

BEST PRACTICE

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When Your Contract Manufacturer Becomes Your Competitor

by Benito Arruñada and Xosé H. Vázquez

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IBM essentially created the personal computer industry. It won't be long, however, before the company's nameplate disappears from PCs and IBM leaves the business, except for the joint venture it recently formed with PC maker Lenovo. Founded in 1984 as a distributor in China of equipment made by IBM and other companies, Lenovo will eventually affix its own logo to the PCs. Certainly, Lenovo has come a long way. So has Sanmina-SCI, the actual manufacturer of some IBM PCs in the United States: It recently acquired some of the factories where the computers are made. Like Lenovo, Sanmina assembles products for a variety of well-known brand owners. The company has expanded its role, however, and now also designs and engineers custom electronic components. These two firms are representative of a host of formerly anonymous makers of brand-name products that are stepping up and pushing the brands themselves aside. Indeed, the complexities of IBM's environment challenge the common view of contract manufacturing as no more or less than the anxious

resort of large brand owners suffering from thinning profit margins.

Yes, outsourcing the entire manufacturing of a product allows original equipment manufacturers (OEMs) to reduce labor costs, free up capital, and improve worker productivity. OEMs can then concentrate on the things that most enhance a product's value—R&D, design, and marketing, for instance. Facilitating these gains are the contract manufacturer's (CM) special strengths, which may include location in a low-wage land, economies of scale, manufacturing prowess, and exposure to the engineering and development processes of products it handles for other OEMs. (Such exposure puts the CM in a position to propose improvements to different clients' products.)

As IBM and other companies have learned, however, contract manufacturing is a two-edged sword. For one thing, a CM is privy to an OEM's intellectual property (IP), which it can leak to other clients or arrogate. For another, an ambitious, upstart CM can claim for itself the very advantages it provides an OEM. Hav-

ing manufactured an OEM's product in its entirety, the CM may decide to build its own brand and forge its own relationships with retailers and distributors—including those of the OEM. When these things happen, the OEM may find itself facing not only more dangerous incumbents but also a competitor of a new kind: the once-underestimated CM. Adding insult to injury, if the OEM had not given its business to the traitorous contract manufacturer, the CM's revenues and knowledge might have remained sufficiently meager to prevent it from entering its patron's market.

Although launching a brand would not be a trivial undertaking for any contract manufacturer, a brand identity rooted in the CM's production prowess would have immediate credibility. Moreover, a CM working for several OEMs has experience making a wider range of products than do most of its clients, permitting it to concentrate on producing the most profitable ones. And its cost structure does not necessarily bear the burden of investments in R&D.

In short, OEMs' humble attempts to realize operational improvements and cost savings can plunge them into a strategically treacherous realm in which partners quickly outgrow one another, spy more attractive opportunities elsewhere, and, in the most flagrant cases, bite the hand that has been nourishing them. Put simply, OEMs that retain contract manufacturers may unleash forces they find hard to control. It would be no exaggeration to say that the players soon find themselves immersed in a melodrama replete with promiscuity (CMs pursuing liaisons with a variety of OEMs), infidelity (retailers and distributors shifting their business to an OEM's CM), and betrayal (CMs transmitting an OEM's intellectual property to the OEM's rivals or keeping it for themselves).

OEMs cannot evade this dilemma by terminating their outsourcing arrangements: Modularization, codification of manufacturing processes, and diminished transaction costs make contract manufacturing irresistible to less well-capitalized OEMs. But OEMs *can* manage their relationships with CMs so that the OEMs don't become weak or the CMs too strong. Doing so requires a few things: modesty about revealing one's secrets; caution about whom one consorts with; and a judicious degree of intimacy, loyalty, and generosity toward one's partners and customers. OEMs can also elude CMs'

backbiting tendencies by using their surplus intellectual property to enter markets beyond those for their core products. Ironically, CMs' barrier-breaking abilities, otherwise used to invade OEMs' markets, can offer OEMs access to new markets—and sometimes a way out of the dilemma.

