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THE PSYCHOLOGY OF DESIGN

CREATING CONSUMER APPEAL

EDITED BY
RAJEEV BATRA, COLLEEN SEIFERT,
AND DIANN BREI

THE PSYCHOLOGY OF DESIGN

Design plays an increasingly larger role today in creating consumer desire for products and attraction to commercial messages. However, the psychological processes involved are only partially understood. In addition, design is inherently interdisciplinary, involving (among others) important elements of aesthetics, anthropology, brand strategy, creativity, design science, engineering, graphic design, industrial design, marketing, material science, product design, and several areas within psychology.

While researchers and practitioners in all of these fields seek to learn more about how and why "good" design works its magic, they may benefit from each other's work. The chapters in this edited book bring together organizing frameworks and reviews of the relevant literatures from many of these contributing disciplines, along with recent empirical work. They cover relevant areas such as embodied cognition, processing fluency, experiential marketing, sensory marketing, visual aesthetics, and other research streams related to the impact of design on consumers. Importantly, the primary focus of these chapters is not on product design that creates functional value for the targeted consumer, but rather on how design can create the kind of emotional, experiential, hedonic, and sensory appeal that results in attracting consumers. Each chapter concludes with implications for a theory of design as well as for designers.

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Creating Consumer Appeal

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and Diann Brei

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FOREWORD

The "Science" in the Psychology of Design

Designers create practical goods and services. This is what makes design so special, so very different than most academic disciplines that do in-depth studies of the topic of interest. Design is a wonderful field because it actually creates things that change people's lives. This is all very nice, but the question before us is whether there is a science to this behavior or whether it depends upon the whims, insights, and creativity of talented designers.

Today, much of design is done through the intuition, instincts, and insights of the designers, honed by years of practice, training, and mentoring. Some parts of design, especially interaction and visual appearance, have considerable basis in the cognitive sciences of interaction and perception. Other parts lack a solid base of evidence. Can design be a science? Many in the design community think the answer is no. I find this misguided.

In a recent posting to a mailing list that discusses such problems I classified the different types of rigor possible in a field like design. Here is what I said (edited slightly):

> Can design be a science, driven by theory? Or can we at least enhance the quality of our methods through evidence-based design, where practices are studied, evaluated, and then codified with statements about their efficacy and the conditions where they are appropriate. Or should design remain as it is today, based upon the skills and talents of designers? My answer? All three.
>
> 1. I strongly prefer design theory as a way to proceed: theory supported by evidence.
> 2. Most areas of design today do not have appropriate theories—indeed, it may be impossible to develop appropriate theories—and in these cases I strongly argue for evidence-based design as the way to proceed.

3. Many areas of design today do not have a base in evidence—indeed, it may be impossible to develop appropriate evidence—and in these cases we rely on the skills and insights of skilled designers as the way to proceed.

In the history of science, this is a common path. First come observations. Then comes classification. Then simple measurements of some components. With time, a theoretical basis develops. The scientific method is a procedure for probing, testing, disputing, and eventually converging upon useful, tested theory. Not all science or engineering practice today is theory based. Some is still evidence-based. Medicine is a good example of a field with a mixture of deep theory, a non-theoretical component based upon evidence, and numerous components not well supported by either evidence nor theory.

Design is following these paths, but in its own way, for each field has different goals, methods, and techniques. In many disciplines the problems to be tackled are well defined. In design, the activities and issues that we address are so vast that I believe that most of design will fall into my categories 2 and 3: no appropriate theory, but a combination of evidence-based best practices, and the skills and insights of designers.

Design is a complex field. Some components of design already are based upon good science, usually from the behavioral and cognitive sciences. Some are at the pre-scientific level of understanding. I believe that with a proper attitude toward evidence-based studies, these areas can also become either scientific, or at least rigorously proven to be effective when used under well-understood circumstances. Some aspects of design seem primarily based upon human creativity, sense of style, and other socially mediated conventions. These may never be scientific, but they do play a critically important role in the quality and acceptance of design. So, can design be a science? Sometimes yes, sometimes no. Can it be empirically based, evidence driven? Yes. Will it have to reply on intuition and the creativity of individual designers? Sometimes, yes.

The power of design lies with its methods. In modern design, the process starts with observation of the people for whom the design is intended, spending time observing, studying, and developing a deep appreciation for the underlying issues. I have a rule when I'm asked to consult: "Do not solve the problem I am asked to solve." Strange rule: why do I have it? Because the problem given to us is seldom the fundamental, root problem—it is usually the surface problem or the symptom. Design is powerful because we do not just solve problems: we define them. We spend a lot of time trying to understand the fundamental issues that should be worked on, not the superficial issues that are easily observed.

