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**Center for
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**From Recovery to Development:
Manufacturing Becomes More
Competitive**

**CEO Publication
G 88-16 (129)**

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Manufacturing Becomes More Competitive

The 1980's have continued the competitive trends which began in the 1970's. The 1990's appear to be more of the same. This paper examines the environmental forces that are driving today's and tomorrow's strategies. These strategies are requiring organizations for their implementation. These organizations, some old and some new are the main focus of the paper. Although there are many environmental forces, the primary force in today's business environment is global competition. Very simply put, there is a smaller pie today which is accompanied by more and better contestants each vying for their piece of that pie. The more competitive environment is driving three strategic changes. First, Companies tend to move initially to adapt their core business. They act so as to recover the cost and quality competitiveness in their core businesses. They then move internationally to extend those businesses from Country by Country strategies (multi-domestic) to more global business unit strategies. Eventually recovery gives way to development as the top strategic priority. Companies look for new revenue sources by concentrating on service, software and/or high technology businesses.

These new strategies naturally lead to new social structures through which to implement the new business directions. The first is "Today's Matrix Organization". Increasingly the choice is not whether to use matrix but how to make it work. Second is the emerging "Network Organization". No longer are businesses vertically integrated, monolithic, hierarchical organizations. Instead they are becoming loosely connected, flexible networks of suppliers, competitors and customers who cooperate and coordinate among each other. The third social structure is the Neo-

conglomerate Corporation. Before there was a divisional structure which managed synergies between related businesses and holding companies which invested in unrelated companies. The new form mixes these styles so that the corporation manages synergies between unrelated or less related businesses. In addition the expansion of financial services and trading subsidiaries give today's corporation a structure very similar to the Japanese Zaibatsus which are built around a bank and trading company.

The other two changes are taking place inside the corporate umbrella. One is the "Clean Sheet Organization" through which a company introduces change by starting some activity from the very beginning. It is easier to introduce a very different business practice by starting fresh than by transitioning from the old to the new practice. The other is the New Business Development organization. Organizations continue to seek to start and build new businesses internally by separating the running of existing businesses from the starting of new ones.

The framework is shown in the figure on the following page. It shows the environmental forces of slower economic growth, more and faster changing technology, new competitors, deregulation, government participation and take overs as creating a higher and more intense level of global competition. Firms respond strategically by restoring the quality and cost competitiveness of their core businesses, creating global businesses and formulating new developmental strategies. These new strategies get implemented by perfecting matrix-type organizations, developing network organizations, evolving toward the neo-conglomerate, employing "clean sheet " units and separating out new business development activities. Each of the five organization forms is being implemented via trial and error. The forms are emerging to relative degrees and still present significant implementation and adjustment problems. The final part

of this chapter presents what we know about them and speculates on future developments.

Environmental Forces

New Strategies

New Organizations

Slower Growth

Recovery of Core
Business

Today's Matrix

Technology Investment

Global Businesses

Network Organization

New Competitors

Neo-Conglomerate

New Government Role

Development

Clean Sheet Units

Deregulation

New Business Organization

Takeovers

The New Business Environment

There are many environmental forces that are impacting today's business strategies such as oil prices and demographics. But the force having the greatest impact on the largest number of businesses is global competition. This new higher level of competition is the result of slower growth, larger investments in technology, new competitors and the new role of governments.

The developed world in the 1980's has been characterized by lower levels of economic growth than the previous decades following World War II. According to statistics, the West European OECD countries have grown at 2% per year or less for the last 10 years. It is likely that this pattern will continue. Neither Japan nor West Germany want to replace the U.S. as the engine to lead world economic growth. As a result competitors will have to fight for existing markets. Growth will not provide more for everyone. Companies will have to look outside their slowly growing domestic economies to search for volume and new sources of revenue.

Starting in 1975 the countries of the developed world stepped up their spending on research and development. In that year spending increased (after inflation) by 6%. The spending has been increasing by 5 to 6% per year each year after that. This compounded growth in R&D spending has greatly increased the fixed costs of doing business. It cost Ford \$3 billion and took 5 years to develop the Taurus and Sable car line. The result is that companies, even in the U.S., must increasingly go outside their domestic economies to pay off these fixed investments in new technology. So both slower growth and investments in R&D are driving companies to seek volume on a world-wide basis. But there is less world-

wide volume available. With less volume and more seekers of that volume from traditional OECD sources, the new competitors greatly heat up the global competitive arena.

