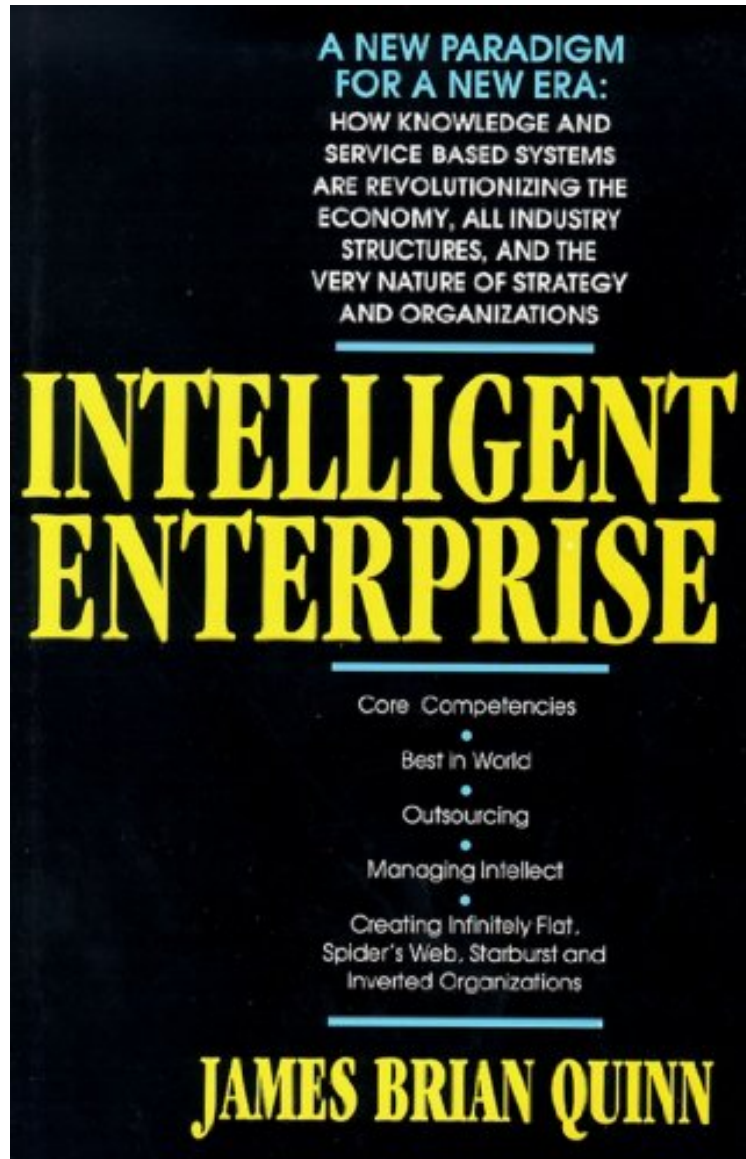


Intelligent Enterprise: A Knowledge and Service Based Paradigm for Industr

James Brian Quinn

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0 of 0 people found the following review helpful. Five StarsBy AdrianI want to buy another one.1 of 1 people found the following review helpful. Must Reading to Understand the Role of Services in Today's EconomyBy Thomas

Oswald Quinn is one of the greats in the field of strategy, so I decided to go back and read this, one of his major works. This book is definitely worthwhile, especially is addressing many of the assumptions that many hold about services. If you still think of manufacturing as "real" jobs and services as flipping burgers, you need to read this book. My only regret is that I did not read it when it first came out. 8 of 9 people found the following review helpful. A brilliant work which should be read by all OEM executives. By rgiuntini@aol.com Quinn's tome intellectually addresses the macro-economic trend of moving manufacturing, especially business-to-business durable goods, to a strategic enterprise model which instead of selling goods, will sell services that imbue the product that they manufacture. The intensity of Quinn's work is formidable! It has the same "feel" of a Peter Drucker work. ...which is a compliment to any author. This is not light reading....but it is worth every minute of effort

In this penetrating study of how knowledge-based services and technology are revolutionizing the economy and every corporate strategy, James Brian Quinn argues that the successful companies of the 90's -- whether in manufacturing or services -- will derive their competitive edge not from ephemerally superior products but from a deep understanding of a few highly developed knowledge and service based "core competencies." Rarely will owning the largest raw materials resource, manufacturing plants, equipment bases, or integrated facilities provide a maintainable competitive edge for major companies. Such physical properties are too easily cloned or bypassed. From now on, Quinn documents, intelligent enterprises will derive sustainable advantage from knowledge and service based activities that leverage intellectual assets. They will increase value through technological sophistication, better knowledge bases, more creative customer responsiveness, and the unsurpassed management of human and intellectual capital that competitors cannot reproduce. Quinn analyzes the technological and economic forces that make such strategies essential. He shows in detail how to create and leverage knowledge and service based core competencies for maximum focus and effectiveness. Managers, Quinn asserts, must define each value-creating activity as a knowledge based service and determine whether or not they can perform that service -- be it research, design, inventory control, accounting, distribution, or advertising -- better than anyone else in the world. Using examples from companies such as Merck, Honda, Apple, Boeing, and Wal-Mart, Quinn describes how forward-looking companies can best perform needed analyses and implement strategies around selected core competencies. By eliminating or "outsourcing" less important functions to superior outside vendors, firms become more responsive, decentralized, and lean. They become the "intelligent enterprises" of the 1990s, leveraging human and capital resources much more than other firms. They may also take on radically new organizational forms, become "starburst," "inverted," "infinitely flat," or "spiders' web" configurations. By designing and benchmarking their knowledge and service based activities to be "best in world," managers can obliterate overhead costs, smash bureaucracies, motivate personnel, and create greater value for customers and shareholders alike.

