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IMPACT

THE SYNERGY OF DESIGN BUSINESS + TECHNOLOGY

CONTENTS

INTRODUCTION

DESIGN PRACTITIONERS

- 12 PASSION, PERSEVERANCE AND, A LITTLE BIT OF LUCK
Cat Chow 64
- 16 THE BUSINESS OF BEAUTY
Karim Rashid 70
- 20 DANGER!
Tucker Viemeister 74
- 24 DOING MORE WITH LESS ENERGY
Craig Vetter 77
- 28 NAKED DESIGN—THE IMPACT OF THE DESIGNER'S EYE
Paul Hatch 80

DESIGN BUSINESS + MANAGEMENT

- 38 THE EMPATHY ECONOMY
Bruce Nussbaum 84
- 40 ERGONOMICS REDEFINED
Bryce Rutter 88
- 44 DEVELOPING A FRAMEWORK FOR DESIGN MANAGEMENT
Earl Powell 92

DESIGN EDUCATORS

- 48 SPACE: A NEW FRONTIER FOR DESIGN
Larry Bell 96
- 50 RELEVANT DESIGN: ENHANCING QUALITY OF LIFE THROUGH
THE FUSION OF ART, SCIENCE, AND TECHNOLOGY
Benjamin Grosser + Deana McDonagh 100
- 54 CREATIVITY WORKSHOP: WHEN IS A CHAIR MORE THAN
A CHAIR?
Rob Lopez + Deana McDonagh 106
- 58 HEARING THE UNHEARD VOICES OF THE WIDER COMMUNITY:
COMMUNITY BASED LEARNING
Deana McDonagh + Alexander Fekete 110

STUDENT EXPERIENCE

- 64 STUDENT IMPACT: EFFECTIVELY CREATING POSITIVE CHANGE
Mona Haggag + Danielle Moorman
- 70 EMPATHIC MODELING TOOLKIT: TREMOR EMULATION DEVICE
Joseph James Grasso
- 74 HOME AND THE STATE OF BEING PRESENT: A CASE STUDY
Noah Norton
- 77 EXPERIENCES: MODELING BEHAVIOR IN THE DESIGN PROCESS
Summer Hill
- 80 MODULAR PRODUCT DESIGN: SIMPLE FROM THE START
Joseph F. McMillan

DESIGN RESEARCH

- 84 CROSSROADS
Daniel Formosa
- 88 DESIGN INITIATIVES AT KIMBERLY-CLARK
Herb Velazquez
- 92 PUSHING DESIGN BEYOND RHETORIC
Brett Vladika
- 96 DESIGN FOR HUMANITY
Velma Velázquez + Aaron Sklar
- 100 DESIGN FOR DEMOCRACY: THE POWER OF DESIGN TO IMPROVE
THE CIVIC EXPERIENCE
Stephen Melamed
- 106 LOST IN TRANSLATION
Benjamin Watson + Deana McDonagh
- 116 CONTRIBUTORS

What is the best-designed product that you own?

ERGONOMICS REDEFINED

Think about the best-designed product you own. It's probably a product that fits you like a glove and when used, becomes a seamless extension of yourself and makes you feel like a million bucks! In most cases you don't let others touch or use it, and you care for it like it was your lifeline. Everyone has one, regardless of who you are, where you live, your culture, age, gender, socioeconomic status, or intellectual prowess. But what does it take to become one of these coveted favorites? Are there any patterns across the board that would provide designers and manufacturers with the ability to more consistently offer products that vie for this coveted position in your life, or is it luck?





When designers are asked for their secret formula for successful design there is significant talk about everything but the end user. I am often amused hearing the stories behind the designs. Designers are renowned for waxing on eloquently about beauty, how they drew from nature, how innovative and green the product is, and the efficacy of materials and manufacturing processes. You swear that if you listened long enough they would eventually link their design to Stonehenge and the great pyramids! But what I find totally stunning and utterly negligent is the complete lack of discussion or consideration of the "human factor." The last time I checked, humans use products, so let's not only include the human factor, but also use it as the primary driver for new product development! After all, if a design does not work, then nothing else matters. Seems sensible to me!