Heightened Competition

Few industrial companies still consider manufacturing an essential part of their businesses. Traditional brand owners—what we know today as OEMs—prefer to focus now on product research, design, and sales, leaving production to the new specialists: contract manufacturers.

Contract manufacturing involves outsourcing an entire manufacturing process to the point where, in many instances, none of an OEM's employees will have physically touched the product they're marketing and selling. The practice began in 1981, with the manufacture of the first IBM PCs, but a decade passed before it reached such everyday products as toys, clothing, footwear, beer, and pharmaceuticals. Today, even a few corners of the automobile industry have embraced it: Finland's Valmet Automotive assembles the Porsche Boxster, and Austria's Magna Steyr assembles cars for Mercedes, BMW, and Saab.

The diffusion of contract manufacturing has heightened competition in some industries in four ways.

The creation of new companies. Contract manufacturing facilitates the creation of new firms and divisions. Businesses that outsource don't have to raise, invest, and risk the capital necessary to develop their own production facilities. Thus, they can bypass the traditional deterrents to entering new markets. Indeed, any firm—even one selling low volumes—can decrease its unit costs simply by retaining the CM with the biggest scale. That's how Dell and Gateway have been able to venture beyond their PC roots and enter the domestic electronics markets for plasma and LCD televisions, DVD players, and more than 50 other new products.

The creation of new brands. Contract manufacturers' evolving situation encourages them to develop their own brands. It happens as follows: As CMs reach efficient scale, their cost levels converge. At the same time, the products they make begin to commoditize. In re-

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OEMs and contract manufacturers can find themselves immersed in a melodrama replete with promiscuity, infidelity, and betrayal.

response, CMs will attempt to regain a sustainable competitive advantage by undertaking the value-adding activities that their patrons had handled themselves, such as R&D and marketing. In a variant of the innovator's dilemma, OEMs cede particular functions to their CMs and, by doing so, give CMs room to develop the capabilities they may later use to threaten the OEMs. By that point, the CMs will have become OEMs themselves. Lenovo and China-based contract manufacturers Haier (household appliances) and TCL (televisions) have become three of the world's leading companies in their industries in just this way.

If CMs find they can't get from customers all the knowledge they need to sell and brand a new product, they can purchase entire divisions of OEMs. Taiwan-based BenQ did just that, buying Siemens's mobile phone business in 2005. By doing so, BenQ acquired not only Siemens's IP but also decades worth of Siemens's managerial experience, its highly developed talent pool, its widely known brand, and its global operations platform. Once they have achieved manufacturing mastery, CMs can begin innovating, something they have been doing for some time: The surging volume of Chinese patent applications filed under the European patent treaty—26 in 1990 and 961 in 2000—offers at least indirect proof of this. CMs can also buy R&D knowledge from OEMs. In 2004, Shanghai Automotive Industry Corporation (SAIC), which had done some manufacturing for Volkswagen and GM, acquired from bankrupt MG Rover the drawings needed to build the Rover 25, Rover 45, and Rover 75. SAIC plans to sell its own line of cars in China, Europe, and North America.

Movement up the value chain. The most powerful retailers and distributors can engage the largest, most efficient CMs to produce (under the retailers' or distributors' own nameplates) items equal in quality to those of the finest OEMs. These products share shelf space with the OEMs' products but ask half the price. Contract manufacturer Solectron developed its manufacturing expertise in the course of working for IBM, Hewlett-Packard, and Mitsubishi. Later, distributor Ingram Micro asked Solectron to custom build PCs, servers, and other computer equipment under its own and retailers' brands. Retailers, too, such as Best Buy, Carrefour, Sears, and Wal-Mart, are selling electronic products under their own

brands, thereby diluting OEMs' marketing clout. Contract manufacturers that have established their own brands suffer as well, because their products have difficulty improving on the retailers' quality, innovativeness, and pricing. However, if an enterprising CM threatened to stop making items for a retailer, it would only drive its client into the arms of another CM—one that could translate the additional business into improved or even superior economies of scale.

