

## DESIGN CONCEPTS & TRENDS

Left-Directed Thinking

Right-Directed Thinking

**Lawyers**  
**Engineers**  
**Accountants**  
**Programmers**

**Inventors**  
**Educators**  
**Counselors**  
**Entertainers**

# IN SEARCH OF DESIGN EXCELLENCE

*A human-centered innovation strategy can provide a solid framework for developing highly successful, thoughtful solutions that connect with customers.*

by **bryce g. rutter**

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**W**hat is *design excellence*? What does it take to be the best of the best? Major brands around the world, in all product categories, invest in detailed and costly market research studies to define the right feature sets to be combined with the best styling options only to consistently experience disappointing financial results. Similarly, many global brands rely on engineering developments or manufacturing vendors to create breakthrough designs that result in nothing more than a redux or mimicry of what is currently in the market today. Other brands have simply watched their businesses erode and manufacturing lines go quiet to lower-cost, off-shore knockoffs.

There are, however, a smaller number of businesses who recognize the strategic potency of good design and its direct impact on financial success. These brands have created new product categories, redefined industry standards, built cult-like brand loyalty, exceeded all financial projections and changed markets forever. The successes of this exclusive club of highly successful brands are directly linked to

their ability to make a meaningful connection with their customer. They have studied and designed each and every aspect of the user experience, from product to interface to packaging to instructions to the web. How the product or service looks, feels, sounds and behaves, combined with intuitive usability and performance excellence, defines the DNA of the brand experience. And when you get it right, you have *design excellence*.

Design excellence is achieved when a product fits the way the customer thinks, feels and behaves, as well as when it creates an emotional connection and has intrinsic value. Products look right and feel right.

### **Excellence vs. Innovation**

On the surface it may seem like innovation and design excellence are synonymous. Today, the “innovation drumbeat” is so loud that many of us have forgotten that it’s not all about defining the next paradigm for the product. How we, as users, interact with this latest breakthrough can make or break even the best paradigm-shifting innovation.

**The dichotomy of left vs. right-brained thinking** or cognitive strategies profiles show very different professions. *Photo: Metaphase Design Group Inc.*

## FIVE USER-CENTERED ERGONOMIC INNOVATION TOOLS

There are five fundamental tools to fuel a user-centered innovation strategy. Depending upon the product or service being designed, these factors play more or less into providing a solid framework for developing highly successful, thoughtful solutions that connect with consumers.

### 1. Pay Attention: Watch and Record.

We all pay attention...don't we? As you read this article online using your laptop or mobile device, I don't expect you to think much about the steps you went through to get to this article to read it: the number of key punches needed; how you are interacting with your electronic device; your sight line, reach, comfort and on a more detailed level how many hands and fingers you are using; the adopted grip architectures; the dexterous control needed, and so on.

All designers, engineers and brand people watch consumers. What I am referring to here is a higher and more systematic rigor of watching so that when different people watch, they all use the same practices so comparisons and contrasting data collected by anyone from anywhere worldwide can be accurately compared. It is always good to watch the product in situ, but of equal importance is being able to days later dissect video, frame-by-frame to witness and document patterns, frequencies of use and nuances.

### 2. Ask Questions.

Everyone asks questions, but there is an art to asking a question that is non-leading. For example, asking a consumer how difficult it was to make a cup of coffee frames the response by inferring it is in fact difficult to do, and now you place his mind on a scale of difficulty for scoring. Conversely, asking one to score the task from easy to difficult with zero being easy, intuitive and seamless through to 10, which is extremely difficult and unacceptable, will remove inference and provide cleaner data.

No one wants to look stupid, which unfortunately curtails good interviewing practices. Just because you think you know why a person did something through observation, it remains important for them to tell you what they did, why they did it and how they felt while doing it. Getting people to vocalize and score their experiences will provide insight into their perceptions that can correlate to their behavioral output. Asking questions and comparing responses to observations will allow you to develop key insights into the biggest conundrum of all design research: What people say they do is not always how they behave.