Jordan J. Baruch former Deputy Secretary for Science and Technology, United States Department of Commerce
Quinn challenges the certainties of management science as Heisenberg did in physical science. Intelligent Enterprise will be required reading from boardrooms to business schools. About the Author James Brian Quinn is the William and Josephine Buchanan Professor of Management at the Amos Tuck School at Dartmouth College and a three-time McKinsey Award winner for the best Harvard Business article. Excerpt. copy; Reprinted by permission. All rights reserved. Chapter 1 Services Restructure the Economy This book is about managing intellect and the services, servicebased strategies, and service technologies that are revolutionizing competition in all industries, including manufacturing, today. Intellect is the core resource in producing and delivering services. Since World War II provision of services has become by far the largest component of the U.S. economy (see Figure 1-1) and dominates manufacturing in virtually all "industrialized" nations. In the United States, the service industries -- as broadly defined -- now account for 74 percent (or \$3,345 billion) of the Gross National Product and 77 percent (or 92.6 million) of all jobs. Through 1990, the services sector continued to grow during recessions and booms alike, although there were some signs that its rate of growth might be slowing and that it too might become vulnerable to downturns. Reflecting its increasing dominance in the economy, during the 1991-92 recession services employment dropped for the first prolonged period since the early 1950s. In contrast, total employment in manufacturing had declined erratically but in a continuous downward secular trend over the past fifteen years. While this represented some serious deficiencies in selected industries and a personal tragedy for many workers, the shift was not as radical as often portrayed (see Figure 1-1). The United States has long been the world's strongest manufacturing country, but it has never had a dominantly manufacturing economy. Figure 1-1 shows that services employment has always exceeded that of manufacturing in the United States. Manufacturing employment remained relatively steady as a percentage of the total for a long period of time; what declined continuously was agricultural employment. Nevertheless, in recent years, some traditional and highly visible U.S. industries -- such as basic steel, automaking, and electronic appliances -- have experienced pronounced losses in both output volume and employment. And many others operating from a U.S. base have lost export sales since the mid-1980s. In the meantime, service industries have grown steadily in scale, technological sophistication, and capital intensity. Why have services become so important today? Steady productivity

increases in agriculture and manufacturing -- largely technology induced -- have meant that it took ever fewer hours of work to produce or buy a pound of food, an automobile, a piece of furniture, or a home appliance. While productivity improved, demand for goods was somewhat capped; people could consume only so many units of food, automobiles, sofas, houses, or washing machines. Meanwhile new technologies lowered services' relative costs and increased their variety and value. The relative utility of nonproduct purchases therefore went up for each individual. And in recent years, as people became more affluent, they began to seek increased satisfaction and improved life quality through more services. The basic cause of this massive economic transformation is the emergence of intellect and technology -- particularly in services -- as highly leverageable assets. Leveraged intellect and its prime facilitator, service technology, are reshaping not only the service industries but also U.S. manufacturing, the country's overall economic and growth patterns, national and regional job structures, and the position of the United States in world politics and international competition. They are forcing totally new concepts of strategy and organization on both the services sector and the product industries -- nationally and globally. The manufacturing-services interface is now the key to most manufacturing strategies (Chapter 6). And the competitiveness of both nations and companies will increasingly depend upon carefully exploiting the new strategic potentials of better-managed intellect and service technologies. Based upon multiple years of research, this book will suggest how best to analyze and implement these new knowledge and service based strategies and the new organizations that support them.

BASIC RELATIONSHIPS: SERVICES, INTELLECT, AND ECONOMICS What do services and managing intellect have to do with a sound economy? Economic texts barely mention either. Many executives and policymakers dismiss services as predominantly "taking in laundry" or "making hamburgers" for others. Such simplifications belie the complexity, scale, employment, and profit potentials of services in the 1990s. While there is not a complete consensus on definitions, most authorities consider that the services sector includes all economic activities whose output (1) is not a product or construction, (2) is generally consumed at the time it is produced, and (3) provides added value in forms (such as convenience, amusement, timeliness, comfort, or health) that are essentially intangible concerns of its purchaser. The Economist has more simply defined services as "anything sold in trade that could not be dropped on your foot." "Service technologies" are technologies developed by or primarily for use in the services sector. They include not just information technologies but transportation, communications, materials handling, storage, health care, and other technologies predominantly used by service enterprises. The "service industries" include transportation, communications, financial services, wholesale and retail trade, most utilities, professional services (like law, consulting, and accounting), entertainment, health care and delivery systems, and so on in the private sector -- and government-social services in the public sector. "Service activities" include personnel, accounting, finance, maintenance, legal, research, design, warehousing, marketing, sales, market research, distribution, repair, and engineering activities, which may be performed as functions inside an integrated -- manufacturing or service -- firm or by a separate firm (like a market research or accounting firm). The common element among all these activities and industries is the predominance of managing intellect -- rather than managing physical things -- in creating their value-added. The key to productivity and wealth generation in over three-fourths of all economic activity is managing intellectual activities and the interface to their service outputs. As we shall show, this is just as true in manufacturing as in the service industries. Indeed, the lines between these two are rapidly being obliterated.