Leakage of intellectual property. Contract manufacturing puts OEMs' proprietary intangible assets into play. A CM can exploit for the benefit of its own brands the knowledge it acquires in the course of working for a given OEM; or the CM can transfer (legitimately or not) this knowledge to other client OEMs. Such leakage may occur even if the CM does no more than assemble components made by others: Three-dimensional scanning, computer-aided design, and computer-aided manufacturing allow companies to copy in a matter of hours components that may have taken years to design. The potential for abuse is high. CFM International, for example, a joint venture of General Electric and French manufacturer SNECMA, which makes parts for aircraft engines, has had to move against repair and overhaul shops in the United States that were purchasing counterfeit parts. Sure, OEMs can resort to lawsuits, banishment, or lobbying. None of these is a panacea, however. The results of litigation are uncertain and may arrive only after years of expensive proceedings. Meanwhile, profits keep falling. Persuading other members of one's industry to shun the offending CM also takes time, is certain to encounter resistance, and risks running afoul of antitrust laws. Finally, as globalization spreads, interventions from individual governments become less decisive. In any event, OEMs need CMs in order to keep specializing, adding value, and staying competitive.

An Inevitable Relationship

Contract manufacturing is inevitable, though it entails inescapable hazards. First of all, OEMs that embrace contract manufacturing can reduce their direct costs even if the number of units they sell is well below the level otherwise required to achieve meaningful economies of scale. Consider Flextronics: The contract manufacturer's plant in Guadalajara, Mexico, can

assemble for Royal Philips Electronics a device for connecting TV sets to the Internet at very low per-unit costs, because it is simultaneously producing a similar device for Sony on an adjacent production line. In turn, working for many OEMs gives CMs the revenues to keep making essential investments in factory automation. It would be more difficult for IBM, Hewlett-Packard, or contract manufacturer Sanmina to obtain equivalent economies of scale if their products were made in their own factories, and if those factories produced exclusively for their own brands.

Second, contract manufacturing allows OEMs to concentrate on their most profitable activities—R&D, for instance, or sales and marketing. IBM certainly had the money and the knowledge to invest in factory automation, and the company was glad that its relationship with Sanmina let it match Dell's prices. But IBM's points of differentiation are its outstanding engineering and services—forms of specialization that outsourcing has allowed it to concentrate on.

Third, firms can communicate and coordinate among themselves more efficiently than ever before. Consequently, the economic logic

that once impelled OEMs to perform almost every specialized function in-house no longer applies. The Internet is driving most of these efficiencies, as are the standardized production methods, management procedures, electronic communication protocols, and digital design formats promoted by the International Organization for Standardization, a federation of national standards bodies. HP, for instance, can use technologies such as electronic data interchange to transmit specifications directly from its design departments to machines and robots at a contract manufacturer's plant. Such measures free OEMs to separate their innovation activities from their production activities.

Fourth, flexible manufacturing systems allow OEMs to replace one product with another on short notice. Valmet Automotive, for example, was able to start assembling the Porsche Boxster within seven months of landing the production deal with the automaker. And Ford makes three different chassis in its factories, each of which can accommodate nine different car models, allowing the company to shift production rapidly to the models generating the greatest market demand.

Finally, the combination of standardization and flexible manufacturing lets OEMs replace underachieving or uncooperative CMs about as easily as they can replace ebbing products. The reciprocal nature of these relationships—and, conversely, the ability of either party to withdraw at the first sign of a hold-up by its partner—makes them easy to embrace.

Leading OEMs cannot afford to retreat to the safety of vertical integration; the benefits of specialization are too great. The better alternative is to master the present stage of outsourcing's development while guarding against opportunistic, self-serving conduct by CMs and other partners.

How OEMs Can Cope

Clearly, OEMs have no choice but to coexist with contract manufacturing. Fortunately, a few defensive moves are available for coping with its dangers.

Be careful what you outsource. Processes that are part of an OEM's core competencies or that embody critical corporate assets should not be outsourced at all. Sony Ericsson, for example, outsources only the manufacturing of its aging, and therefore already copied, products. Cisco Systems retains an in-house

What Kind of Relationship Do You Want to Have with Your Contract Manufacturer?