So what happened to our design industry? When did we stop paying attention to human factors that can shape design? When did the proverbial wheels fall off the apple cart? It is my opinion that they were never on the cart in the beginning!

WHAT IS ERGONOMICS?

After twenty-five years of evangelizing for ergonomic design, I can tell you that as soon as I mention the word "ergonomics," people's eyes glaze over; they immediately think of lumbar supports in office task chairs, displays and controls in nuclear power plant control rooms, and generally see nothing but ugliness. In fact, designers overwhelmingly view ergonomics as the Trojan Horse to good design because the concept limits the creative process and places unreasonable constraints on design and the potential of the outcome.

I know the design community at large will argue day and night that they do indeed integrate ergonomics into their design process. But even they do not realize they are trapped in an archetype of what ergonomics was fifty years ago. As a result, it should be no surprise that they see ergonomics constraining their creative process.

ERGONOMICS REDEFINED

I want to share a new view of what ergonomics is and its place and power in new product development. The new ergonomics goes beyond all traditional and narrow interpretations of the word by providing a rich source of knowledge about how we as humans think, feel, and behave, and it creates a scientific framework that allows us to develop a deep and rich understanding of people. It addresses every nuance of a product's design from weight, balance, color, form, textures, and materials through to the minutiae of color, contrast, and visual sensitivity. It allows us to understand routine discrepancies between what people say they do and to their real behavior, and takes into account factors of culture, age, gender, socioeconomic status, and global influences that collectively define the sandbox within which designers should play to achieve successful design.

The new ergonomics embraces all of the sciences from human perception, cognition and sociology to kinesiology, biomechanics, physical therapy, anatomy, and physiology, and employs a wide variety of research methods that allow design to be measured. The confluence of these disciplines, when married with design, provide designers with the ability to fine tune a texture on a design down to nanometer—because the human fingertip is capable of sensing a dot as low as a few microns. It can define differences between masculine and feminine or durable versus sophisticated product experiences.

The new ergonomics confronts the intrinsic weaknesses of traditional market research tools and techniques such as focus groups, conjoint analysis, mall intercepts, etc., that continue to serve Fortune 500 corporations as the de facto standard in defining user needs and testing new product concepts. The fundamental shortcoming of these techniques is that they do not capture reality because they are conducted out of context and they score consumers based on responses and reaction without drilling to a deeper level to identify the drivers of such reactions.