FOUR MYTHS ABOUT SERVICES To develop a proper perspective about these changes, we first need to expunge some of the more misleading myths, held over from the past, about services. The "Lower Value" Misconception -- perhaps first stated by Adam Smith -- regards services as somehow less important on a "human needs scale" than products. Since services are essentially marginal (so the argument goes), they cannot add the same economic value or generate the growth potentials manufactures can. Karl Marx made this a central part of his dogma. As a result, all his adherents so underinvested in services that their countries today tragically cannot store, transport, distribute, finance, communicate about, or repair the products they could otherwise produce in abundance. So prevalent are these misconceptions that many economists -- particularly in developing countries -- refer to services as "the tertiary sector." In very elemental societies it is perhaps true that the first production to meet basic needs for food, shelter, or clothing do take precedence over all other demands. However, as soon as there is even a local self-sufficiency or surplus in a single product, the extra production has little value without further distribution, financing, or storage -- all "service" activities. In most emerging societies services like health care, education, trading, entertainment, religion, banking, law, and the arts quickly become more highly valued (high-priced or capable of generating great wealth) than basic production. And the positive wage differentials their practitioners receive tend to be even more marked as societies grow more affluent. Far from being inferior economic outputs, services are directly interchangeable with manufactures in a wide variety of situations. Few customers care whether a refrigerator manufacturer implements a particular feature through a hardware circuit or by internal software. New CAD/CAM software can substitute for added production or design equipment, and improving transportation or materials handling services can lower a manufacturer's costs as effectively as cutting direct labor or materials inputs. These "services" improve productivity or add value just like any new investment in physical handling machinery or product features. Even more fundamentally, products are only physical embodiments for the services they deliver. A diskette only delivers a software program or data set. An automobile delivers flexible

transportation or a personal image -- both services. Electrical appliances deliver entertainment, dishwashing, clothes cleaning and drying, convenient cooking or storage -- all services. In fact, most products merely provide a more convenient or less costly form in which to purchase services. Although it is a surprise to some people, on a national basis value-added in services is much greater than that in manufacturing (see Table 1-1). In fact, value-added in the services sector accounts for approximately 74 percent of all value-added in the economy, while the total goods sector (including all manufacturing, construction, mining, agriculture, forestry, and fishery outputs) accounts for only 25 percent. Although the total value-added per employee in private services nationally is slightly lower (at \$38,069 per person) than that in manufacturing (at \$40,622), in the strategic business units of the larger companies sampled by PIMS data, value-added per service employee is quite comparable to that in manufacturing (see Figure 1-2.) This suggests (1) that important economies of scale and scope may be available through technology investments in larger private service enterprises, and (2) that it is the government sector's \$30,132 of value-added per person that poses the major problem. The "Low Capital Intensity" Perception asserts that service industries are much less capital-intensive and technologically based than manufacturing. While this may be so for small-scale retailing and domestic services, many service industries today are extremely capital- and technology-intensive. The prime examples have been communications, transportation, pipelines, and electric utilities. But the banking, entertainment, health care, financial services, auto rental, package delivery, wholesaling, and retailing industries also increasingly qualify. Stephen Roach, Chief Economist of Morgan Stanley, has calculated that total capital investment -- and in particular hightechnology investment -- per "information worker" (mostly employed in service industries) has been rising rapidly since the mid-1960s and now exceeds that for workers in basic industrial activities. Similarly, Kutscher and Mark's data show that nearly half of the thirty most capital-intensive industries (of 145 studied) were services. And certain service industries -- notably railroads, pipelines, broadcasting, communications, public utilities, and sea and air transport -- were among the most capital-intensive of all industries. Surprisingly, few service industries were found in the three lowest capital-intensity deciles. PIMS data, collected on a different basis, show aggregate capital intensity in larger service entities to be comparable to -- although slightly less than -- that in manufacturing. Fortune 500 data, which often contain large service units like GM's \$115 billion (asset) GMAC within an "industrial" company, do not break investments out to the SBU level as PIMS data do. Fortune's more aggregated figures show large industrial companies to be more capital-intensive than their predominantly services counterparts. But total capital investment in the service industries has been growing much more rapidly than that in manufacturing. Even excluding the heavy investments of the transportation and public utilities sectors (usually considered services), aggregate annual investment in services now surpasses that of manufacturing (see Figure 1-3). The "Small Scale" Misconception considers the services sector too small in scale and too diffuse to either buy major technological systems or to do research on its own. Although complete Herfindahl indices of concentration are not available, PIMS and Fortune 500 data suggest that concentration and scale among larger service units are comparable to that in larger manufacturing units (see Figure 1-4). In fact, as we shall demonstrate shortly, many companies in the services sector are much larger than their manufacturing suppliers. Large banks, airlines, utilities, financial service institutions, communications companies, and hospital, hotel, or retail chains now not only have the scale to be lead purchasers of technology, they also contribute extensively to its initial design, early financing, reduction to practice, and wide diffusion. In addition, such companies acting in intermediary roles (like distributors) often force new technologies out into smaller service and manufacturing companies (through their just-in-time systems), further assisting diffusion. Many large service institutions now also support extensive RD activities, creating or guiding major new technological developments themselves. ATT-Bell Labs, Federal Express, COMSAT, Arthur Andersen, Citicorp, Arthur D. Little, Microsoft, EPRI, and Rand Corporation are just a few among many such organizations. The "Services Can't Produce Wealth" Viewpoint holds that services are not capable of producing the ever higher levels of real income and personal wealth that have been the hallmarks of the "industrial" era. This argument assumes, in part, that services inherently cannot achieve the productivity increases available through automation in manufacturing. If not, services cannot possibly provide the inflation-free income growth rates manufacturing can. While many past measures of productivity in services have tended to support this view at the macro economic level, there is increasing evidence that the measures themselves may have serious flaws. Productivity in services is notoriously difficult to measure because of problems in numerically defining output units and quality levels. For example, how does one evaluate medical procedures that may use greater resources but may substantially decrease patients' pain or morbidity levels? Of what validity are the standard economic productivity measures that ignore the output value of many public services (like sewage treatment plants or air depollution) and assume that the output value of critical services (like fire departments, police forces, some aspects of banking, and many welfare services) is equal only to their cost inputs? One should be very careful in interpreting aggregate productivity data about services and should look behind the numbers to the measurement methodologies used. Chapter 11 will deal with this issue in much more detail. Productivity measures are more valid in competitive arenas, where customers can make direct purchase tradeoffs between one class of service and other services or manufactures. Here the sales value of the service can provide a better surrogate for measuring output. In some of the more measurable service segments, Bureau of Labor Statistics (BLS) historical data -- and some new measures --