Organizational arrangements between original equipment manufacturers and contract manufacturers run the gamut—from one-off contracts to more interdependent pacts that may or may

not be renewed. The chart below can help organizations determine the level of commitment—and, thus, the amount of risk—they're willing to assume when engaging outsourcing partners.

Type of relationship	Characteristics	Level of Commitment/ Cost of Control
Market agreement	Onetime engagement	Low
Renewable contract	Ongoing, but not open-ended, engagement	Moderate
Framework arrangement	Agreement in principle to produce several models in a given period; payment on basis of units produced or space utilized in manufacturing facility	Moderate-High
Strategic alliance	Long-term agreement; open sharing of processes and intellectual property; adaptiveness; frequent reciprocal communication	High

manufacturing capacity for its cutting-edge routers and switches and their prototypes. Although Alcatel in 2000 began selling most of its 100 or so plants—some of them to CMs such as Solectron and Sanmina—it withheld half a dozen for the purpose of fabricating new products as well as high-tech items that can be made only on proprietary equipment.

In such cases, the risk of infringement—the dearest of transaction costs—is high. And sales volumes would not be so great that contract manufacturing could deliver important economies of scale; it would be too soon for the technology to have spread to competitors, whose additional business CMs could then translate into a lower cost per unit for everyone. Moreover, a company that has outsourced all its manufacturing will in time lose most of its manufacturing knowledge, which, if nothing else, it needs to oversee and inform the work of its CMs.

Hence, Porsche's venture into contract manufacturing didn't involve the automaker's 911 series, into which the firm customarily introduces its innovations. Instead, the venture involved the Boxster—a luxury car in the eyes of many, but, nevertheless, Porsche's low-end model. It is true that Porsche reclaimed in 2004 about one-third of the Boxster's production, but it did so in response to pressure from labor representatives on its board to repatriate good jobs that had been sent to Finland. Meanwhile, Porsche's plant in Leipzig, Germany, continues to assemble the newer and more sophisticated Cayenne SUV and Carrera GT.

One might expect that managers would be aware of the risk of externalizing core competencies. Why, then, do they seem so eager to outsource? The answer may be found in several countervailing influences. First is management's penchant for off-loading tangible assets in order to raise the company's return on assets and return on investment—and to be richly rewarded for doing so. Furthermore, by downsizing the workforce, managers can usually improve productivity ratios and avoid long and arduous negotiations with trade unions; changing suppliers is almost certainly much easier.

Suit the relationship to the circumstances. When an OEM's product is not novel and unique, its degree of innovativeness, complexity, and maturity in the marketplace should dictate the duration of the relationship between the CM and the OEM. If a product's

novelty and complexity require a CM to devote time and other resources to mastering its manufacture, the CM will need the inducement of a long-term contract to make those investments. A long-term contract will also protect the OEM's own investments in the CM's mastery of the production process. In situations where the OEM's product is novel and complex, it becomes nearly impossible for the OEM to quickly find a replacement CM. Therefore, a long-term contract becomes valuable because it also hinders the CM from abandoning the OEM or extracting prohibitive terms as the price of remaining. An additional consideration for an OEM is what a CM will do with the OEM's intellectual property when the two parties are no longer legally bound to each other. The contracts that are drawn up to anticipate and deal with such eventualities cannot avoid being complex themselves, though the cost and difficulty of preparing them is justified by the seriousness of the stakes.

Conversely, if the OEM can easily switch CMs because the product is simple to make or has been around long enough to have become generic, a contract of shorter duration would be practical—even advantageous—for the OEM. In such cases, nothing should prevent an OEM from pursuing more attractive terms from a different CM, or vice versa.

In 1999, DaimlerChrysler (then doing business as Daimler-Benz) asked contract manufacturer Magna Steyr to assemble its Mercedes-Benz M-Class SUV. The first unit left the factory within only eight months of the initial venture agreement. In that case, a contract of limited duration was all both parties needed to protect their investments. When BMW asked Magna to assemble its X3s, however, the parties prepared and signed a lengthier contract. In that case, BMW wanted Magna's help in achieving advances in four-wheel-drive technology that would give the X3 some of the road feel for which BMW automobiles are noted.