The new competitors, like Taiwan, Korea, India and Brazil, teamed with their governments are targeting industries, protecting home markets in those industries, providing cheap long term financing and using exports to provide economic growth. All of them are following the Japanese model. They initially use lower labor costs and an educated work force to produce a cost advantage. They then invest in world scale plants using the latest process technology to reduce their dependence on a temporary labor cost advantage, produce quality products and still maintain a cost advantage. They borrow, license, copy and even steal new technologies and avoid the costs of developing their own. The result is that there is not only less volume to go around but there are more and more formidable competitors for that volume.

One of the reasons that the new competitors are formidable is that they are teamed with their governments. There is still competition between companies but increasingly competition is between countries. Since World War II, countries have been evolving their role in the economic process from one of regulation of markets to negotiation and participation. Most international trade was initially carried out by merchants and traders. The trade was largely in raw material commodities. Governments intervened with market mechanisms like tariffs, quotas and subsidies. Now the trade is in industrial and increasingly consumer products. The trade is carried out by the manufacturers themselves who are multi-national oligopolies. It is easier for countries to achieve their economic objectives by negotiating directly with IBM, Daimler-Benz or Sony. The biggest change however is that governments are becoming partners in the economic process with their

own multi-nationals. Using subsidies, reduced taxes, reduced anti-trust, cheap capital, protected home markets, research consortia, forced joint ventures and so on, governments promote the cause of their local companies. They use their international diplomatic networks as sales offices and for negotiating leverage. The role of government makes the new competitors more competitive.

Deregulation is another force increasing the intensity of competition. Ironically governments are becoming both more and less active. The financial markets, the media, telecommunications and the European Common market are the clear examples. It is quite possible for governments to regulate markets less but help their firms compete more effectively.

The times for sleepy managements are over. The competitive pressures have increased substantially. If the competition does not cause change, their investors who see undervalued opportunities will bring about change. Takeovers will continue in the U.S., U.K. and increasingly in Europe. Combined these competitive forces increase the power of the shareholders and customers among the stakeholders. In most industries it is a buyers market. For those companies who do not respond to the discriminating customer, their owners will act or sell.

In summary, four environmental changes are acting in concert to make the world markets much more competitive places to do business. Slower growth combined with occasional recessions in the developed world plus a debt crisis in the developing world mean less demand volume for those seeking it. Slower growth and higher investments in technology are driving companies outside their domestic markets to seek the more limited volume. In seeking international volume, these companies are encountering new competitors from the newly industrialized countries seeking economic

development through exports. In partnership with their governments the new competitors are competing with more than just low labor costs. They are global competitors. This competition is increasingly global and increasingly more difficult.

Whether this scenario will continue is subject to future changes in the world's economic and diplomatic environment. If the U.S. turns more protectionist in the post Reagan environment, the world could repeat the 1930's scenario and competition would return to country-by-country contests. The Iran - Iraq war could precipitate a third oil crisis or worse. But a likely scenario is that increased global competition on a cost, quality and new technology basis will drive business strategies for some time to come.

The New Strategies

The new global competition and the recession of 1981-82 acted together to severely depress corporate performance in the U.S. and Europe. The manufacturing firms were particularly hard hit. The American firms were also subject to an over valued dollar. The hard times caused them to make major changes in their core businesses. Initially the focus was on recovering their competitive position particularly with respect to cost and quality. They then extended their core businesses from country-by-country strategies to more global strategies.

Recovery

The policies to reduce costs were initially the obvious cuts, closings and concessions. The cuts were layoffs of the work force, early retirements, layoffs of managers, reduced corporate staffs and reduced

levels of organization and so on. Inefficient facilities were closed or sold. Concessions on wages were negotiated with unions. These changes immediately dropped the break even points of the business.

Over the longer term, companies are continuing their efforts to become and stay cost competitive. They are attacking all types of cost. Quality has been a consistent focus not only to raise quality as perceived by the customer but also to reduce costs of rejects, rework, customer service and warranties. Quality Directors were appointed at Corporate and quality programs of all varieties were launched and maintained. With high interest rates in the U.S., CFO's shopped the world for lower cost money in the form of Euro dollars or Yen.

