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My Years with Thermax

I was invited to deliver the Silver Jubilee lecture on the 25th Anniversary of the Pune Chapter of the Institute of Cost and Works Accountants, in December 1990. When I enquired what they would like me to talk about, it was suggested that I speak on growth strategies. I felt a little uneasy. A subject like growth strategies smacks of being a little academic-— strategies of growth, long term planning, SWOT analysis, theories of competitive advantage and so on. What I thought would be relevant is the example of Thermax as a "growth" company.

I have a little theory about management theories. Management experts and business consultants are perennially rummaging into "success" stories to try and unravel some eternal truth which they inflict on a lay public, which lap it up in the hope that they too can become successful, little realising that by the time the management expert completes his research and comes out with a best-seller, the world has gone by. And so another bunch of success stories with a new focus emerges—the Japanese Model, the Search for Excellence, more Excellence, Total Quality, what they teach at the Harvard Business School, what

they do not teach at Harvard Business School—and so the merry-go-round continues.

I thought, rather than talk in general about growth strategies, I would share with you my thoughts on a company which has experienced growth—a company with which I am familiar, a company called Thermax—and leave it to you to discern what insights are meaningful and relevant in your own context. I have, rather brazenly, entitled it "My Years with Thermax"—after the famous corporate biography of Alfred P. Sloan, which every student of management is nursed in—but the similarity ends there.

Let me give you a thumb-nail sketch of what we are. Thermax started 24 years ago as a small-scale industry, manufacturing little packaged boilers. We started with a capital base of Rs 0.3 million, a dedicated team of 40 people and unbridled enthusiasm.

Thermax is now a multi-divisional company, involved in the design, manufacture and marketing of products and systems in the areas of energy, environment, water treatment, surface coating, post-harvest technology, speciality chemicals, electronics and computer software.

Our turnover today is Rs 2,160 million, of which exports represent about Rs 820 million.

Thermax has a team of over 2500 people, of whom some 960 are engineers and scientists.

The net worth of our company today is just under Rs 300 million, of which fixed assets account for a little over half that figure.

Our Profit Before Tax last year was Rs 125 million*.

Our Company is located in Pune on a 50 acre plot of land, with a built-up area of just under 50,000 sq. metres.

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*For those who have a fondness for statistics, the figures for 1992: sales turnover—exceeding Rs 3,000 million; people—just under 3,000; Profit Before Taxes—Rs 210 million.

We have three manufacturing plants: Engineering, Chemicals and Electronics.

We have a strong presence in the market, with twelve sales and service offices in India and five offices overseas in Moscow, Nairobi, Detroit, London and, very recently, one in Bangkok.

We have two joint ventures with well-known companies from the United States: Thermax Babcock & Wilcox, for a range of equipment in the energy sector, and Thermax DeVilbiss, a household name in painting technology and paint systems.

Let me give you some idea about what we make. As I mentioned earlier, we are a multi-divisional company, but our three core Mission areas are Energy, Environment and Exports.

On the energy front, we have a host of products and systems designed to transfer heat from a fuel resource to an industrial application at the highest possible efficiency and to conserve energy through the recovery of heat from prime movers, turbines and furnaces.

Our core activity so far as environment is concerned, includes air pollution control equipment, incinerators for incineration of toxic wastes, a whole range of industrial water treatment plants from simple demineralisers to Reverse Osmosis. Our chemical plant manufactures a whole range of resins for water treatment.

Our other divisions cater to surface coating, post-harvest technology, manufacture of electronic components and sub-assemblies and software.

Our third core activity is exports. Apart from our own range of products, we represent some 50 select associate companies to some 46 countries. The engineering products which we have pioneered in world markets include machine tools, textile machinery, electronic and consumer durables, computer software and hardware, pumps, valves and seals, and construction machinery.

As I look over the last 24 years, what do I feel are some of the significant factors that have contributed to our growth?

■ I think the first and most basic factor is a desire, a will, an irrepressible urge to grow. Without it there is no growth.