suggest that individual service industries can sustain productivity growth rates as high as those in major manufacturing sectors for substantial periods (see Table 1-2). As managers become more sensitive to the value-added potentials of service activities and focus on the 60-75 percent of their (nonmaterials) costs that typically lie in internal services, further growth in productivity can be expected. Since in the future most of a company's or nation's competitiveness and productivity increases must come from better performance of service and intellectual functions, a central focus in this book is on managing such activities for greater productivity, output quality, and value-added.

SERVICES OFFER PERPETUAL GROWTH OPPORTUNITIES The growth of the services sector should not be viewed with alarm, despite the comments of some spokespeople to the contrary. Fortunately for the economy, until the 1991-92 recession demand growth in the services sector caused services employment gains to far outstrip employment declines in the goods-producing sectors (see Figure 1-5). And despite the problems of certain industries, the total output of U.S. manufacturers is growing in both quantity and quality. As we shall show, service technologies have actually supported manufacturing productivity in the United States and -- in many sectors -- have begun to cause the "remanufacturing" of the U.S. economy. Lower transportation, communications, retail and wholesale distribution, and financial service costs in the United States have presented unrecognized cost advantages to U.S. producers. As virtually all services have grown on the basis of their improved technologies over the past several decades, they have enhanced both the standard of living of individuals and the manufacturing outreach of U.S. companies. For example: * Jet aircraft have made long-haul passenger and freight handling much more efficient and convenient. New containerization, loading, refrigeration, and handling techniques for dangerous and volatile materials -- by making it possible to transport virtually all goods safely and effectively -- have vastly extended international trade. Electronics, information, and communications technologies have stimulated innovations in virtually all service areas, most notably in retailing, wholesale trade, engineering and design, financial services, communications, and the professional services that support manufacturing and service industries alike. In addition, new technologies have revolutionized other fields affecting U.S. quality of life, like entertainment, personal security, or medical care. The high-technology fax, cellular phone, movie, theme park, videotape, and emerging virtual image and multimedia industries of today were unimaginable a few years ago. New noninvasive imaging devices, drugs, diagnostics, genetic engineering, and life-support and surgical systems have revolutionized medical research and practice. And so on. Note that it is not just information technologies, but service technologies developed across a wide spectrum, that have changed the entire structure of U.S. and world competition. Not only have service technologies revolutionized the U.S. economy, they have had the same impact in all other major industrialized countries (see Table 1-3). All these countries now increasingly compete as service economies. And service industries are becoming the bellwethers of all countries' future international competitiveness and standards of living. The services-produced trends in value-added in the U.S. economy since World War II (see Figure 1-6) can, with nurturing, continue to provide opportunities for unending economic growth -- with fewer of the undesired environmental effects of a heavily production-oriented society. Since the value of all services (as well as service-based or high-style products) exists solely in the mind -- i.e., a jewel, an opera, a Ferrari, a sightseeing tour, or a stylish coat may have little functional value relative to its high price -- the growth of a service-based economy is limited only by the capacity of the human mind to conceive of activities as having higher utility. Surely a safer, healthier, better educated, or more stable society can easily be considered "wealthier" than one with more physical goods. And this wealth can be passed on to future generations. Services like better education, art, music, literature, information repositories, banking, trade, transportation, scientific or design know-how, public health, and legal systems are true national assets -- intellectual assets with greater value than physical assets -- for posterity. In fact, such "intellectual assets" have generally been the measures of a nation's wealth throughout history (as in Florence, Athens, or Alexandria) and have proved to be the basis (as in Hong Kong, Japan, Singapore, France, or Germany) of rapid recovery from disasters. One must hasten to add this does not suggest that the United States could or should exist without its advanced manufacturing capabilities. Instead, in a healthy economy, the two go together. Well-developed service industries upgrade and add significant value to the manufacturing sector, making it more effective domestically and more competitive internationally. And they support a strong military capability, as the advanced transportation, communications, and logistics support systems of the Gulf War proved. Strategic opportunities and economic growth are maximized when services and manufacturing are developed in tandem.