Organizational arrangements between OEMs and CMs range from one-off contracts—known as market agreements—to more interdependent and ongoing pacts, such as framework arrangements, joint ventures, and other kinds of partnerships. A market agreement, which might or might not be renewable, would involve the manufacture of, say, a particular type of MP3 player, and the pact would contain very precise technical and design de-

tails. By contrast, a framework arrangement could require the CM to produce several models of an MP3 player in a given year. A partnership agreement, however, could commit the CM to being the long-term and exclusive supplier of an OEM's MP3 players.

There are two interesting varieties of short-term agreement. Elamex, a contract manufacturer of electronic components, lets customers choose either a turnkey contract or a shelter agreement. In the former arrangement, an Elamex customer shares the assembly line with other customers; each pays Elamex according to the number of units the company has produced for it. In the latter arrangement, a portion of the plant is dedicated to the production of a given customer's products, and the customer pays a proportional share of the overhead, even bringing in its own managers to oversee processes. Because Elamex lacks design capabilities, the firm enters into few long-term alliances. It follows that the company prefers to work with experienced manufacturers rather than start-ups.

Curiously, many strategic alliances end up devolving into temporary market-agreement relationships. This happens for three main reasons: First, many OEMs seem to lose track of the ultimate purpose of their long-term arrangements and start pressing CMs hard for savings. As a result, the CMs begin to feel that their investments in learning how to make and improve a specialized or unique product will not generate a return. Perhaps understandably, CMs under this kind of pressure shed whatever qualms they may have had about, for example, selling directly to the OEM's customers. This is an especially dangerous development for the OEM when it cannot easily find another capable CM—one of the main reasons for forming a long-term partnership in the first place.

A second reason for the devolution of strategic alliances is the eventual devaluation of whatever was new and unique about the product. This problem is especially pronounced in the high-tech arena, where products have such short life spans. As products commodify, OEMs gain a wide choice of interchangeable suppliers. Take the case of PCs: Many were originally built by brand owners. Later, surface-mount technology, the increasing codification of knowledge, and the routinization of internal processes made the assembly of PCs easier and thus within the capabilities

of external suppliers, to which the work was outsourced. Today, most PCs are generic products composed of motherboards, fans, and hard drives acquired by a local assembler according to an OEM's specifications.

The third reason strategic alliances weaken is the increasing modularization of components. Automation demands fewer judgment calls and less improvisation from workers. And assembly has become simpler for CMs now that OEMs are transferring ever-larger portions of manufacturing jobs from CMs to suppliers, which are responsible for turning parts into a single piece of equipment, such as the seat of a car. Both developments make it less important for CMs to have special skills and knowledge.

Give trustworthy partners their freedom.

As mentioned above, in noncommodity situations, OEMs should seek close relationships with trustworthy contract manufacturers to minimize the risk of IP leaks and to protect their investments. Such closeness would have the incidental benefit of making CMs dependent on OEMs for funding and technical guidance. But such relationships should not be exclusive; otherwise, OEMs will become isolated from industry innovators or be denied the maximum feasible economies of scale CMs can achieve by serving many clients. OEMs that depend on CMs disengaged from developments in the industry will eventually find themselves marketing products whose cost and quality aren't competitive with those of rivals.

Accordingly, an OEM should enter into a close relationship with a CM that already has relationships with other OEMs. Indeed, some companies may expect and even encourage their CMs to find other clients. Contract manufacturer Flextronics in 1999 bought a plant from Swedish OEM Ericsson on the heels of winning a contract from that company. Only one-third of that factory's production capacity is dedicated to Ericsson's products; a bigger share is dedicated to fabricating Motorola wireless phones, two-way pagers, and other devices. By selling its factory to Flextronics, Ericsson has fostered a closer relationship between Flextronics and one of its leading competitors, from which it expects to benefit. It is also unlikely to be unhappy that Microsoft has established a wireless research center in Sweden in order to be near this node of manufacturing know-how. If Ericsson had wanted an exclusive relationship with its CM, it could surely have

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found one willing to agree to its terms—though probably a second-rate CM.