### 3. Ensure Design Integrity.

Far too many good designs are left on the drafting table because somewhere, someone made a decision unaware of how this decision impacts the overall integrity of a product. For example, human sense of touch allows us to feel a raised bump as small as 3 microns high on a sheet of glass. So, why do we let a tool and die maker force us to choose from a relative narrow offering of finishes when we know that to drive an emotional or tactile response what we need is not in the book?

Sweat the details. Understand the original intent of the design and, through each step of development, ensure that the design stays true to plan. When compromises or tradeoffs do need to be made, which is inevitable in 99% of new product development programs, you can intelligently assess the impact of a tradeoff to ensure that the integrity of the design is maintained.

### 4. Use Iterative 3-D Rapid Modeling.

Getting an idea off paper and in a 3-D form will eliminate variations between how people read a drawing. When you show 10 people a design sketch, you will have 10 variations in what they see. Put a model in their hands and you immediately define the same

For example, I was never so happy as when on-line music downloading became common practice. I listen to more music, in more places. Also, instead of wrestling with impenetrable shrink-wrapped jewel boxes that violate ever fundamental rule of usability, I easily and quickly download the tunes. Today, I cannot even imagine being in the room when the idea of shrink-wrapped jewel boxes was served up as a good packaging design solution.

In contrast, with the ease and simplicity of downloading music, there are two steps in this consumer experience that, for the most part, suffer. Very few software interfaces for downloading, creating and managing your music match the intuitiveness and simplicity of the raw innovation of downloading a song with one click. Similarly, very few media players complete the other end of the consumer experience with the same degree of simplicity and intuitiveness.

Successful innovation is not measured by its quotient of cleverness, but also by the fidelity of the design of the entire user experience. Steve Jobs, CEO of Apple, who

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has demonstrated the potency of this thinking repeatedly both on consumer experience and profitability levels, is quoted as saying: "In most people's vocabularies design means veneer. Nothing could be further from the meaning of design. Design is the fundamental soul of a man-made creation." Have you ever seen anyone need a manual to use an iPod?

The thread that successfully joins design excellence and innovation is "the human factor." Regardless of product or service, all great designs have woven together a holistic solution that provides a unique, intuitive and pleasurable consumer experience. And, with this fidelity of design, the sell in is the easy part, because people will beat a path to your doorstep.

So let's dissect this concept; rethink on a strategic level how

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design intent to all 10 team members.

Quick and rapid interactive modeling is like sketching in 3-D. These initial models need not be high-fidelity solutions, but cobbling something together with duct tape and popsicle sticks can very quickly allow the team to debug a new idea. As you progress through the design process, so should the fidelity of your models, ending in picture-perfect functional prototypes that are tested with consumers and will allow for all aspects of the design to be assessed before cutting big tooling development checks.

## 5. Create Dream Teams.

Just as the name implies, with a dream team comprised of experts from all necessary disciplines, there is no learning curve. They bring expert-level skills and deep, broad experiences. Effective teams are most often interdisciplinary and are formed for specific projects, changing and morphing as the project unfolds. Their experience mitigates wasted explorations, provides deeper and more meaningful insights and generally raises the caliber of thinking. While the right team can be expensive, the cost of being wrong in markets today is an order of magnitude more costly. Nothing beats great thinking and flawless execution. ■

to weld design excellence and innovation; introduce a framework for a human-centered innovation process; and discuss five critical success factors that can be applied immedi-

ately to foster more creativity and innovation, and lead to the design of better consumer experiences.

## Linear vs. Non-Linear Thinking

On many levels, the commonly used, gated new product development (NPD) process places more restraints on creativity and innovation than it does to empower it.

In Daniel Pink's book "A Whole New Mind" he presents a compelling framework for creativity. The cliff notes on his thesis is that left-directed thinking—people who rely on the left hemisphere of their brain for thinking—results in what he calls *logical, linear computer-like reasoning*. In contrast, right-directed thinking is more holistic, intuitive and inventive, and provides the facility to empathize and understand concepts of joyfulness and meaning. This is non-linear thinking.

Deploying non-linear thinking that is using the creative side of the brain, one can more easily imagine new things, connect dots that most never thought of connecting, and more generally explore, consider and examine new ideas without prejudice.

