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Design and the Economy of Choice

Abstract This article argues that we are in a transition from an economy of scale to an economy of choice. It presents the historical context of how design relates to the economy of scale, and why underlying forces of that economy reduced the relevance of user experience and focused design practice on appearance. It discusses why manufacturers now meet the desire for more consumer choice through over-production. It explains how this leads to an "innovation gap" in which companies know how to make anything without knowing what to make.

This article presents a model of the core capabilities of design, showing how they relate to economically viable ways of providing choice. The model involves a closer fit with emerging production processes related to platforms, the maker movement, and open innovation. In this model, such capabilities provide more exploratory and responsive ways to create innovation than a reliance on the predictive methods inherent in the economy of scale. This leads to a "whole view" model of innovation.

The model proposes a way of "sketching" innovation initiatives that involves fundamental questions: What is the offering? Who is it for? Why will it create value? How will organizations make it a reality?

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Billion-Dollar Bets

During the mid-1990s, executives at GM and Toyota each made a billion-dollar bet. Eiji Toyoda, Toyota's chairman in Nagoya, Japan, and the patriarch of its ruling family, was worried about the future of the automobile. In response, Yoshiro Kimbara, then head of R&D, set out to develop a new car that could be sold globally. He had two goals: create new ways of producing the car, and achieve dramatic improvement in fuel economy. Takeshi Uchiyamada, a senior engineer and an expert in noise and vibration control, was selected to lead the project. Toyota gave him four years and 200 million yen to develop an engine that was three times cleaner and twice as efficient as the current engines.

Uchiyamada had no idea how he was going to do this. Even if he achieved this goal, it seemed like a road to nowhere: marketing research said people would want larger cars for the foreseeable future. One only needed to look on American streets to see the obvious preference for large vehicles and the clear lack of concern for fuel efficiency. Creating an unwanted engine, no matter how sophisticated, seemed like an assignment to end a career.[1]

Meanwhile, executives at GM headquarters in Detroit had the same view of American streets being increasingly populated with ever-larger SUVs. They also saw the numbers predicting an increase in sales of large vehicles, and with full confidence and optimism, they bought Hummer.[2]

In hindsight, with Toyota's Prius becoming an icon of sustainability and with GM's divestiture of Hummer and eventual bankruptcy, it seems that Toyota's bet was obviously right, and that GM's investment was dubious. But exactly the opposite was true. The management methods created in the twentieth century to help companies predict markets gave GM executives the confidence to follow numbers and make a safe bet. In this context, Toyota's decision was high-risk.

The problem was that GM was looking at conventional data that they were able to gather, while ignoring the public's nascent yet unspoken and unmeasured concerns about sustainability and its emerging desire to spend less on fuel. Analysts could count the number of people saying they wanted larger cars, but they had no way to measure daily actions indicating a burgeoning sense of environmental responsibility. Consumers were not lying when they said they wanted larger cars. What is an executive to do when increasingly sophisticated consumers do not clearly know what it is they truly want? Bob Lutz, then vice chairman of GM, said that hybrid engines were an "interesting curiosity."[3]

At that time Toyota was recognized as the industry leader in manufacturing, but thought of as a follower in design and technology – albeit a fast one.[4] How could Toyota create multiple technical innovations and design an iconic car in so little time? How could GM executives be off course by 180 degrees when they could see the growing interest in environmental responsibility and sustainability – and actually lived in what would become the primary market for the Prius? With all the resources available to GM's many intelligent executives, who have degrees from the best schools of engineering and business, why was it so difficult to predict what cars to make?

The Quest for Certainty

During the 1950s and 1960s, the US auto industry was at its height. All of the companies had adopted the platform-creating theories and processes first deployed on a large scale by Alfred Sloan while he was CEO of GM.[5]

Before Sloan developed this approach, it was standard practice for the development of a new model to require that all parts and components be new. This meant teams would work on a new engine, new transmission, new chassis, and other expensive components. With platforms, however, the most expensive

1 For the history of the Prius, see Adrian J. Slywotzky and Karl Weber, *The Upside: The 7 Strategies for Turning Big Threats into Growth Breakthroughs* (New York: Crown Business, 2007). See also Hideshi Itazaki, *The Prius that Shook the World: How Toyota Developed the World's First Mass-Production Hybrid Vehicle* (Tokyo: Nikkan Kogyo Shimbun Ltd., 1999).

2 Gregory L. White, "GM Buys Hummer Brand Name, May Offer Broader Range of SUVs," *The Wall Street Journal*, last modified July 1, 1999, http://www.wsj.com/articles/SB93078398275940304.

3 Chris Isidore, "GM Executive Lutz Argues Critically Acclaimed Hybrid Compacts Like Toyota Prius Are Bad Business," CNN/Money, last modified January 6, 2004, http://money.cnn.com/2004/01/06/pf/autos/detroit_gm_hybrids/.

4 For information on Toyota's capacity as a manufacturing firm, see Jeffrey Liker, *The Toyota Way: 14 Principles from the World's Greatest Manufacturer* (New York: McGraw Hill, 2004). See also Toyoda, Eiji. *Toyota: Fifty Years in Motion* (Tokyo: Kodansha International, 1987); James P. Womack, Daniel T. Jones, and Daniel Roos, *The Machine that Changed the World* (New York: Simon and Schuster, 1990). The crucial differences here are not automobiles or platforms, but the culture of the automobile companies that create innovative automobiles and manufacture them. See also David Halberstam, *The Reckoning* (New York: Avon Books, 1986).

5 Alfred P. Sloan, *My Years with General Motors* (New York: Doubleday Currency, 1990 [1963]). See also: David Farber, *Sloan Rules: Alfred P. Sloan and the Triumph of General Motors* (Chicago: University of Chicago Press, 2002); and Peter F. Drucker, *The Concept of the Corporation* (Rutgers, New Jersey: Transaction Publishers, 1993 [1946]).