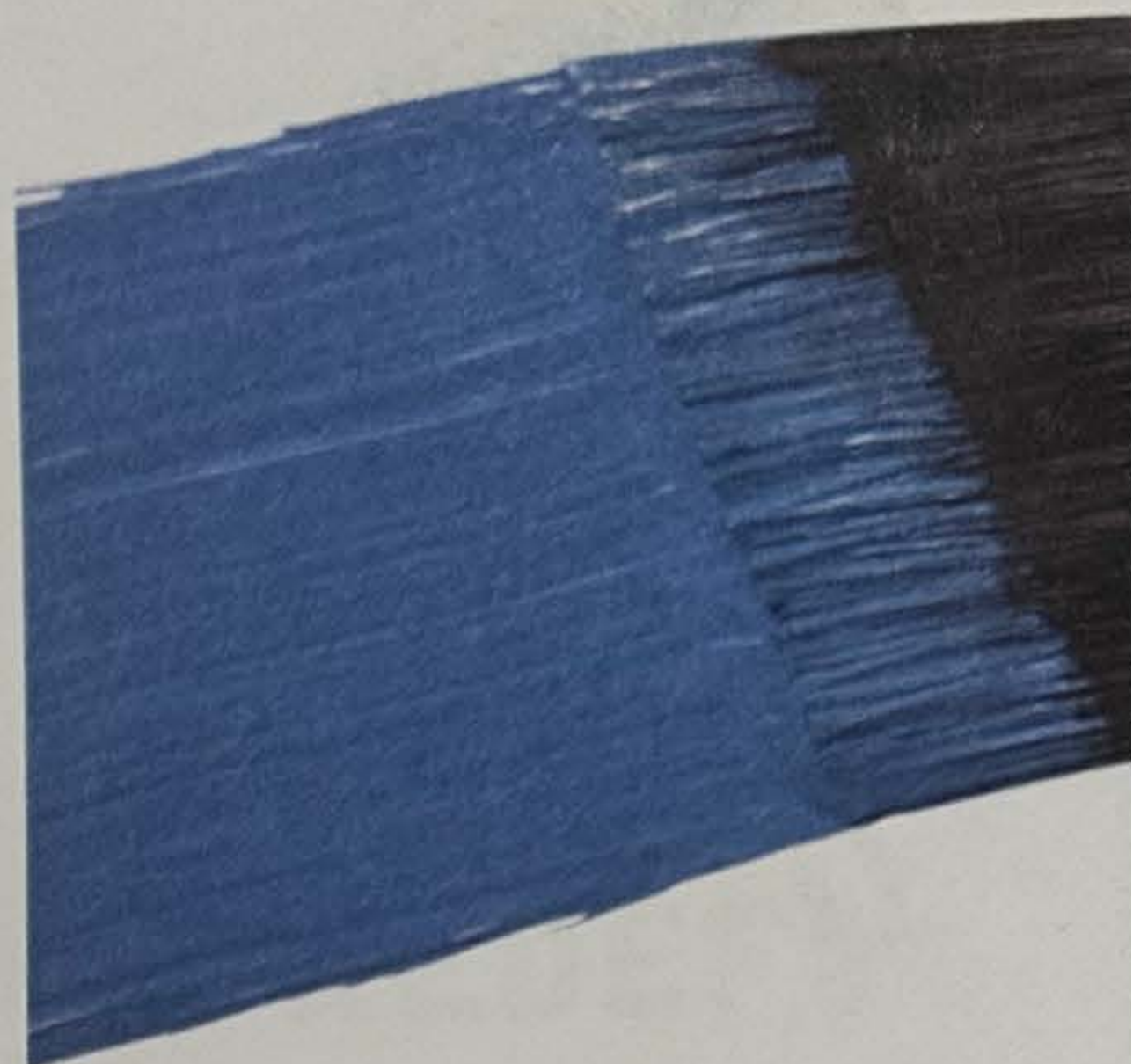
For example, focus groups, the most used and relied upon development tool for measuring consumer interest and demand, are fundamentally flawed as you end up with eight to ten strangers in a room, who by human nature are not inclined to reveal their idiosyncratic behaviors, knowing they are being watched by people behind the one-way mirror (eating M&M's). Add to this typical sociological dynamics, where in a group of ten there are one to two alpha dogs who the moderator tries to keep under control, one to two people who you need to take a pulse on to see if they are alive and the rest who go with the flow. It's not that these subjects are consciously trying to deceive you, but rather a performance dynamic is in play. Ask yourself if you have ever met a normal person who likes to reveal their odd side? Furthermore, the entire interview is conducted out of context, so it should come as absolutely no surprise that you get questionable data!

Traditional market research techniques over the last thirty years have been pushed far beyond their original intent and resolution to compensate for the design community's failure to provide alternative methodologies that yield measurable insight and a rich understanding on all levels of consumers and design.

ERGONOMIC DESIGN MAKES GOOD BUSINESS SENSE

I know my opinions will incense some designers. I hear cries of killing creativity, constraining lateral thinking, and limiting potential outcomes. But nothing can be further from the truth. When fully leveraged, ergonomics becomes an incredibly powerful innovation engine, providing clear and concise parameters to make smart trade-offs and resulting in designs that, plain and simple, work. There are several examples where a truly human-centered design orientation can result in highly innovative design solutions that create passion at POP and profits at the cash drawer.