Since the new competitors used lower labor costs as a competitive advantage, labor was an early and obvious target. Concessions on wages, automation to reduce labor content and employee involvement policies were all introduced. The employee involvement approach has been the least utilized of the above policies. The reason is that it is extremely difficult to change traditional factories to the new high involvement work systems. Instead, the new work practices are introduced when new plants are constructed. Companies are therefore migrating slowly over time to the new more productive work systems. At some companies, these new plants are 40% more productive. Although progress has been slow in introducing employee involvement, it represents a significant source of future improvement. In the developed countries with educated work forces, people are underutilized and overpaid. The approach can also be used for professional, clerical and even managerial work improvement.

The above approaches have been successful to the point where labor cost is less of an issue. In some assembly operations labor cost has dropped from 25 to 7% of total costs. As a result, cost reduction efforts

are focusing more on management productivity than labor productivity.

The initial cost recovery efforts attacked the obvious and easy to identify sources of cost improvement. While useful, these efforts have been only the beginning of real recovery of competitiveness. Profit recovery has also been a function of recovery of economic conditions in the U.S., a re-evaluation of the dollar and various protectionist efforts against the Japanese. Experts question whether Ford, for example, can weather a recession, the dropping of quotas for Japanese car makers and the entry of Korea, Yugoslavia and others into the small car market. As a result, companies are now searching for the less obvious and harder to achieve cost reductions. These reductions are requiring interface management, consolidation and pooling of resources, debureaucratization, outsourcing and alliances, and continued automation.

Many companies are discovering that there are hidden costs in the interfaces between business functions like engineering and manufacturing. Under cost pressures companies are adopting programs for "Design for Manufacturability". Previously engineers were unconcerned and/or unaware that trivial design changes could produce major savings in manufacturing costs. Attempts to achieve faster time to market are also forcing tighter integration across functions. If GM is able to reduce product launch time from 5 to 3 years, they will achieve enormous cost reductions. Use of cross functional teams has generated the tighter integration and "simultaneous engineering" efforts. In another company the sales force, measured on revenue and sales expense, was unconcerned and unaware that many of their practices raised manufacturing costs. The introduction of product teams measured on "Total Delivered Cost" produced significant cost reductions. Thus managing the interfaces has made functions more aware and

more concerned about how their actions can reduce costs incurred in other functions.

Businesses that have highly specialized labor and use expensive equipment have found that consolidating and pooling those resources into a single unit can reduce the numbers of people and investment levels to do the work. At GE the business units are centralizing and returning to functional organizations in order to reduce the number of managers as demanded by Jack Welch. However, unless managed properly, consolidated functions can also become unresponsive monolithic empires that pursue their own parochial goals. In which case, costs are not reduced.

Another source of cost improvement, so far underutilized, is the reduction of bureaucracy. Many companies have paper work systems with 8 to 10 signatures required for a new hire or capital expenditure. In another company a project office hired an engineer, not to do any engineering, but to check on the engineering department and act as an independent information source to the project office. This company estimates that bureaucracy and redundancy groups increase management by 20%. However, removing this cost is as difficult as implementing employee involvement. The checks result from lack of trust, status seeking, hierarchical thinking, an inability to delegate or a need to know everything. Like employee involvement, less bureaucratic organizations are best created using a new start-up facility. These clean sheet organizations start with little bureaucracy and stay small. Very often these new plants implement automated processes like computer aided design (CAD), employee involvement, paperless factories, and minimal bureaucracy all at the same time.

The last recovery technique is the increased use of sourcing arrangements and alliances with outside firms. Previously high performing companies did everything themselves. The belief was that "If you want something done well, do it yourself". This policy led to extensive vertical integration managed by monolithic hierarchies like IBM or General Motors. Today, the policy is changing. The belief is now that companies cannot do everything well. Companies should therefore perform only those activities at which they excel and out-source the rest. This policy applies to the purchase of parts, components and subsystems as well as to support activities like maintenance, food service, printing, and design of test equipment. Costs get reduced and quality is increased by giving the activity to a professional or specialist in that activity.

Costs also get reduced by establishing close working relationships with the firms to which activities have been sourced. Here the logic is the same as working on internal interfaces. External interfaces carry the same costs as the internal ones. Using new information technology a company can link with suppliers and customers to fine tune product flows thereby reducing delivery time, inventories, shortages and oversupplies. Even where parts were previously purchased outside, companies are reducing the number of suppliers, increasing volumes from a single supplier, working closely with them and reducing costs.

