

leader, and to embrace new forms of creative collaboration. We achieve this by embodying a magic mixture of characteristics that include being radical, inspirational, and optimistic; fun, flexible, and young of mind. But most important we are ethical, tolerant, caring, and hardworking. Then, 'form follows emotion.'

# 1999

## Donald Norman, "Time for a Change: Design in the Post-Disciplinary Era"

American Donald Norman is a cofounder of the Nielsen Norman Group, an executive consulting firm that promotes human-centered development processes for products and services. Formerly a vice president of advanced technology at Apple and Hewlett Packard, he is now a professor of computer science at Northwestern University. In this 1999 essay, he reiterates some of the ideas he laid out in his influential 1988 book, *The Design of Everyday Things*, arguing that designers' focus on aesthetics often comes at the expense of usability.

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**W**hat do I look for in a product or service? Sensible things. I want products that are attractive and that look and feel good. I want them to fit nicely in my home, office or wherever else I might use them. I want to be able to understand how to use them without reading a manual. They should be safe, endangering neither me nor anyone else. All of these aspects matter to me as a user. They make up the user experience.

I'm not happy with what I see. Products are difficult to use. They are unsafe. Or they flout style for the sake of style, without regard for the consequences upon use. Bad design, all of it.

In part, bad design results from producing design for the interest of design. This is exacerbated by design prizes that focus only on a product's appearance. Bad design results from a process that ignores the whole product.

Good design, on the other hand, results from interdisciplinary, human-centered product development. This approach addresses the whole product, fulfilling the needs of the user and the business that manufactures the product. It takes into account the total user experience.

Defining the user experience requires at least five different activities:

- field observation, which is best done by applied anthropologists;
- product design, best done by a team of industrial designers, human factors experts and engineers;
- rapid prototyping, by industrial designers, model makers, artists and programmers;
- user testing, usually done by psychologists;
- user manual writing, best done by technical writers.

All five of these activities play an essential role in creating the total user experience. All of these user experience experts must work together as a team from conception through shipping to the start of the next design cycle. In addition, these people must work harmoniously with others who are involved in the product development process, particularly manufacturing and marketing.

In the current product development process, each discipline makes its contribution to product design in isolation and then complains bitterly that other people ruined the outcome. I have heard designers grumble that their clients undo their work. They develop a great design, but by the time the product is shipped it has been completely distorted. "Can you help us stop companies from ruining the design?" designers ask.

This question points out the fundamental flaw in understanding the role of design. Design cannot be separated from the other considerations of a product. The person who 'ruined' the design probably was trying to improve some other dimension of the product. The design must have been unsatisfactory in some way. This happens when the industrial design team's work is completed without consideration of all the relevant variables and then the team is frozen out of the final decision process.

Industrial designers and human-factor engineers often are kept out of the loop because they argue for superior aesthetics or usability at the expense of everything else. This attitude may win design prizes, but it bankrupts companies. All design is a series of tradeoffs. Cost, time to market, compatibility with previous products, making a brand statement—these are important factors.

It's time for a change. It is time to break out of the segregation that keeps the various disciplines tightly locked in their own boxes. It is time for a post-disciplinary revolution.

Each of the legs of product development—industrial design, engineering, user experience, marketing and manufacturing—is essential to good design. The disciplines have to work as a team throughout the *entire* development process, together making the necessary tradeoffs to better satisfy the needs of the customer and the company.

This is not always easy. People from other disciplines have different educational backgrounds, different sensibilities and work styles. The same words may have entirely different meanings when used in other disciplines. It can take weeks, months or even years before working as a team goes smoothly. But time allows each discipline to gain an appreciation of the contributions that others can make.

Real collaboration results in superior design. This means that industrial designers, as well as everyone else involved in the product development process, must learn to be team players, doing what is best for the company and the product rather than focusing on any single aspect or feature of the product. They must recognize that the best design does not always lead to the best product.

At the end of the day, what makes something beautiful is whether or not it works.