In noncommodity situations, OEMs and CMs should commit themselves to long-term relationships so their investments have enough time to pay off. Naturally, the greater the duration of a contract, the more contingencies there are that can arise over its course, and the less predictable those contingencies become. Consequently, such contracts must be highly detailed, with the meanings of terms fully elaborated. In the case of Magna Steyr and BMW, the assembly of the X3 entailed so many complex technical and commercial details that the contract ran to more than 5,000 pages. However, the enforceability of even a contract like that one would depend on the good faith of the parties.

How, then, does an OEM foster a CM's good faith and commitment to the alliance when the CM has other masters as well? An OEM might begin by trying to gain a sense of the prospects for long-term trust. The best way to do this is to examine a CM's past behavior; that might mean talking to other OEMs, trade association representatives, and the CM's suppliers. An OEM can also investigate the CM's record of commercial disputes. If a CM tries to persuade you to retain its services by offering to share other clients' trade secrets or intellectual property, it is a fair guess that, somewhere down the road, the CM will do the same thing with your IP.

Even if a CM candidate's good intentions have been established, an OEM must still determine its reliability. Before either Toyota or Honda retains a supplier, for instance, it scrutinizes the supplier's production process and cost structure. After the supplier has been selected, the automaker sends it a monthly questionnaire eliciting a performance history—quality and quantity of outputs, timeliness of delivery, the occurrence of any irregular incidents. Toyota's or Honda's engineers may then spend several months at the supplier's facilities using the information obtained to solve problems and improve processes.

And finally, an OEM needs to practice good communication. This involves more than just conducting surveillance and reacting to the responses it engenders. Both sides need to share their goals for the alliance and to agree on norms, values, and procedures. Exchanging personnel helps facilitate those things. OEMs

not only can send their engineers to CMs' facilities but also can create, as Toyota and Honda have done, "guest engineer" programs, whereby first-tier suppliers send several of their design engineers to CMs' offices for two to three years.

An OEM whose product's commercial viability rests on proprietary technology and processes needs its CM to know its business well. The OEM must take steps, both at the inception of the partnership and throughout its course, to ensure the CM's competence, currency of knowledge, and good faith.

Fight CMs' disloyalty by deepening distributors' and customers' loyalty. It may be that CMs have certain advantages—superior manufacturing prowess, a broader variety of products to offer, and lower costs being the most important. But the rise of contract manufacturing has also brought with it some challenges for CMs that decide to retail the products they make. Among them is the proliferation of consumer choices and brands that the advent of contract manufacturing has spurred. There are as many as 20 global TV brands today, for example. Although CMs have by definition surmounted the barriers to entering the manufacturing business, OEMs' well-established brands and their marketing and selling expertise constitute barriers of another kind. Moreover, OEMs can deepen their existing, direct relationships with customers and distributors more easily than CMs can build such relationships from scratch.

OEMs can strengthen their ties with customers by offering rewards or special discounts to those that buy products frequently, by personalizing customer relationships, and by providing strong technical support. Some OEMs advertise professional products directly to end users in hopes that the end users will express a preference to the actual purchasers. Philips Medical Systems, for instance, has launched a massive TV campaign in several countries to publicize its Brilliance CT scanners, which are sold exclusively to hospitals.

Fundamentally, however, customer loyalty must rest on what distinguishes an OEM's product from those of its competitors. Loyalty cannot be based on low prices, since consumers looking for the best price will be perpetually ready to switch—and CMs are almost always in a better position than OEMs are to offer the best price. The same goes for quality,

which CMs' operational excellence assures, and product range, which is a feature of CMs' scale. In fact, the products CMs provide to other brands will be similar in quality and cost precisely because they were made by the same company. By contrast, a CM that made unique products for a given OEM would be tied down by a long-term agreement, which would remove it as a competitive threat.

In IT, the assemblers of "clones" offer not only the best prices but also greater possibilities for customization than companies selling differentiated but fixed products. The assemblers' customers choose components of varying quality and are thus able to achieve made-to-measure PCs at their desired price points. Cars are likely to be assembled in just this fashion in the not-too-distant future: Flexible manufacturing and the ever-shrinking amount of time and money it takes to ship a car by sea (three weeks and \$500 to travel between any two points in the world) argue for the rise of CM-branded cars in low-wage countries like China.

