Companies, Focusing on Brands, Are Outsourcing Some Design Work

A Solectron factory in California. Solectron makes electronic products that sell under the names of other companies.

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Correction Appended

Two years ago, Medtronic, best known for its pacemakers, introduced the CareLink, a home-use wireless gadget that can transmit relevant data from implanted devices. Its engineers designed the original monitor. But when it comes out with the next version, another company will design it.

"We'd rather use our in-house people on really new core products," said Reggie Groves, vice president of patient management.

Lots of manufacturers are sounding that note these days. And that has given rise to a whole new industry, dedicated to designing products and parts for companies that once considered every aspect of the process as sacrosanct.
This is not because companies are trying to tap foreign sources of cheap labor. The new design firms are not in India or China, but in New York, California - all over the United States. But their clients have the same overall goal as those that ship jobs to Bangalore: to churn out products - even ones that look much like the competition's - at high speed and low cost.

"Manufacturers are all asking whether the cost of product differentiation exceeds the benefits," said Cliff Waldman, an economist with the Manufacturers Alliance, a policy research group in Arlington, Va.

The push is too new to yield hard data, but anecdotal evidence is mounting. Honeywell just contracted with I.B.M. to design many of the core processors that go into its fighter jet displays. Boeing Commercial Aircraft has contracted out parts of the design of the wing structure and fuselage on its Boeing 7E7.

General Motors Shanghai asked Visteon to design much of the interior of a high-end car it now sells in China. The trend does raise some thorny questions. Who owns the patents on outsourced designs? Will equipment manufacturers turn their innovative instincts to marketing rather than invention? And if they do, are competing products going to look alike, as more companies turn to the same players in the new design-for-hire game?

"Whenever suppliers get the edge on innovation," warned George Stalk, a partner at the Boston Consulting Group, "the ability to differentiate is lost."

That fear is not stopping the flow of design work to third parties, though. "More and more manufacturers are forcing innovation down to their supplier base," said David Bleustein, an industrial analyst with UBS Investment Research.

For many manufacturers, that represents a cultural sea change. Ed Wheeler, vice president of defense and space electronic systems for Honeywell, readily concedes that, just a few years back, Honeywell would have considered product design a core strength, and would have scoffed at outsourcing it.

But these days, "organic development takes time and huge investments," he said, "so it makes sense to leverage other people's technology."

Boeing has grown similarly flexible. "We'll always design the airplane's basic shape, but we now realize we don't have to design every detail," said Michael J. Denton, vice president of Boeing Commercial Airplanes Engineering.

Design help is getting ever easier to find. Two years ago I.B.M. formed its Engineering and Technology Services unit, which has designed components like chips for Sony PlayStations and processors for Honeywell aircraft instruments. The operation, which I.B.M. executives have publicly referred to as an area of "hypergrowth," already has 1,200 people and had $160 million in revenues in 2003.

Contract manufacturers also are adding to their design staffs.

"Design work is clearly where our market is going," said Craig London, an executive vice president at Solectron, which makes electronic products that sell under other companies' brand names. Mr. London said that last year more than a dozen clients, hoping to extend the life of older products without devoting research dollars to them, hired Solectron to
Even parts suppliers are getting into the arena. Visteon, an automotive supplier that originated as an engineering division at Ford, recently designed special headlamps for G.M.'s Corvette. For G.M. Shanghai, it surveyed affluent Chinese businessmen about their car preferences and translated the results into rear-seat temperature controls and front-seat holders for tea jars.

"Car companies used to say, 'Here's a drawing, turn it into a high-quality, low-cost product,'" said Richard Vaughan, director of North American design at Visteon. "Now they are saying, 'What can you design that will sell more cars?'"

Car companies are not alone in asking such questions. More manufacturers now view their branded equipment as mere conduits to sales of lucrative consumable products (say, the inks and papers used by printers) and services (maintaining a fleet of jetliners, or managing data centers).

"Companies aren't selling products, but services to wrap around products," said Noel P. Greis, professor of operations at the University of North Carolina's Kenan-Flagler Business School. Other reasons are fueling the trend as well:

\[By the time a company designs a product from scratch, it could already be obsolete. Jack L. Kelly, a conglomerate analyst at Goldman Sachs, said, "When technology is changing every six months, it makes sense to go to specialists."

\[Many of the newest product fillips are built on research from other industries. Hank C. Queen, vice president for engineering and manufacturing for Boeing Commercial Airplanes, said, "You can't have a fortress mentality when someone else's designs can give you a competitive edge."

\[Many leading-edge technologies have become routine. The chips inside most cellphones are pretty standard, for example, so T-Mobile, Sprint and other telecommunications companies now let low-cost Asian manufacturers design as well as build the phones that bear their names.

\[The protracted economic slowdown forced companies to do triage on costs. Donald B. Rosenfield, a senior lecturer at the Massachusetts Institute of Technology's Sloan School of Management, said, "They are concentrating on what they do best, which is develop brands and plumb the marketplace."

\[Internet technology has made it easier to coordinate with off-premises designers. Boeing, for example, has farmed out design work to such geographically disparate companies as Fuji Heavy Industries in Japan, Vought Aircraft Industries in Dallas, and Alenia Aeronautica in Italy. Mr. Queen said, "It's a lot easier when you don't have to send 500-page documents every time something changes."

But outsourcing design has also brought an array of troubling implications. For one thing, critics say, a certain sameness creeps into products when competitors turn to the same specialists for designs.

"There's no question: the 2004 models of competitive cars look a lot more alike than the 1994 models did," said Sunil Chopra, a professor of operations management at the University of Chicago's Kellogg School of Management.

So, apparently, do most bicycles.
Skip Hess, president of Giant Bicycle, a subsidiary of Giant Manufacturing of Taiwan, said, "We don't want to figure out how to put a cellphone holder on a bike when someone else knows how to do it cheaply and well. But it keeps getting harder for consumers to differentiate between different brands."

David Reid, chair of international business at the Rochester Institute of Technology's College of Business, raises a potentially more worrisome issue. "The question of who owns the intellectual property remains a very muddy one," he said.

Most manufacturers insist on written guarantees that designers working on their projects will not do similar work for competitors. But the designers counter that they can create low-cost, high-quality products only by building on every bit of expertise they develop.

Clients acknowledge that. Some future G.M. cars, for example, will include a braking stability system that uses a tiny gyroscope on a computer chip that senses when a car is about to spin out of control. Robert Bosch, a German company, is developing much of the system; G.M. will own the intellectual property on the final results.

"But we know that they will use some of the basic learning on systems that they will pitch to other companies," said Tom Wilkinson, director of corporate technology communications for General Motors North America.

So will Visteon. G.M. Shanghai owns the designs that Visteon drew up for its high-end car. "But sure, we will share what we learned about colors and textures and preferences with other customers," Mr. Vaughan said.

That kind of expertise is hard to patent, or to own. And even third-party designers concede that intellectual property fights could derail their fledgling industry.

"The intellectual property issue remains the most complicated thing we have to deal with," said Pat Toole, general manager of I.B.M. Engineering and Technology Services. "If we can all figure it out, farming out design will be a common model in the future. If we can't, it won't."

**Correction:** January 1, 2005, Saturday:

An article in Business Day on Thursday about companies that are outsourcing product design misstated the affiliation of Sunil Chopra, a professor who commented on the trend. He is at the Kellogg School of Management - part of Northwestern University, not the University of Chicago.

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