The newest form of alliance is the increasing numbers of arrangements between competitors. Here large capital outlays for something like a semiconductor plant force competitors to share the investment. Companies also cannot afford to remain at the state-of-the-art in all relevant technologies. In aerospace teaming arrangements allow the sharing of technologies and the reduction of development costs. The European auto business will be characterized by extensive cooperative design and

manufacture of components and sub-systems. These arrangements take place through agreements, contracts, minority investments and joint ventures.

In summary the manufacturing firms reacted to the profit problems of the early 1980's by focusing on a competitive recovery of their core businesses. Initially they pursued the obvious course of reducing employment and dropping their break even points. They then focused on long term and continuing efforts aimed at quality, automation, interface management (both internal and external), consolidation and pooling of functions, outsourcing of components and support activities and alliances with competitors. To a lesser degree they have adopted employee involvement and debureaucratizing policies. These efforts are continuing as the companies see more and more formidable competitors. Most believe they have recovered their core businesses to the point where development of new business is becoming a higher priority. One strategy has been to extend the core business internationally.

The Global Business

The manufacturing firms extended their businesses internationally in order to get the necessary volumes, generate new sources of revenue, establish a presence in all key markets and acquire a retaliatory capability for potential use against the new competitors. They also converted their international strategies from country-by-country approaches (called multi-domestic) to more global or world-wide strategies.

The primary force for international strategic change was initially the quest for volume to support higher break even points on new product programs. The increased R&D investment requires that companies achieve sales volumes greater than the volume available in their country alone. Shorter product life cycles means that there are fewer years over which to

amortize an investment. With fewer years of sales volume, companies seek more countries for sales volume now. With slower domestic growth in the West, companies are forced into international markets.

International sales volume is not achieved, however, if different products are desired in different countries. Different product preferences in different countries for consumer products and to a lesser degree industrial products had always been the rule. Today markets are homogenizing and products are becoming more universal. Consumer behavior for many products is determined more by disposable income and education than by nationality. The equalization of economic standards across the developed world has homogenized the demand volume. The lower cost of universal products also generates more value for the customer.

Ford is typical of the trend. It first homogenized demand within Europe. Then after the failure to make Escort a world car, they have been moving to more universality with Sierra/Merkur and most recently Taurus and Sable. They cannot afford another \$3 billion for European equivalents of Taurus and Sable. Therefore new models are designed from the beginning to serve multiple markets.

World or multi-country volume is also needed in capital intensive industries. For example it now costs \$200 million for a new semi-conductor plant. As more activities become computer aided and telcom driven, the capital costs increase and along with them the need for world volume.

The above discussion would suggest that companies should supply the world from one or two factories, have a single design center and utilize a local multi country sales force. Indeed, this model served the Japanese very well. However, there appears to be a Newton's Law of International Business. "For every economic and technological force, there is an equal and opposite political force". The countries of the world are happy to

have a company supply the world from a single plant as long as that plant is in their country. If it is not, they insist on some offset to imports or value added within their country. The solution to the local value added but world scale dilemma appears to be the use of multiple plants in multiple countries. However each plant produces and usually designs a limited product line and produces that line for the world. Each country gets a world-wide mission, local value added and yet sufficient scale to support the fixed costs.

The other force that is causing a shift to more global strategies is the tactics of the new competitors. They compete on price. The price competition may cause a need for global integration even if the company has varied markets, local products, few economies of scale and minimal investment in R&D. The new competitors start in the low end of the market where price is important and their low labor costs are an advantage. They go to private label or distributors next and get more manufacturing share than market share. Next they build low cost, world scale plants and attack the middle and main markets using price and universal products to buy market share. If the western company is domestic-only or manages international with a multi-domestic strategy, the market share battle can only be waged in the attacked market. If the western company has a large share and the new competitor a small share, the western company cannot afford to have a large percentage of its revenue under margin pressure. A better strategy would be to retaliate in another country where the new competitor has a large share and the western company a small share. But to

retaliate or to have the threat to retaliate, the western company must be in all the main markets and be able to manage the business cash flow across countries. That is, the company must manage the business on a global basis.