SERVICES RESTRUCTURE THE ECONOMY As services have expanded, they have restructured virtually all individual industries, the basic relationship among industries, and the total economy. First of all, the scale and power of service companies have increased markedly relative to manufacturing companies. As their economic power has grown, service companies have redefined their roles versus those of manufacturing. Table 1-4 demonstrates the relative scale of manufacturers in several consumer product industries versus that of their retailing, wholesaling, or product using partners. For example, Toys "R" Us, with its \$5.5 billion sales, enjoys three times the revenues of the world's largest toy suppliers. With its greater information about the marketplace and capacity to control the positioning, display, retail advertising, and pricing of toys, Toys "R" Us can in many cases dictate what toys make it to the marketplace, how well they sell, and even how they should be designed, packaged, transported, or presented. Within the industry Toys "R" Us packaging and marking procedures set the standard for all producing companies. *

Because it has specialized, Toys "R" Us can sell products virtually year round, while its competitors can afford to carry significant inventories only during the short pre-Christmas season, when over 60 percent of all toys are sold at retail. Consequently, Toys "R" Us, with its high volumes and sophisticated electronic inventory and point of sale systems, has a powerful mechanism for pretesting what toys are likely to sell -- and in what form -- when the big Christmas sale season comes. In addition, with its sophisticated models of toy sales, toy production, and changing tastes, it can invest in its inventories with considerably less risk than other companies. Finally, it can force many of these risks back onto its suppliers -- especially those for inventories -- by insisting on very efficient "just in time" deliveries. Such practices further decrease markdown losses, which are as much as 25 percent of the industry's cost for other retailers, while increasing Toys' own returns on capital invested relative to its competitors. * Similarly, \$7.8 billion McKesson Corporation's wholesale drug divisions can strongly influence the sale and distribution patterns in its field. By providing its retail dealers with analytical services that spring off its ECONOMOST inventory control system, McKesson can create a mutually beneficial relationship with retailers, making it very difficult for them to shift suppliers. As a result of McKesson's and other drug wholesalers' use of similar technological power, wholesaling's share of the pharmaceuticals market grew from 47 percent in the mid-1960s to 77 percent in the late 1980s, and is expected to become 85 to 90 percent by the end of the 1990s. POWER SHIFTS TOWARD SERVICES Manufacturers have had to adjust their strategies to the reality of this kind of economic power. As Table 1-4 further shows, textile companies like West Point-Pepperell, Inc., Burlington Industries, or Springs Industries, Inc., have become quite small relative to their retail customers -- i.e., less than one-tenth the sales of Wal-Mart at \$32.6 billion or Sears at \$32.0 billion. Increasingly, these customers actually co-design the products they want, dictate precise inventory and shipment standards, and dominate manufacturers' relationships with the ultimate marketplace. This is particularly true when such retail giants source from overseas, where suppliers have relatively little direct power in the U.S. marketplace and are highly dependent upon orders from U.S. soft goods retailers for their very existence. McDonald's fast food chain provides a dramatic example of the impact such scalar shifts can have. * McDonald's feeds 22 million people a day -- approximately one-third the population of Britain. Each day it uses 2 million pounds of potatoes and dictates the fortunes of many farmers in that segment of agriculture. It purchases an astonishing 3,400 tons of sesame seeds a year. Its volume potentials are so great that when it sought to "lighten its menu" by introducing a shrimp line, it found that not enough shrimp could be caught in the world to supply its needs. When it tried to introduce a raspberry sorbet, it discovered that there were not enough raspberries being grown. And when it decided to go to a more healthful, low-fat milk shake, it destroyed the already weak price of butterfat in the marketplace. Now, because of this and similar trends elsewhere, a whole series of entrepreneurs are busily working on ways to use butterfat chemicals in new and interesting products. With their combination of size, electronics, and market power, major retail chains -- like Toys "R" Us -- can provide both maximum flexibility or differentiation and lowest cost at the marketplace level, calling into serious question theories about "generic strategies," which hypothesize that low cost, flexibility, and differentiation are inherently incompatible. Because retailers have much more access to and information about the marketplace than any individual producer, they can also -- with their electronics communications systems -- sense and respond to detailed changes in the marketplace much more rapidly. To put it differently -- and more positively from the manufacturer's viewpoint -- the producing system is so closely related to customer needs at the retail level that the ultimate customer now dictates desired responses throughout the entire system in extraordinarily short time cycles. Virtually all apparel merchandising has become a "fashion" industry forced to react to the current whims of the consumer marketplace within days. Most noticeably, low-cost discount, "off price," and high-volume chains are beginning to sell essentially fashion -- rather than staple -- goods as a result of the new flexible, worldwide marketplace that retail information, electronic communications, fast transport, and materials handling technologies have made possible. Even extremely large manufacturing companies like GM Truck, GE Transportation, Fruehauf Trailer, Lockheed, and McDonnell Douglas Corporation's aircraft divisions have become smaller relative to their customers in the services sector (see Table 1-5). And in information services, only IBM, with its \$69 billion (1990) sales, is larger than the biggest information service users in the financial service industries. Increasingly these large service users are forcing even the manufacturing giants to respond to their needs in real time. Time-based strategies have become a necessity in the new service economy but are only one element in the service-based strategies now needed for success. CUSTOMERS DETERMINE STRATEGY, DESTROY INDUSTRY BOUNDARIES These powerful service companies, directly connected to their product producing sources, have placed ultimate consumers ever more in command of the world's production system and able to dictate responses to their individual and collective desires. Being able to sense, produce for, and service these trends is the sine qua non for success in the new service society. Service technologies have created both the need and capacity for such responses. They have also radically changed the sources and options one can call forth in responding. Most importantly perhaps, the widespread penetration of service technologies has virtually destroyed the boundaries of all industries. The example of the financial service industry is often cited. But airlines no longer compete just against airlines. They also compete against travel agents, tour groups, retailers (for products sold from in-flight catalogues), financial service companies (credit cards), ground transportation providers (rental cars or buses), communications companies (network and database