In contrast, we have all been in meetings trying to come up

with the next big idea only to see it shot down for a variety of reasons. The funniest reason I hear far too often is, "We can't do that because we have never done that before." Of course, one could answer this right-brained thinker with, "That is why we call it a new idea!"

When we look at NPD control processes used by the majority of corporations today, they are linear stage-gated steps that, by their own structure and definition, do little to foster and nurture non-linear thinking that is a key driver for creativity and

## INNOVATION KILLERS

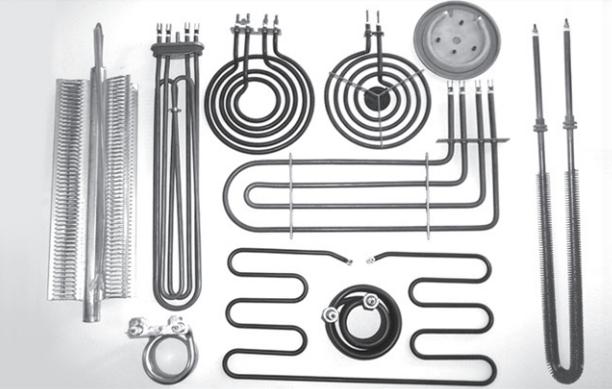
- We tried that already.
- We've never done that before.
- We don't do it that way here.
- That never works.
- It's not in our budget.
- It's not an interesting problem.
- We don't have time.
- Executives will never go for it.
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- Our customers won't get it.
- It won't make money. ■

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innovation. By no means must one choose one hemisphere over the other, but rather the most potent thinkers have the ability to move back and forth between these two very different ways of thinking to create solutions that combine innovation with practicality—and result in breakthrough design solutions that sell.

Author Daniel Pink's thinking not only highlights the contrast between traditional NPD practices deployed today and how we are functionally wired for thinking and creativity, but it also highlights that if the corporate goal is to offer products to customers that create strong and meaningful emotional connections that fit like a glove, then the design process must promote non-linear right-brain thinking development strategies that allow the NPD team to see and understand its customers not as statistical entities with socioeconomic profiles, but rather as living and breathing organisms that have emotions, needs and capabilities that change and morph from one minute to the next. Truly, companies need to see, understand and empathize with the human side of the design equation.

## The Human Factor

For many people, when they hear the word *ergonomics* their eyes glaze over and, if they have not fallen asleep, they think of the many boring, uninspiring or simply weird products on the market today. Consider the ergonomically designed pen or PDA where the former looks like a dog's broken collar bone and the latter is no more intuitive than a brick. Conversely, we have also seen ergonomic designs that do indeed have bonafide ergonomic features, but simply look odd or make no emotional connection with the customer. Clearly, we know that ergonomics alone do not guarantee design excellence. Let's examine how ergonomics are seen and used today.

There is a condition that I call *ergomania* that targets the DNA of brand managers, and sales and marketing people. And, like all forms of mania, when contracted ergomania rapidly leads to an obsession to claim that the product being sold is "ergonomically designed" regardless of the facts. It's like walking into an auto dealership and buying a sports car because they tell you it will do zero to 60 mph in 4.3 seconds and pull

4 Gs in the hairpin, only to discover it's a 4-cylinder engine that barely pulls your body weight around the corner. Welcome to the cut throat world of sales and marketing.

Ergomania has had a pronounced impact on consumer awareness and the perception of the value that ergonomics bring to design. Buying a product advertised as being ergonomically designed, only to learn after purchase that it is awful, uncomfortable and no different than what you already owned, projects a perception that ergonomics aren't needed—because if they were, it would have been a great product experience for you.

If the product has bonafide ergonomic qualities, be sure to clearly articulate those to consumers with a fact-based campaign where the claims will stand the test of time. These same techniques will also allow you to benchmark the product against competitive designs to make quantitative statements that can clearly distinguish a product's efficacy from competitive offerings.

Current NPD practices position ergonomics as something you sprinkle on design in the initial creative stages. For example, in designing a handheld surgical instrument, kitchen gadget or gardening tool, designers



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develop conceptual designs as ergonomists supply data such as hand anthropometry (static measures of body parts), range of joint motion and finger strength to inform the creative process. What is missed more often than not, however, is a fundamental question of strategy.