In summary, the environmental forces are causing companies to establish a presence in all key countries and to manage across these countries with a global strategy. Presence in key countries is required to get world volume and local value added. Presence is needed for retaliation capability. It is also needed for market intelligence. In order to introduce universal products to homogeneous markets and coordinate pricing across countries, the business needs a global strategy. Countries cannot be forgotten either as companies need a substantial presence in order to have negotiating leverage with host governments.

Development

The initial response of manufacturing companies to the increased level of competition was to recover or exit from their core businesses and extend those businesses globally. This process is continuing today. But at some point each company began to search for new sources of revenues. They believed that they could not survive by closing plants. The new developmental strategies are not yet fully configured but some generalizations about them can be made.

First some companies are choosing not to develop. The oil companies are returning excess cash flow to their stockholders and buying back their own stock. These companies went through their own difficult times in the 1970's when OPEC emerged, oil crises occurred and corporate raiders tried to take them over. They diversified, performed poorly and divested their ventures to stave off the raiders. Other companies promote revenue growth

by managing on a portfolio basis. They fund faster growing, cash using businesses with money taken from mature slower growing cash generators. So far portfolio management has altered product mix and improved profits more than it has stimulated growth.

The real developmental efforts are targeted on service and technology based industries. Services are attractive for manufacturers for several reasons. First manufacturing companies already provide these services as product supports to their manufactured products. Second, services are the fastest growing sectors of the post industrial economies. Third, they tend to be local businesses and less susceptible to foreign competition and the new competitors. And finally many services are local or regionally fragmented businesses. A large company can bring capital for computer aided delivery, provide a brand name and for national advertising, install sophisticated management. The example of mortgage banking shows how a fragmented industry can be concentrated by a large company.

Many companies kept their services unit when they sold or closed the manufacturing portion of the business. General Electric's Credit Corporation, Nuclear Services and Information Services are all examples. These units have then been expanded internally and through acquisition. The Nuclear Services not only repairs and supports G.E. manufactured equipment but will now maintain any equipment thereby giving a customer a single point of responsibility. From here they have taken over a customer's maintenance function and in some cases run the facility for them. GE Credit would finance the purchase of GE equipment. With deregulation of financial services, they can finance or lend for any purpose. They can buy equipment and lease it back to the user. They have acquired other financial capabilities like investment banking and insurance to service the entire needs of the CFO. These businesses have been major

sources of revenue growth. Currently the companies are encountering problems with further growth of the services they provide already. The problems arise because the business units producing the products being serviced are still viable businesses. The manufacturers of the products still see service as a product support activity not a money making activity in its own right. The service activity may need to service competitors' products or take on activities which reduce the priority given to support activities for the manufacturing unit. The strategic question becomes one of whether the service activity is a vertically integrated portion of the manufacturing business unit or another stand alone business unit. The conflict is slowing the use of service units as a source of growth of new revenue. Usually the leadership of the company has come from the older manufacturing portions of the company and are reluctant to promote the new service directions.

The second growth initiative is to pursue business opportunities in R&D or technology intensive industries. There are several reasons for this focus. First it is believed that the U.S. and the developed countries have the infrastructure and education levels to use technology as a competitive weapon vs. the new competitors. The new competitors have advantages in mature, cost based industries. Second, technology leads give competitive advantages that reduce cost based competition. Third, government partnerships to exclude foreign firms are most likely in new technologies. Even in the U.S., the government is ignoring anti-trust implications of collaboration, encouraging joint research like MCC and sponsoring the cooperative programs in semiconductors and super-conductors. Fourth, the defense establishment in the developed world buys performance and state-of-the-art over cost in its weapons acquisition programs. The companies in

both commercial and defense businesses want to pursue spin-offs from their defense work. And finally new products and new technology are the source of new industries and new growth. Semiconductors created Texas Instruments, Xerox came from copiers, Polaroid from instant photography, Digital from mini computers, Intel from integrated circuits and so on. So companies see technology as a means to enter the next sunrise industry like the factory, the office or the home of the future. The initial markets for these sunrise industries will be the home markets of the developed countries which would favor local manufacturers and could also be protected in the infant stages. So technology based strategies can yield significant advantages to companies in developed countries.

The question then becomes how to conduct the new strategies. The companies could use acquisition or internal growth to pursue the new strategies. They could use combinations of small acquisitions, minority investments, joint ventures, venture capital and/or internal growth. A variety of patterns has emerged.