For example, we could have never conceived the award-winning Kellogg's Drink'n Crunch packaging design, identified as one of the most significant innovation in food and beverage packaging in 2004, without a detailed understanding of how people eat on the run, the confluence of opinions and influences between mother and child, and the physiology of eating, lip and mouth anatomy as well as eyes-on-road factors for safe driving.



The end result was a design that created an entirely new category of food delivery for a society that has turned to eating on the run.

Without a detailed understanding of the surgeon's need for precise dexterous control while minimizing the onset of stress and fatigue during long and complex procedures, we would have never discovered the need or design attributes for a fingertip control to rotate the operative window or the instrument's main grip configuration in the design of Medtronic's M4 Microdebrider (see Figure 2). This and other breakthroughs on this product resulted in a 243 percent increase in sales within the first sixty days of introduction.

For the weekend DIY painter we never would have discovered what causes the cramp you get in your forearm without a detailed analysis of the biomechanics of painting and studying professional painters' grip architectures (see Figure 3). Knowing that the thickness and grip topology of the brush are critical to solving this issue, we made the brush grip area fatter which in turned created a novel aesthetic.

In the design of Bayer's new Ascencia blood glucose system, by using traditional means we would have done what every other designer would have done and made the blood glucose meter smaller than anyone else in market, following traditional designer intuition that high tech and small size are the right paths to success. In reality, however, diabetics have measurable decrements in dexterity, vision, and kinesthetic feedback that clearly showed that the industry trend toward miniaturization was creating designs that were increasingly difficult to use (see Figure 4). The results speak loudly to this finding with Bayer reporting a 258 per cent increases in its finger lancing device sales and a more than 50 percent monthly increase in sales volume of meter disposables.

These successes are a direct result of studying how we as consumers think, feel, and behave, understanding the limits and capabilities we possess and using these to form the design strategy for new product development.

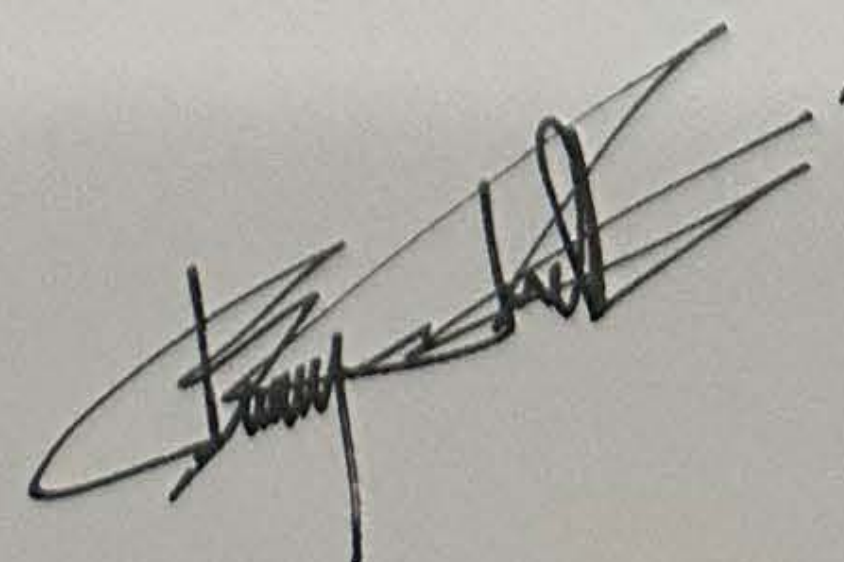
SO WHAT IS GOOD DESIGN?

Good design, like beauty, is more than skin deep. Good designs possess a unique and sensory experience. They work the way our brains work and as a result are intuitive and easy to use. They feel perfect on all levels, and create a memorable experience and passion in ownership. They become our coveted items of ownership. They become the best designed product you own!

Our design industry has spoken out for decades extolling the necessity of aesthetics to such a great extent that when compromises are made they overwhelmingly place aesthetics over everything else. This is not just my opinion but also a fact that can be easily confirmed. Walk through your house and inventory all the cool looking stuff that does not work or fit, or is not intuitive.