Many of the important problems in the world cannot be solved, either because not enough is known or because they are fundamentally unsolvable: there are too many factors, too many competing constraints, too many issues that are fundamentally incompatible. "Wicked" is the term applied to these problems by both economists and designers: wicked problems. Design differs from most

disciplines in that it is not searching for truth. It is searching for "good enough," or sometimes, simply for "better." In the words of Herbert Simon, we satisfice. Design has to create real value, it has to make a difference. It has to look for large effects, not small ones, things that make a significant difference, whether or not they are optimal or perfect. Design is the field of practical accomplishment, where the results are continuously studied, modified, and improved. Big effects, not small ones. Significance in people's lives, not the tiny difference of statistical significance.

Designers think by drawing and by making. Not with words, not with equations, but by drawing, sketching, and building. It's a different kind of thinking. Drawing and sketching are powerful because they readily allow two, three, or even four dimensions to be represented. Space and time, both.

Part of design is a form of applied art. Yes, we want things that work well, but we also want them to be attractive, to give pleasure: nice to look at and that feel good in their operation. That's an art form, and we still don't quite know how it happens. Many parts of the design process remain art rather than science.

Let me give you an example. On today's smartphones and modern operating systems, when scrolling through a list by gesture, when the finger is lifted off the screen or track pad, the list keeps scrolling, slowing gently. It has a virtual "momentum" and "viscous friction" so that it slows non-linearly. At the end of the list, what does it do? It bounces! What is the function of the bounce? None whatsoever, except that it makes us happy. That's what great designers put into products: pleasure, feeling good, making us happy.

What is the science behind the addition of the tiny little pleasures these products provide? We don't know. Maybe we'll never know. I don't have an answer for what kind of theory might ever develop in the artistic, pleasurable, fun, and emotional component of design, even though these are crucial aspects of successful design.

This essay has been about the traditional area of design. Many of the chapters of this book come from the field called "consumer psychology," which include lots of insights and evidence about people's preferences, the importance of sensory look and feel, the impact of color, and how price affects adoption. These issues overlap the concerns of the traditional product designer, but should be a fundamental part of the design process, considered during the early phases of design.

Design is a multi-faceted, complex enterprise. It involves the initial choice of what to make, a deep understanding of people, of materials, and of technology. It requires understanding how people decide upon purchase, and then use products. It covers an extremely wide range of activities and different disciplines of study and training. It is this depth and richness that makes design such a wonderful, fascinating field.

Don Norman
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INTRODUCTION

Rajeev Batra, Colleen Seifert, and Diann Brei

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This book is the product of an interdisciplinary conference held in May 2014 in Ann Arbor on the subject of "the Psychology of Design." Design plays an increasingly larger role today in creating consumer desire for products and liking for commercial messages. However, the psychological processes involved are only partially understood. In addition, design is inherently interdisciplinary, involving (among others) important elements of aesthetics, anthropology, brand strategy, creativity, design science, engineering, graphic design, industrial design, marketing, material science, product design, and several areas within psychology. While researchers and practitioners in all of these fields seek to learn more about how and why "good" design works its magic, they may benefit from each other's work. The goal of our conference—the 33d Annual Advertising and Consumer Psychology (ACP) Conference of the Society for Consumer Psychology—was to bring together top researchers and scholars, as well as thoughtful practitioners, from these different contributing domains in order to build our understanding of the "psychology of design." Importantly, the primary focus of this conference and book was not on product design that creates functional value for the targeted consumer, but rather on how design can create the kind of emotional, experiential, hedonic, and sensory appeal that results in attracting consumers.

In this book, we have attempted to create a volume that not only presents very useful literature reviews and integrative frameworks, but also contains syntheses and suggestions by the authors that will help us move our knowledge of design forward. The chapters therefore end with the authors' implications for practicing designers, as well as for new theories of design.

The themes of the conference included Embodied Design, Designing Product Features, Aesthetics and Emotions in Design, and Methods for Design. Each of the contributions to this volume provides a diverse perspective on the themes.

