state of design development and highlights several case studies in relational psychology between the artistic and the scientific with concern for product generation.

The methods in which integrated design are managed and addressed in the second part of the chapter followed by the roles of the designer, the engineer and the production manager within this assimilation. These areas of product development are discussed in order to better understand the key shortcomings in the synthesis of the workplace.

Overall, product development comes down to art and science, engineering and design. So far in product design, science has dominated the playground. The science physically creates the development, but the art creates the story and in the end, stories are all we really have.

**BACKGROUND**

It’s four in the morning on a muggy Sunday night in North Jacksonville and I’m sitting in a Wal-Mart® parking lot with a few friends playing a game of Tidily Winks™, waiting for the Tire and Lube Express® to open. My buddy Theron is dominating all of us by a solid 50 points. We had driven the two hour stretch down I-95 from Savannah, Georgia earlier that night in hopes of finding adventure before taking Theron to the airport where he would catch a seven o’clock flight out to the west coast. Ka-thump, thump, thump! That’s the sound of a shredded tire. As we sat there waiting for the tire center to open, it came to me: “This is what it’s all about…the story.” It is the stories derived from experience that unite humans and give importance and understanding to our relationships with the world around us.

In the age of mass consumerism and knowledge at the press of a finger, people are searching for meaning in life beyond the stainless steel espresso maker that matches the kitchen sink and the lemon scented dish soap that “leaves hands feeling soft.” People want to have a connection with their belongings that transcends the functional and dives into the experiential (Norman, 2003). As extreme as it sounds, people want to create stories with the products they buy and the services they purchase, because stories are how people remember and remembering is where the true value lies. If all that was written in the last paragraph was a monologue about the pros and cons of oblique engineering in the automotive industry, probably half of the people reading this chapter would stop and the other half would fall asleep. It was the essence of a shared experience, a story, which kept the reader intrigued and fascinated with the outcome. The story was where the value was maintained and the experience understood. This value in the experience must be conveyed within business, between and among departments, if it is to be successfully implemented.

This value of the story is further elaborated by designer Scott Klinker, who says

> Wordsmiths have long been able to deliver complex ideas about the human condition with simple emotional stories. Language is the starting point for any design process: words define your goals and often determine the results. Inventive keywords can help you reposition the product to breach new categories. Literature is full of theoretical tools like deconstruction for the designer who learns to play with language to build meaningful forms, intellectual positions, and experiences. (Klinker, 2007)

The story is where the value is, but the product is where the business is.
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