The large acquisition made on a conglomerate, portfolio basis is rare. The institutional investor immediately trades the acquirer at a lower price/earnings multiple. The acquirer's stock price drops making it a target of takeover and breakup. The acquisition must "fit" in some way with the current portfolio of businesses. In addition an acquisition must be friendly, fair to the stockholders and not subject to anti-trust objections from the Justice Department. The number of acquisitions that are large enough to be meaningful to the G.E.'s of the world and yet satisfy the criteria of fit, friendly, fair and legal is quite small. The large acquisitions that have taken place have been caused by problems at the acquired firm or its previous owners. The firms had to be sold. The acquisitions of Kidder Peabody, Reinsurance, Hughes, MAN, Dornier and

AEG were all motivated by problems at the selling organization. RCA is still the subject of speculation as to why it was sold, and whether it had to be sold. Only GM's acquisition of EDS was initiated by the acquirer.

The acquisition of service firms is always to grow the internal service unit of the acquirer into new products or new geography. The acquired firm builds on what the acquirer already does. Only TRW broke new ground with its credit information systems business. TRW had the data base technology and capital. It acquired a small regional firm and then grew the business internally with some additional regional acquisitions. It concentrated a previously fragmented industry to become the dominant provider.

The firms have employed a larger variety of growth methods for the pursuit of technology businesses. The auto companies have used large acquisitions. However, each acquisition has been a potential supplier to the acquirer. The acquisitions have been analyzed from a supplier and an acquirer view. They have some relatedness to the core business. The acquiring firm can benefit from the additional market share it gives to the acquisitions and from any state-of-the-art advances given to the acquisition from a state-of-the-art customer. Both GM and Ford are using the same logic for small acquisitions, joint ventures, minority investments and venture capital activity. They seek to acquire the best of their vendors.

The acquisition of high technology firms to enter new markets has not been successful for GE or Westinghouse. Their attempts to enter the factory of the future market through the acquisition of small high tech firms has been a failure. GE acquisitions in computer aided design and ceramics have not performed well either. The unfamiliar technology and

small sized units have presented difficulties to the large acquiring firm.

The companies have also pursued the growing of new business units internally and the extension of current ones from technologies transferred to it. The technologies are most successful when transferred to an existing business unit. The transfer of magnet technology to Medical Systems at GE is an example. The start-up of new business units from internal ventures or small acquisitions has been less successful. Only TRW, with a history of early identification of sunrise industries, has had some success. The potential of using technology is strong but the inability of large companies to manage small entrepreneurial units has been a major barrier.

A similar pattern repeats itself in ventures to transfer technologies from defense to commercial applications. Products do not transfer. They are never cost effective. Existing business units can adopt basic technologies and improve their product line or process experience. New ventures using basic technologies suffer the same problem of entrepreneurial units in a large company. Very little experience is available from the use of research consortia.

In summary, companies are targeting technology based businesses as a source of future growth. These industries potentially provide an advantage to companies in the developed world. Our experience to date shows that existing businesses can exploit new technologies for line extensions and next generation products. Using new technology to break into new markets and establish new industries has not yet been successful. Perhaps acquisition is a better vehicle for new market entry if the acquired management will remain. Management is still searching for the formula for new business development in technology based industries.

Part of the problem with the implementation of new strategies is that the organizations for them have not been discovered. It is to these new organizations that the discussion turns in the last section.

Today's Organizations

The environmental changes that were described above have brought the strategies that were the subject of the last section. In turn, these new strategies require organizational changes for implementation. Which strategies are causing the new organizations are shown in the following table.

Recovery

Cuts, Closures and Concessions
Quality
Quality
Automation
Cheaper Money
Management Productivity
 .Interfaces
 .Consolidation
 .Outsourcing, Alliances
 .Debureacratizing
 .Employee Involvement

Global Businesses

Presence in Key Countries

Global Business Strategies

Active Host Governments

Development

Services
Technology

Organization

Today's Matrix

Network Organization

Clean Sheet Units

Neo-Conglomerate

New Business
Organization

The forces that are promoting a return to matrix are two fold. First, the simultaneous need for consolidation and faster time to market is creating a need for better integration across functions in the business units. Second, the simultaneous pressure from global business strategies and active host governments create a need for integration across countries. In both cases a reorganization to product profit centers or world-wide business units is counter productive. What is needed is the simultaneous organization of matrix management in its various forms. Matrix permits the dimensions of product and functions and country and business to be addressed simultaneously.