Consequently, companies wanting to adopt a differentiation strategy will have to focus on research, design, sales, time to market, or customer services. By doing so, they commit themselves to extensive outsourcing. Dell, of course, has dealt with the hardware commoditization problem by eliminating intermediaries—which permitted it to get closer to its customers—and by offering better service and support.

OEMs can also try to rebuild distributors' loyalties. Distributors may be unusually receptive to CMs' overtures because they resent being squeezed by OEMs seeking short-term savings. Even in cases where OEMs act generously, distributors' fears of disintermediation and ultimate replacement by electronic channels tempt them to embrace whichever companies promise fair treatment and long-lasting relationships. OEMs that make credible commitments to distributors, though these may entail higher costs, can help tie the distributors to the OEMs' brands and keep aggressive CMs at bay. These commitments may include paying to train a distributor's personnel in servicing and repairing the OEM's products; underwriting the cost of a processing system fitted to both parties' requirements; or incorporating the distributor's identity into an OEM's marketing campaigns. The last commitment in particular should help discourage the distributor from thinking about becoming a brand itself. OEMs might also

want to consider granting a distributor territorial exclusivity, which would improve the distributor's revenues and encourage it to specialize in the OEM's products. If the distributor should nevertheless be tempted to shift its allegiance to a new OEM, it knows it would have to bear the expense of learning how to sell and service the new brand.

Look beyond the dangers of your own market. The strategic challenges posed by contract manufacturing call into question the truism that specialization trumps diversification. Traditionally, large companies have maintained portfolios of patents that are much more diverse than their portfolios of production activities. In other words, a good OEM will probably have intellectual property relating to more than just its core products. A maker of car doors, for instance, needs to be knowledgeable about the plastics, airbags, electronics, and glass that go into them and might even hold patents for devices that it invented in the course of researching and developing improvements in its core technologies. OEMs may want to exploit this surplus or incidental knowledge by entering new product markets. Such entry could be facilitated by the CMs that OEMs hire—just as competitors use contract manufacturing to enter OEMs' original markets. Here OEMs would be turning to their own advantage the very resource that was used to torment them. OEMs would accomplish this by doing the same thing to the incumbents in some other market that had previously been done to them—at low cost and low risk, thanks to the features of contract manufacturing. These new products would rest advantageously on novel, proprietary technologies. For example, Royal Philips, an electronics company, already designs and sells a range of products—computers, photography equipment, Discmans, refrigerators. Similarly, auto companies would have the brand credibility and technological capabilities to diversify into fuel cells, alloys, batteries, filters, mirrors, glass coating, electric engines, security devices, and safety systems. With eager CMs waiting in the wings, all that such companies and others would need to begin is sufficient production expertise to assemble prototypes and high-quality, limited-run products. Toyota has already diversified into telecommunications, prefabricated housing, and recreational boating—which it did opportunistically, not

because any CM put the company's margins under pressure.

OEMs should implement this strategy to enter markets outside but related to their core offerings, where their brands may have some influence. For OEMs, directly exploiting their patents—with help from their CMs—is a better alternative for coping with an accumulation of dormant IP than out-licensing would be. Without contract manufacturing, most OEMs would probably never attempt direct market entry.

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As long as technological innovation keeps increasing the benefits of specialization, contract manufacturing will be an oft-exercised choice for OEMs. Unfortunately, managers' incentives encourage a wholesale, uncritical approach to decisions about whether to out-

source, which products to outsource, which CMs to engage, and in what form—a market agreement, a strategic alliance, or something in between. When OEMs share sensitive intellectual property with CMs, it is important that the relationship be trusting and close—but not so close that CMs lose touch with the market and other OEMs' contributions. Since these techniques are not infallible, OEMs should treat their customers and distributors well enough that they become immune to the appeals of upstart CMs, and they should spread their risk by diversifying their portfolio of products.

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