I know of perfectly good, respectable, well-managed organisations which are content to be where they are. They do not actively seek opportunities or take risks. They are well-managed and orderly. Their managements have a lot of time and leisure to draw organisation charts, prepare manuals and design canteens. Their bankers are happy with the sober, respectable debt-equity ratios. Their executives are relaxed-—leave office punctually at five, spend evenings playing bridge or meeting friends. There is a lot to be said for the quiet life. Except one thing: there is no growth. It is a perfectly valid philosophy of business, particularly in a sheltered environment like ours, where an organisation can survive for generations without growing.

But if growth is your aim, then the entire organisation has to be imbued with this culture from the top. Every opportunity has to be pursued relentlessly and tracked down, and every part of the organisation has to be stretched to the maximum and find fulfilment in reaching new frontiers rather than in a quiet, orderly existence.

A constant refrain in our organisation is questions like these:

(i) What is competition doing that we can do better?

(ii) What new markets can be served by modifying or adapting the technology we have?

(iii) What new products or services does the market need?

There is nothing particularly unique about these questions. What might be considered unique, perhaps, is the intensity with which they are asked, the enthusiasm with which they are pursued and the determination with which any obstacles to their fulfilment are overcome.

■ A second contributing factor to our growth has been our

method of diversification. Management text-books on business policy talk about scanning the horizon, taking an inventory of opportunities and threats, interfacing them with one's organisation's strengths and weaknesses, and then identifying areas of diversification with a cut-off point based on return on investment.

With our very limited resources, we could not afford any such luxury. We could not dream of making nylon fibre, or setting up a paper plant, or starting a five star hotel, or going deep-sea fishing.

Our strategy of diversification has essentially been one of moving from the familiar to the not-so-familiar. So from steam, we move into thermic fluid heating into gas-to-air heating into industrial drying and so to paint-drying—to automatic paint systems—to grain and seed drying in agriculture. From oil we move to solid fuels—to coal, wood and husk.

That brings problems of air-pollution, so to cyclones, dust collectors, bag filters and electrostatic precipitators. And so to environmental engineering—incinerators, first for conventional waste—then for chemical waste.

Since water treatment is crucial for boiler feed water, we got into small packaged water treatment plants, then to large field-erected water treatment systems, then to resins and chemicals for water treatment, and so to base-exchange resins used in processes like refining of sugar, manufacture of streptomycin and recovery of metals—and so on to polyelectrolytes used as flocculating agents.

From energy-related products to energy conservation products was a natural next step. We moved into economisers, waste-heat boilers and absorption chillers.

We perceived a market for our products in the Soviet Union. Having established a base there, we started representing a select range of engineering products in the USSR, and exports as a core activity came into being.

The logic behind this strategy of diversification was four-fold:

(i) We were quick to react to events and opportunities as they unfolded themselves. The first oil crisis in 1973 could have been our Waterloo because we were

manufacturing only oil-fired boilers. We reacted fast, coming out with the country's first packaged coal-fired unit, well before competition; this has since been a bestseller. Our entry into the Soviet Union was a happy accident. We were participating in an exhibition in Delhi. A visiting Soviet delegation evinced an interest in our Hot-Air generator, but they wanted it totally adapted for a paint-drying application. We seized the opportunity and had a prototype ready in six months. The rest followed.

(ii) The second logic was the defining and re-defining of our business. Some of you may have read a book, which has since become a classic in management literature—*Marketing Myopia* by Theodore Levitt. Levitt talks of defining a business, not in terms of the product being manufactured, but in terms of the market need it fulfils. He refers to the classic case of railroads in the US at the turn of the century. These were giant companies, powerful and flush with funds, but they made one cardinal mistake. They looked at themselves as being in the rail road business, whereas they should have realised that they were in the transportation business. In a couple of decades, they just faded away.

Many of our competitors, much bigger and older than us, continued to remain boiler makers. Early in the game, we realised that we are not in the business of making boilers. We are in the business of generating and transmitting process heat—and steam and boilers are only one medium of generating and transmitting process heat. And a whole new world unfolded: pressurised hot water, hot air, thermic fluid heaters... We became the Process Heat People. Since then, we have further re-defined our business to be in the area of Conserving Energy and Preserving the Environment. If you can re-define your business in terms of the market need you fulfil, the canvas is limitless.