Matrix is not a new organization form. Although earlier versions existed, matrix became the vehicle by which space and defense contractors implemented fixed priced contracts in aerospace in the 1960's. During the

1970's, it had become a management fad. By the time the 1980's arrived, some 80% of the companies that tried matrix had become disillusioned with it. Part of the problem was that companies saw matrix as a structural issue. They would have emotional battles over solid line or dotted line reporting relations. These battles prevented the collaborative relationships on which matrix depends from being operationalized.

In the other 20% of the companies and in aerospace, matrix worked well. These companies developed sophisticated information systems and accounting systems for tracking both sides of the matrix. They used the planning system to resolve many of the inherent conflicts in the simultaneous organizations. Subordinates were thereby buffered from the unnecessary conflicts. Goals from the planning process became the "managers" of two boss managers. The performance appraisal process became an important and joint process. Reward systems became more flexible and recognized the priority given to team players. People who were team players were selected and promoted. Understanding of both sides of the matrix was promoted by career paths which gave managers experience on both sides. Matrix, the simultaneous organization, became manageable when managers became capable of managing on either side and decision process as where put in place for simultaneous management. The key to managing "Today's Matrix" is not structure, its is simultaneous processes and the development of managers with experience on both sides. Sophistication in management processes like performance appraisal, planning, information systems and reward systems are the foundation to making functions and countries responsive to business needs without reporting to a business unit or product manager.

The simultaneous implementation of consolidation and pooling, interface management and fast time-to-market requires sophistication in matrix management. The key to simultaneous implementation of global business integration and strong country presence is sophistication in matrix skills. In addition, these same skills will be required for the implementation of the network organization.

The second organization form required for today's strategies is the network organization. Instead of the monolithic management of vertically integrated empires through hierarchical structures, more economic activity is being managed through flexible, often temporary, arrangements between suppliers, customers and even competitors. These arrangements can be contracts, sub-contracts, alliances, teaming arrangements, joint ventures or minority investments.

The network organization results from two strategic sources. First, the search for cheaper sources of supply or support and better quality have caused companies to look outside their organizations. With the fixed costs of technology and capital intensity rising, it is increasingly difficult to stay on the cutting edge of everything. Instead companies are focusing on fewer activities at which they excel and subcontracting the rest. The second pressure comes from global strategies to have a presence in all key countries. Usually the only or best approach to entry is a joint venture or strategic alliance with a local firm. Some alliances are combinations of both strategic pressures.

Success at managing the network organization requires the same sophisticated management systems and managerial skills as those required in the matrix. Managers must work across interfaces with peers that they do not and cannot control. Authority, control and majority ownership are like structure. They are old fashioned thinking in the new organizations.

The network organization requires two stages of development. The first is the negotiation stage. Alliances and joint ventures require considerable up-front work in searching for compatible partners. Like acquisitions, partnerships may be struck opportunistically, but their success will depend on foundations laid prior to the appearance of the opportunity. Then virtually everything is negotiable. Who pays for what? How much profit can be repatriated? What technologies are involved? How are revenues split? And so on and so on. A great deal of negotiating skill is involved. In international environments a great deal of language and cross cultural skills are also involved. Management selection and development processes must reflect the new need for these international skills.

The second stage is the management of the relationship after it is established. Like any relationship, the problem arises when those who negotiate leave. New people arrive to manage with someone else's contract. The managers of the relationship need to be involved early in the negotiations. Then they need the same skills at managing interfaces as managers managing in a matrix. The benefits of a joint venture are extracted daily. The day-to-day managers need the skills of negotiating like the up front negotiators do. Our largest problem is finding managers for this day-to-day negotiation. We need good matrix managers. Most companies lack the skills for an internal matrix. An external interface is more difficult. An external international interface is the most difficult. If the managerial skills are not developed, the network organization will become the next management fad to replace the matrix.

The clean sheet organization is a way around the lack of managerial skill and entrenched power centers. The implementation of employee involvement also requires managers who can operate without relying on authority, power of the office and status differentials. The non bureaucratic organization requires trust of others, non-hierarchical processes and less acknowledgment of position. All of these social hierarchical features are difficult to take away from those who have them and have worked to attain them. So rather than convert existing organizations, companies are creating new self-contained units to implement employee involvement, non-bureaucratic management practices and automated management activities. When starting with a clean sheet of paper for the organization and carefully selecting new managers, these new strategies are more likely to be successful.