So what is good design? Good design is a product that not only looks fabulous, but also works perfectly and seamlessly on all levels. It is a design that puts a smile on your face every time you use it and never makes you think that you may have spent too much for what it offers in return.

GOOD DESIGN IS ERGONOMIC DESIGN!



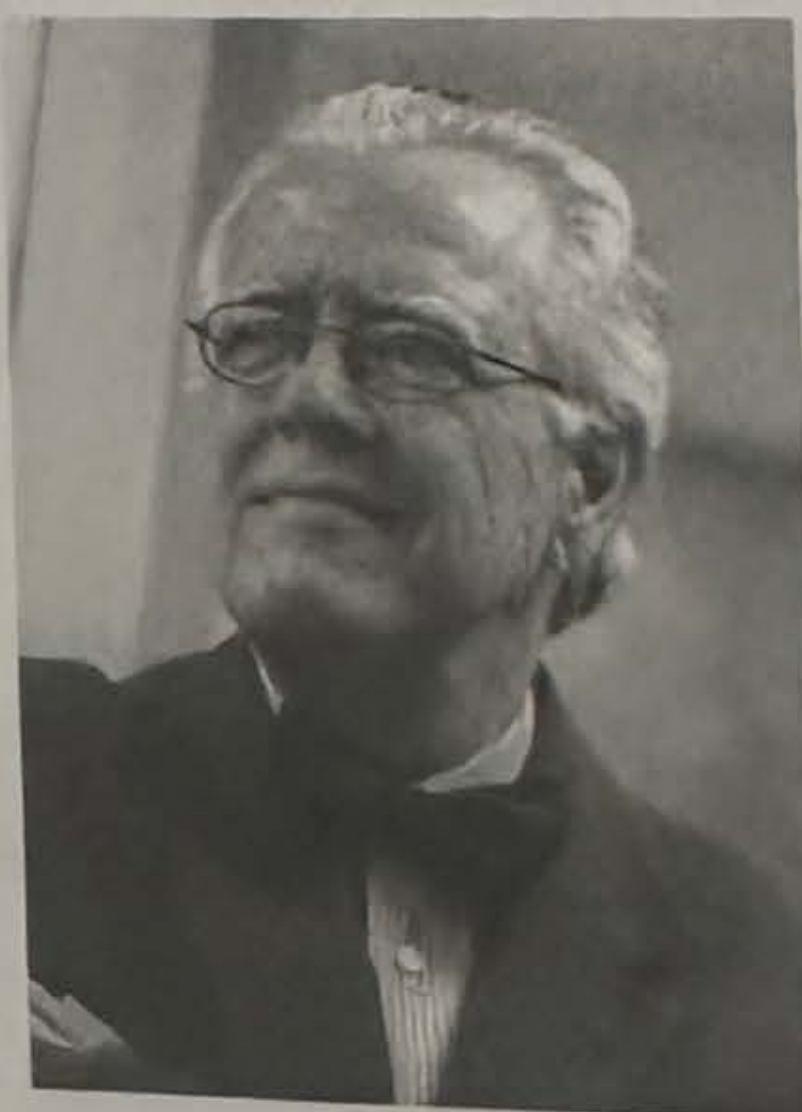
With more than twenty years of design management research and experience, I have had many opportunities to consider the challenges and responsibilities of successfully managing design. While the title of the profession is design management, I believe it is better thought of as managing for design. Other important factors include the context in which design management is exercised, ranging from fashion to industrial to architectural design; the role of design management, which reaches from small design groups to the focus of a nation; and the strategy or intention, which provides crucial guidance.

As the president of the Design Management Institute, I have frequently been asked to define design management. In the late 1980s, there was a meeting of the Institute's board of directors and advisory council in which the attendees attempted to come up with a definition of design management, which I believe still holds today. This is what we settled on: Design management is the development, organization, planning, and control of resources for the user-centered aspects of effective products, communications, and environments.