services), and so on. Similarly, accounting companies no longer compete just with accounting companies, or computer companies just with computer hardware companies. Instead, the software and computer service divisions of accounting companies compete with the software and service divisions of computer companies, as well as those of user companies. Their executive recruitment activities compete with headhunters and personnel organizations, their consulting groups compete with independent consulting firms as well as staff arms of manufacturers, and their merger and acquisition groups compete with specialists in investment banking. And so on. As a result, managers can no longer define their corporation as being in a single "industry." Technology demands that they reconceptualize the "industries with which they compete" to include all functional and potential cross-competitors for the services and products they create. Later chapters will show how this changes the very basics of one's approach to strategic analysis, strategy formulation, organizational structure, and control systems. Those companies that do not respond could join the long list of enterprises and industry segments that service technologies have already made obsolete. Fortunately, experience has led to some very concrete and productive ways to analyze technological advance, to think about strategy in this milieu, and to organize for maximum service and responsiveness in today's more service-oriented marketplace. The remaining chapters will define in detail how to develop such service-based strategies and manage the knowledge-based intellectual resources at their core.

TECHNOLOGY'S DISTINCTIVE IMPACT PATTERNS

New technologies tend to invade and diffuse through the service industries -- and the service arms of manufacturers -- in more or less predictable ways. As they do, they usually initiate vast economic restructurings and important new strategic opportunities. These forces cause industries to pulse from concentration to decentralization, from economies of scale to economies of scope, from simpler product lines to greater complexities, and often from regulation to deregulation to reregulation. Fortunately, this sequence of impacts is both distinctive and relatively repetitive in pattern -- and hence manageable once recognized. Each stage creates a new group of strategic options, possible organizational responses, competitive threats, and industrywide structural impacts. New Economies of Scale generally appear first, causing centralization of key service activities into larger institutions. An initial period of consolidation ensues, in which many smaller enterprises lacking capital and expertise are driven out. Later a renewed decentralization occurs as smaller units in more dispersed locations link into networks to provide feeder operations for the larger enterprises and to deliver their services locally to widely dispersed locations. Ultimately, these networks allow both small and large units to share the lower costs and greater productivity of the new technology. This pattern has recurred in health care, air transport, insurance, communications, retailing, banking, professional and financial services -- and so on. Midsize service enterprises -- unable to afford the new technologies themselves yet too large to service only one location -- have often been forced to merge upward in scale, niche their services radically, or go out of business. Strategists describe such pressures on midsize firms generally as "being caught in the middle." For example: * In air transport, when the airlines moved to wide-bodied jets, their new economies of scale and improved service potentials consolidated the fragmented industry into a relatively few larger carriers that could (1) serve major trunk routes efficiently and (2) afford the enormous infrastructure investments called for by the large jets. Midsize airlines were forced out or merged. A series of small "express" airlines later emerged to serve the localized route structures these large companies and planes could not handle well. To obtain scale efficiencies, they linked their schedules and reservation systems to those of the few remaining "majors." * In hospitals, the expensive new technologies for PET and CAT scans, open heart surgery, organ and bone transplants, and new cancer therapies forced a centralization of such activities into fewer larger hospitals. Specialists moved to these hospitals, where they would have a sufficient patient flow to practice their specialties. Smaller hospitals withered as they became less and less able to attract patients and doctors who were willing to forgo the opportunity to practice these more complex procedures. Instead, smaller hospitals began to specialize in primary care and more routine procedures, acting as referral units linked to the large research and tertiary care centers. * Similarly, as the large banks and insurance companies automated their bank offices, they were able to achieve economies of scale that smaller and midsize companies simply could not afford. Their entire industries restructured as the latter either affiliated with better-endowed companies, sharply niched the services they offered, or in many cases simply disappeared. New Economies of Scope frequently provide powerful second-order effects. Once properly installed, the same technologies that create new scale economies -- or the supporting technologies necessary to implement the large-scale technologies -- allow service enterprises to handle a much wider array of data, output functions, or customers without significant cost increases. In fact, with proper management, unit costs actually decrease as variety and