Top management needs to orchestrate the use of these experimental centers. They are usually successful on performance criteria but unsuccessful on conformance criteria. The clean sheets therefore need protection from the established order. They function best with little publicity. The graduates of the unit should not be made "elite troops." Over time, the establishment of many clean sheets and the promotion of the graduates can convert the company to the new strategies. The process is slow and painful along the way.

The new development strategies are generating a new corporate form-- the now-conglomerate. In the 1970's there were two distinct types of diversified companies. The first was the divisionalized company that diversified through internal growth into related businesses. Hewlett-

Packard and Procter and Gamble were typical of this type. The other type of company was one that grew through acquisition by buying companies in many unrelated industries. These companies like ITT and Textron were managed through holding companies.

Today diverse enterprises like GE and TRW are diverse but are being managed to achieve synergies between businesses. In addition they buy and sell companies like the old conglomerates. Many related businesses or single businesses like Ford and GM are acquiring and growing into less related areas. This intermediate form is referred to as the "Mixed Corporation." It is organized into clusters of related businesses. The cluster manages itself through a group structure with group or sector staffs and a holding company structure at corporate. Policies and careers are oriented around related clusters. Internal joint ventures across the clusters are the new phenomena that corporate units are trying to promote.

One way to promote the internal joint ventures is to use the financial services subsidiary as an internal bank. This internal bank, the international divisions and the trading subsidiaries along with the mixed corporation become the neo-conglomerate. General Electric, Daimler-Benz and Deutsche-Bank and the Mitsubishi Group all look alike on paper. Is this new neo-conglomerate the corporate structure of the future? The current prevailing opinion would say no it is not. The conglomerates have not performed well in the U.S. The investment community trades conglomerate stocks at a discount. Academic research says corporate headquarters must provide value added. If not the collection of businesses in freely competitive capital markets is better off being separate.

However some recent evidence from academic studies shows that diversity pays off. The Japanese Zaibatsu model has also performed well. In technology based competition a long run view is needed. Having friendly long term share holders like the Japanese Zaibatsu or German banks may be an advantage. As competition shifts to country vs. country, the neo-conglomerate may be a superior form. It permits the acquisition of cheaper money on a world-wide basis. However, the U.S. conglomerate has not been as successful at accomplishing internal joint ventures like the Japanese Zaibatsu. Some additional implementation work needs to be done.

The last organization form to be needed for the new strategies is the New Business Development unit. Like matrix, the New Business or New Venture groups are not new. They were popular in the late 1960's and again in the early 1980's. Companies became fascinated with internal entrepreneurship. However the use of the New Business Development unit and "intrapreneurship" for purposes of diversification has not been successful. The oil companies were the most obvious promoters of these units and the biggest failures.

The development dilemma still exists. Managers responsible for the running of today's businesses are not successful at searching for and creating tomorrow's businesses. Yet New Business Development units have not been successful. Part of the issue is "At what stage in the development of a new business or industry, should the large firms enter?" The prevailing view now is that start-up should be left to the free market and venture capitalists. Big companies can participate but as part of venture capital funds, minority investors and customers. Then during the shake out period when access to resources and management skills become competitive advantages, the large firm should enter via acquisitions.

Therefore the New Business units should be searchers for sunrise industries, new technologies and likely acquisition candidates for the neo-conglomerate.

In the meantime the growth that is occurring is coming from offshoots of the current businesses. These were mentioned earlier as service units and software units. The firm already performs these activities. In those areas where the firm has an advantage, these units can be spun off and acquisitions added to build a business unit. This approach is currently being followed by GE and TRW.

In summary, the new strategies are requiring some new organizations for their implementation. Some of the new organizations are not really new. They are resurrections of previous forms which need to be perfected. The new organizations like matrix, network and clean sheets all require managers who can influence without authority or 100% control. Many of the barriers to implementing these new strategies revolve around our limitations in implementing these new organizations. The corporate form that is partially implemented and evolving is that of the neo-conglomerate. Its ultimate form is also a matter of debate. And finally the New Business Development unit is still being perfected. Where in the development cycle should the big firm enter is the key question being addressed. These issues appear to be the primary ones facing manufacturing organizations in the U.S. and Europe today.