## Ergonomics as Innovation

In contrast to today's prevalent practice of using ergonomics as an antidote to make a design or engineering configuration easier to use, an ergonomically driven design strategy begins with fundamental questions of how to optimize the person-product interface, on all levels. For example, let's consider designing a new powered surgical hand instrument.

Using a traditional NPD strategy, one would begin with mechanical layouts of the internal componentry or a defined feature

set based on a competitive product analysis or a unique aesthetic language or some combination of these. We then bring ergonomics in to the design process to address conflicts between the user and product.

Contrast this with an ergonomically driven strategy where we first thoroughly study the current conditions of use to identify friction points, inefficiencies and opportunities, and identify measurable physical, cognitive and emotional performance requirements that the new design must address. Note, at this point, we are not yet concerned with industrial design as we cannot begin designing until we know what to design.

A design strategy driven by the relevant human factors (ergonomics) will effectively shape and inform the creative process by creating functional boundaries and defin-

ing empirical performance requirements for engineers and designers alike.

For example, when designing a powered surgical hand piece we know what grip architectures promote more or less dexterity, precision and comfort. We can provide instrument geometries, trigger forces and travel, vibration bandwidth, physical size and weight parameters to ensure accommodation of large and small handed surgeons that effectively define, shape and inform the innovation process. This information defines the sandbox within which design and engineering can play.

To design for the human body, one must understand how it works and how one feels about the tasks he is performing. Only then can the design team begin to develop design solutions that are driven by need and not a designer's intuition or armchair research



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observations. So, rather than beginning design programs with mechanical packages that predetermine a product's layout and configuration, or conceptual styling exercises that are driven by visual passion, one must innovate from the inside out.

This is the fundamental difference between current NPD practices and a human center innovation process that is formulated through best practices to understand how we think, feel and behave. (On a practical level, I do not want to underplay the challenge this places on successfully managing this non-linear creative process within a linear-based corporate culture—an important topic in its own right.

## Good Design Matters

What does it take to be the best of the best? Just as we are defined by bits of DNA that prescribe our outward appearances and inward workings, the foundation of design excellence and meaningful innovation similarly resides in the DNA of a design. The secrets of this DNA can only be discovered by dissecting and understanding the "human factor."

Clever innovations have time and again fallen in the market because they ignored the

potency of the human factor. A user-centered innovation strategy sets the stage for seeing things others won't see. It provides a framework for creating design solutions that fit perfectly, perform flawlessly, look beautiful and connect emotionally. It humanizes innovation.

Great designs allow consumers to enter into a blissful state of interaction or what Mihaly Csikszentmihalyi calls flow. In his book "Flow: The Psychology of Optimal Experience" (1990), he reveals that this flow state is achieved when one experiences deep enjoyment, a seamless extension of the body and mind.

## Corporate Culture

Change is not easy. To migrate the NPD process from a traditional stage-gated methodology to a user-centered innovation strategy takes courage and commitment—and, it will only work with funding and support from the top down. It takes time and should not be viewed as something that is changed out over the weekend. It truly is a change in corporate culture.

Every company has a corporate culture. Does your organization facilitate, support and invite innovation? Is your company

committed to understanding and funding the front-end discovery research that provides insights and defines human factor issues that illuminate innovation opportunities?

All offices have what I call *physical innovation antibodies*. These people are roadblocks to creativity, thinking and innovation, on all levels. These are the right-brained thinkers that say you cannot do something because they have never done it before. To eliminate *innovation antibodies* simply have a jar in every room and enforce the rule that anytime an innovation killer statement is made, the individual puts money in the pot for a right-brain party to be held in the future.

Think differently by tapping your own personal creativity. Get comfortable being uncomfortable in the creative space where rules are fuzzy at best and the entire goal is to turn things upside down and connect dots others never have. It's thinking about your customer as people with unmet needs, emotions, and physical and cognitive capabilities—not statistical data plots. Think about the human factor. ■

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