The profession of design management strives to understand, develop, support, manage, and shape the context in which design can be most effective. For this to happen, two things must be in place: first, the organization must be aware of design's power for competitive advantage; and second, the design manager must be a leader with "a core set of knowledge, skills, and attitudes."

This set of knowledge, skills, and attitudes includes six elements—of which three (purpose, people, and presence) are intangible, qualitative, and "softer"; and three (process, project, and practice) are more pragmatic, tangible, and measurable.

developing a framework for DESIGN MANAGEMENT PURPOSE: THE DESIGN MANAGER MUST "SHAPE THE



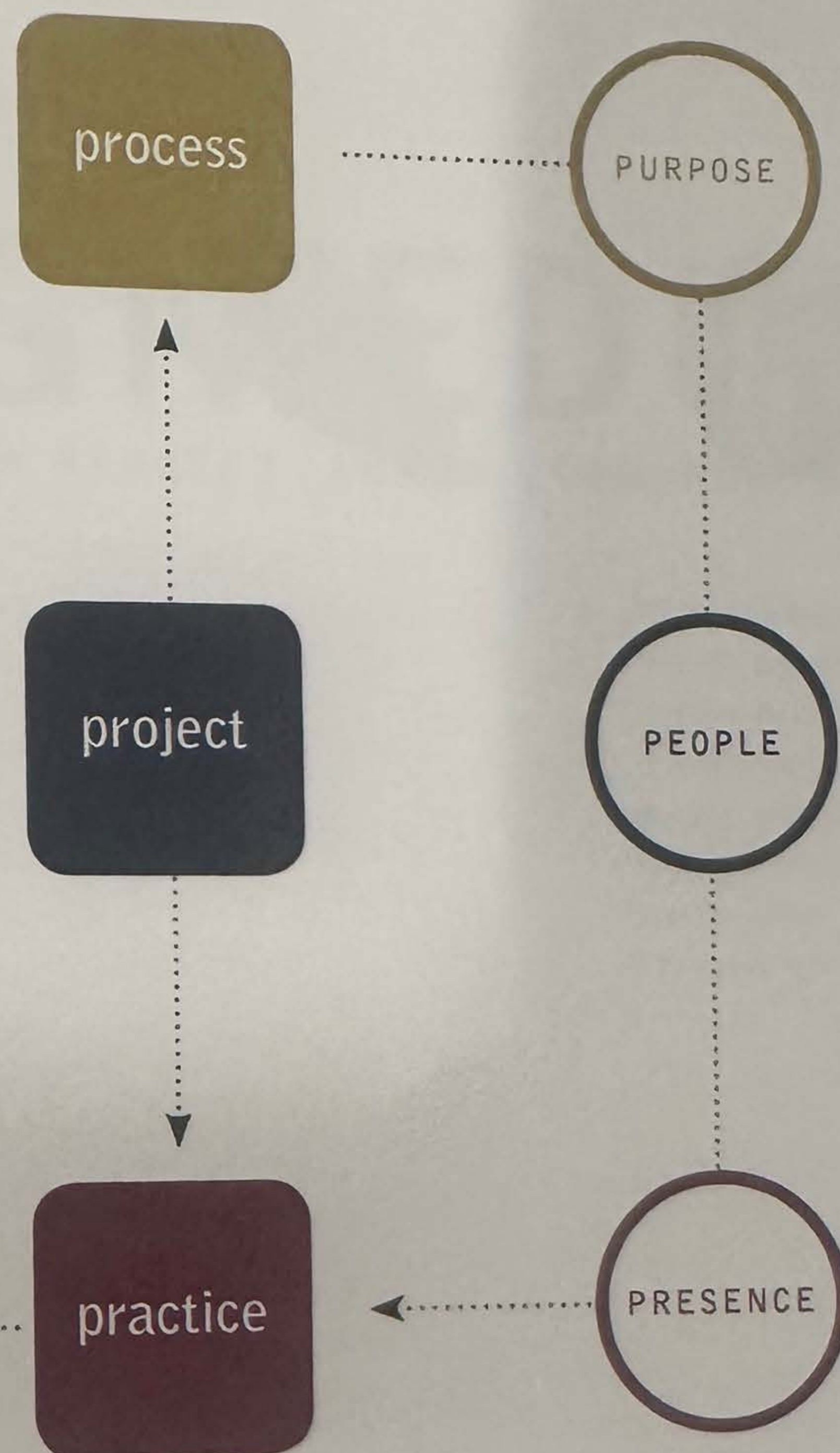
EARL N. POWELL

PURPOSE OF THE GROUP HE OR SHE IS MANAGING AND ENSURE THAT THIS PURPOSE MESHES WITH THAT OF THE ORGANIZATION." THIS "P" IS REALLY ABOUT LEADERSHIP. THE DESIGN MANAGER NEEDS TO CREATE A CONTEXT IN WHICH PURPOSE IS DEDICATED TO KEEPING DEVELOPMENT PROCESSES FOCUSED, EFFICIENT, AND EFFECTIVE.

PEOPLE: THE DESIGN MANAGER MUST BE ABLE TO MOTIVATE, ENABLE, AND FOCUS CREATIVITY. INDEED, WHEN EMPLOYEES MOVE FROM ROUTINE PERFORMANCE TO STELLAR WORK THAT GOES BEYOND THEIR ASSIGNMENTS, THEY HAVE MOVED FROM BEING MANAGED TO BEING LED. BEYOND THE DESIGN DEPARTMENT, IN FACT, DESIGNERS CAN BENEFIT THE WHOLE ORGANIZATION BY HELPING NON-DESIGN MANAGERS LEARN HOW TO FACILITATE CREATIVITY WITHIN THEIR OWN GROUPS.

PRESENCE: I DESCRIBE THIS AS "THE UNWRITTEN DIMENSIONS OF AN ORGANIZATION THAT OPERATE INFORMALLY, YET HAVE A POWERFUL INFLUENCE ON DECISIONS AND HUMAN INTERACTIONS." A DESIGN MANAGER WHO UNDERSTANDS CORPORATE PRESENCE UNDERSTANDS WAYS IN WHICH CHANGE CAN BE FACILITATED, AS WELL AS THE BARRIERS THAT MUST BE SURMOUNTED. THE INFORMAL PROCESSES ARE THE PRIMARY DRIVER OF AN ORGANIZATION, AND THEREFORE ARE AN IMPORTANT AVENUE FOR INFUSING IT WITH A RESPECT FOR DESIGN.