Embodied Design

Given the increasing recent interest in "grounded" and "embodied" cognition, we begin the book with four chapters that show how our study of such phenomena can help us better understand consumer response to design elements. Joshua Ackerman draws implications from theories and studies about people's haptic (touch-related) experience (e.g. of heaviness, or roughness, or hardness) for product and environmental design (such as perceptions and feelings about importance, or difficulty, or stability). Lawrence E. Williams then shows how knowledge developed in infancy—called conceptual scaffolding—serves as the foundation for conceptual knowledge developed later in life, so that later physical experiences (such as physical brightness, or temperature) activate related psychological concepts (such as purity, or emotional warmth), and then influence higher-order thoughts and feelings (including feelings of product efficiency, or trust). He argues that while embodiment effects can operate via scaffolding, this need not always be the case; and that scaffolding can occur in ways that go beyond conceptual metaphors.

Luca Cian explores how the concrete experience of verticality can convey specific and unconscious abstract connotations of power, divinity, morality and valence—via the cognitive mechanisms of conceptual metaphors—leading to effects on consumer recognition, memory, accuracy and preferences. Aradhna Krishna, a keynote speaker at our conference, links design phenomena to recent research on sensory marketing, an area that she has championed.

Designing Product Features

From these general and overall conceptual and cognitive principles, the book segues to specific characteristics of products, to see how they might shape consumer perceptions and responses.

Two chapters address the role of color. Aparna Sundar and James J. Kellaris discuss how colors—not just green, but also blue (but not red)—affect ethical judgments. In their studies, they show colors impacting ethically ambiguous retailer practices, and they argue that this occurs via halo effects of eco-friendliness. Then, Keiko I. Powers looks at how vehicle color affects emotions, and those emotions then affect the prices that consumers are willing to pay for their (used) automobile purchases. She presents a regression-method study that shows how vehicle color affects the price depreciation rates of used cars.

Tanuka Ghoshal, Peter Boatwright, and Malika M. detail how the angular versus curved shape of products can work better to communicate functional versus hedonic benefits respectively. They show that while there seems to be a general predisposition for curves over angles, preferences seem to vary across product categories, depending on the nature of benefits sought. Two other chapters examine the effects of visual symmetry on brand personality inferences. Aditi Bajaj and Samuel Bond show that a product's visual symmetry can create perceptions of greater sophistication, while asymmetry suggests excitement.

Experimental evidence shows the mediating role of arousal, the effects of which are then (mis)attributed to properties of the brand. Antonios Stamatogiannakis, Jonathan Luffarelli, and Haiyang Yang also show such brand personality effects (including effects on sincerity, competence and ruggedness) for brand logos, but then also show how these brand perceptions need to be congruent with the nature of the product.

In their chapter, Ahreum Maeng and Pankaj Aggarwal propose and test the interesting proposition that products which are anthropomorphized to become associated with a humanlike face (e.g., a car), will also show an association between the width-to-height ratio of the product face and the product's perceived dominance. Specifically, they suggest that consumers prefer such dominant products since they allow consumers to achieve a higher status/power. As such, these products enjoy an advantage over products that show a lower width to height ratio of the product face.

Looking at a different configuration of a product's "facial features," Tingting Wang and Anirban Mukhopadhyay present a review of the research on consumer response to "cute" products—such as Hello Kitty. They examine the stimulus-based characteristics that create perceptions of cuteness; cognitive (inferential) and affective responses to it; and individual differences in approach motivation to these antecedent features. He (Michael) Jia, Gratiana Pol, and C. Whan Park address similar issues, examining in addition how cuteness differs from other types of attractiveness, and the multiple types of behavioral tendencies that follow from it.

Sarah Roche, L. J. Shrum, and Tina M. Lowrey examine auditory stimuli—how the sound of a product or brand name can drive consumer perceptions of its physical, tangible and functional aspects, which then affect attitudes towards it. After reviewing prior research on phonetic effects, they present research on how the sound of stock market ticker symbols can actually affect the initial performance of stock IPOs (initial public offerings).

Bernd Schmitt, a keynote speaker at our conference and leader in the field of "experience design," presents his perspective on how experiences are shaped by design, not just for brands but also in other domains such as architecture. He argues that there are general principles—applicable across domains—that underlie the way in which specific dimensions of design relate to specific types of experiences and object perceptions. He urges that these be used in our efforts to create a broad theory of design.

Underlying Processes

Naturally, we also have several frameworks and investigations about the underlying mechanisms through which various design elements impact the level and type of consumer desire.

Claudia Townsend and Sanjay Sood show why and how the influence of product aesthetics on evaluation and choice may not be a straightforward deliberative process. While functional attributes usually require serial and effortful