flexibility increase; and the larger companies allocate their technology development or equipment costs over a richer base of operations. For example: * Airlines (like American or United), wholesalers (like Super-Valu or McKesson), retailers (like Wal-Mart or The Limited), travel-bank services (like American Express), and professional service providers (like Arthur Andersen, ADP Services, or Bechtel) used their installed facilities and networks to extend their presence into a broad range of new activities. Similarly, in health care, hospitals soon found that their equipment and laboratory infrastructures allowed them to handle a much greater range of maladies and cures, eventually extending their activities even further into the realms where individual practice had dominated. Such economies of scope generally become so powerful that competitors focusing on narrower lines can rarely provide the same flexibility, quality, or cost advantages that new service technologies allow those innovators who develop their technologies with broader markets in mind. At this stage, consolidation usually continues, while the innovating companies simultaneously reach outward with their new and varied product lines toward new customer niches. Finally, as these niches become large enough, major companies refocus into them, or whole new companies form to specialize in and exploit their potentials by designing technologies especially for them -- as National Medical Care did for kidney dialysis or Lenscrafters did in optometry. Increased Complexity then can be economically handled by the new technologies if they receive proper human resources support. Electronic systems and computer models have frequently been the main enabling technologies -- but are by no means alone -- in permitting the management of much greater complexity. A variety of new sensing, telecommunications, information handling, materials, and processing technologies now routinely design, build, and test radical new designs for boat hulls and aircraft; specify structures for new molecules and predict their performance; transport volatile or perishable materials worldwide; suggest and test hypotheses for medical research; access and analyze global and astronomical databases; run remote factories and processes; handle worldwide monetary and securities transactions; control effluents and water supplies; monitor environmental and political events; and manage huge transportation systems with a precision and at a speed previously impossible. Entire new service and regulatory systems often emerge -- as they have in advanced medical care fields like organ replacement, severe trauma, and brain, genetic, or heart diseases -- to deal with problems whose solutions were so complex they could not be imagined in the past. In many cases technology has improved probabilities of success so much that patients may have higher expectations than can yet be justified. Disintermediation is often a consequence of this process. Given the innovators' large scale and technological power, outside parties seek to connect directly to the innovators' systems rather than go through intermediaries. For example, large corporate users of transportation systems began to demand direct access to the reservation systems of airlines. Patients and referring physicians gravitated to specialized outpatient centers to avoid dealing with big hospitals' bureaucracies, high costs, and greater complexities. Large corporations began to place their securities directly on the market to avoid substantial brokerage fees. Individual investors bypassed brokers and went directly to no-load mutual funds. And so on. In addition to increasing the efficiency of each service system, this forced small intermediaries either to develop highly specialized services or to become representatives of the larger entities. As a result of economies of scope, increased complexity of products, and such disintermediation, cross-competition among units in different service (or product) firms and industries became rampant. This then led to the vast restructuring in existing industries already noted -- and to the destruction of traditional barriers among many others. Deregulation became a more viable policy option in many areas as new technologies made extensive cross-competition possible. Policymakers began to look to market forces to control corporate actions in areas where government regulation and monopolies had earlier held sway. Such industries have included airlines, trucking, rail and intermodal transportation, hospitals, financial services, communications, and even public utilities. Decreased regulation has had an enormous impact on the strategies and strategic options of all players, customers, and suppliers associated with these industries. While costs have generally been lowered for customers -- particularly airline and financial service customers -- too rapid deregulation (without transitional government oversight in many cases) has allowed competing companies to externalize many costs onto the public. The savings and loan, banking, and emerging insurance debacles provide prime examples of the social costs of such badly implemented public decisions. The increased waiting, confusion, safety concerns, lateness, and unpleasantness of air travel and some communications systems provide others. Some imaginative companies have already recognized these problems as new strategic opportunities. But new government policies will undoubtedly be needed to deal with the remaining externalities. And those in turn will lead to another round of corporate strategies, essentially resulting from the initial decision to install earlier generations of service technologies. Redispersion and Redecentralization are the final phases in this pulsing process. As centralization and disintermediation occur, there tends to be a counter-need for more localized and personalized contact in each of the service areas -- Naisbitt's need for high-tech and high-touch. New surrogates for the brokers, travel agents, and ticket vendors soon appear. On the one hand, local brokers and agents join into networks with the major players. On the other, new services like PRODIGY allow individual homes and small businesses to connect directly into the system, providing to many individuals and small enterprises the efficiencies of large companies. Skilled financial advisers and travel consultants replace the order-taking brokers and ticket-selling travel agents of the past. Each of the survivors has higher-power technologies locally available and is able to provide much more personal service than their counterparts did in the past. Thus the technology achieves a new