PROCESS: This "P" involves the way in which products move from concept to market. Design is the only discipline that has the process of idea development at the core of its education program and its practice. Thus, taking a concept through a development process and examining it all along the way from multiple viewpoints is at the core of the design manager's contribution to organizational success. It is a unique gift. PROJECT: Here is where we learn about the norms and values of project management, where professional development occurs and where most of the political battles are fought. Regardless of whether the design manager considers himself or herself to be "in charge of" or "a member of" a project team, "people" skills are as crucial as the talents expected of a designer (skills of viewing problems from multiple viewpoints and solving them through the development process). Good design managers seek to encourage these talents in all the members of the group. PRACTICE: Practice supports the design resource group through the day-to-day operations of finance, performance planning, and human resource development. Design managers need to be able to attend budgeting meetings and fight for the funds necessary, for instance, to help their designers continue to develop professionally. They need to learn the concepts and language of finance, budgeting, and business in general. This will go a long way toward being accepted as part of a management team when larger issues of corporate strategy are being discussed.



As our world becomes more complex and continues to change and evolve, the variety of our encounters with products and services also increases and becomes more complicated. All of these encounters begin with perception, whether they involve pouring a fresh cup of coffee or filling out a bank loan form. The primary goal of design is to shape these perceptions and thus the experiences they represent. Consequently, the goal of design management and the design manager should be to ensure that the organization uses its design resource as effectively as possible to achieve these ends. A truly great design manager will be able to manage all the "P's," and do so with understanding, enthusiasm, and humility.