level of outreach and connectivity to the marketplace. Many new enterprises appear in emerging small niches; and larger companies, in turn, must deal with these new competitors and service structures. Usually, the customer is the beneficiary.

CONTINUOUS TUMULT, BUT A NEW ECONOMIC STABILITY These pulsings have meant continuous tumult in the service marketplace. Service companies and industries have made greater transitions in their scale and earnings in the last decade than ever before. Over half of all the companies in the Fortune's Top 100 industrial group ten years ago are no longer there, and long protected industries have been completely restructured. Yet services have also introduced a new stability to the total economy. A classic study by Moore showed that employment in services is considerably more stable than that in the goods sector, as measured by overall percentage gains or losses during recessions. Figure 1-7 graphs similar data through 1989. From 1956 through 1988 there were net increases in average employment in services each year, as compared with the total goods sector, which fluctuated violently. During the four recessions from 1969 to 1982 private service employment rose an average of 1.0 percent while the goods producing industries dropped an average of 7.9 percent. The 1991-92 recession is the first time service employment has dropped in a recession for a significant period, perhaps reflecting that with 77 percent of employment in services, the very word "downturn" must require a decline in service activity. Canada and Britain have enjoyed similar stability patterns. If services were really more marginal relative to products, one would expect people to give up their services first in recessions. Just the opposite happens. While people may go to the movies less often or purchase fewer personal services, they are reluctant to give up their telephone, health care, education, insurance, banking, police and fire protection, and utility services. Instead they postpone durable goods expenditures. Stability is also enhanced because there is no pause in service production while inventories -- which are more important in most product industries -- are depleted. Many primary services associated with population growth (like social services, personal security, health care, and education) are, in fact, likely to increase in recessions -- providing both employment and purchasing stability during downturns. Given these factors, the new "service economy" may well prove more stable than an industrial economy. In addition to reducing the depth of recessions, service industry growth has tended to make them shorter. Service industries are major purchasers of capital equipment, and the replacement of services' capital items -- keyed as they are to fast-moving information technologies -- tends to be more constant because the useful life of equipment is shorter there. In the past three decades (until 1991-92), the service sector continued to grow and invest during recessions and thus level out (or actually expand) the manufacturing sector's sales -- especially those of capital goods producers -- in bad times. It would seem that capital goods producers, policymakers, and executives seeking more economic stability and continuous growth would both praise and target the services sector for support. But, with rare exceptions, this has not been fashionable. Even these macro level restructurings and the new industries that have emerged are far from the endpoint of services' impacts on the economy. As each company responds to these new forces in its own way -- changing its own strategy, organization structure, and control systems to reflect the new realities -- whole new forms of enterprises and competition are being generated. So profound are these changes that -- as the next chapter suggests -- the very nature of companies is changing, and a totally new kind of enterprise and strategy process is arising.

CONCLUSIONS Although frequently scorned by economists and policymakers, services clearly dominate the U.S. economy. Service industries have become the preeminent producers of GNP and new job opportunities in all advanced industrial societies. They now account for 77 percent of all employment and 74 percent of all value-added in the U.S. economy and a majority of all GNP in other countries. Service companies have become large, capitalintensive, technology driven, and strategically powerful entities. They are and should be a major focal point of investment, employment, and capital deployment strategies. The technologies that made them possible have restructured the entire economy, created cross-competition among the individual segments and functions of many companies that used to be considered noncompeting, and forced global competition on everyone. Corporate strategists -- whether in the manufacturing or the services sector -- who do not understand, and most importantly exploit, these changes do their enterprises a great disservice. The continuing refusal of public policymakers to recognize the power and potentials of the services sector is also likely to lead to serious misallo-cations at the national level and to decrease U.S. competitiveness internationally. The following chapters will suggest in detail how corporate managers can rethink their strategies, reorganize their structures, and best develop new relationships with outside companies to exploit the new service-based economy to the fullest extent. The book's final chapters will look at the more complex issues -- of quality assurance, productivity, and human resources management -- that these new structures pose for executives as their corporations move increasingly away from managing physical and fiscal assets and more toward managing service-based strategies and the human intellect that brings them into being. Copyright copy; 1992 by James Brian Quinn