(iii) Our third basis of diversification was the move into

areas which provided a synergy either in terms of the technology, or the market, or both. Boilers to energy conservation is a diversification where both the technology and the market are familiar. The move to Water Treatment provides the synergy in terms of the market, but not in terms of the technology. Chemical incineration has a lot to do with heat and combustion, but a substantially different market.

A basic synergy, technology or market, or both, make it possible to test out a small captive market before opening a large area. We went in to Water Treatment initially for our own captive market. Two years later we went into larger systems for power stations. We cut our teeth in air handling through blowers for our own captive use. We are now making large fans for the cement and petrochemical industry.

(iv) The fourth logic behind our diversification is the choice of products which make it possible for us to use the same assets and infrastructural facilities to serve a variety of markets. As a result, the same general purpose workshop can be effectively and optimally used to manufacture a whole range of products.

■ The third contributing factor to our growth has been what I would call a sense of mission. I guess we all are in business to earn a profit. But earning a profit is not enough. I like to believe that we are in business to fulfil a mission.

It is desirable to spell out some of these missions. Here is our Mission Statement on Energy:

To conserve energy in Industry, through design, manufacture and propagation of equipment and systems designed:

□ To transfer heat from a fuel source to an industrial application at the highest possible efficiency.

□ To recover heat from the exhaust of prime movers like steam and gas turbines and diesel

engines, wherever technically and commercially feasible.

□ To extract and use heat generated from integrated industrial processes, wherever technically and commercially feasible.

□ To replace power, wherever used for heating or cooling, in industrial applications with a direct source of heat energy so that scarce power is used only for prime movement and for lighting.

□ To devise innovative technologies and application to utilise: Low grade end of fossil fuels—high ash coal, coal dust and washery rejects, refinery tailings, renewable energy sources like bagasse, husk or biogas, alternate sources of energy, particularly wind and solar energy.

Here is our Mission Statement on Environment:

It is our belief that while pollutants are inevitable, pollution is not. For the economic progress of our country, industrial growth is essential and yet it has to be sustained at ecologically acceptable levels. We firmly believe in and support a national effort at environmental protection, in which we have to play a significant role by developing or acquiring appropriate technologies, promoting general awareness, aligning our priorities with those of society and providing service to industry which enables it to produce in an uninterrupted and yet pollution free manner. We also strongly subscribe to the view that economic development and environmental protection are not antithetical.

Here is yet another Mission Statement on Exports:

> It is our mission to generate and fulfil the needs of markets around the world, through the export of goods and services in which we, as a country, enjoy a comparative and competitive advantage. And do it in a manner that brings glory to the words "Made in India".

This missionary zeal has been the cornerstone of our company's growth. Responding to market urges, a host of new products and application technologies have emerged. Fifty per cent of what our company makes and sells today did not exist in our portfolio of products five years ago. Fluidised bed technology for high ash coals and agro wastes, absorption chillers, process integrated boilers, retrofit and life extension of old boilers, fired heaters, incineration of toxic wastes, de-dusting systems for the cement and steel industries, metal removal products from effluents, fume extraction from arc furnaces, nuclear grade resins, pour point depressants, fireside and fuel additive chemicals, desalination plants, electrodialysis membranes, cathodic electrodip process of coating, data communication products, parallel processing, metal film resistors in a full range of values and tolerances, automatic silo systems for the sugar industry—the list attests to a creative outpouring of which our company can be justifiably proud. Most of these products and technologies accord with our national priorities of conserving energy, preserving the environment and developing and exploiting our export potential.

- The single most important contributor to the growth of our company has been the development of an entrepreneurial culture in which entrepreneurs *within the organisation* have flowered and found fulfilment.

You can see we have a very diverse range of products and services. Each new activity was the outcome of the entrepreneurial efforts of an individual or a group which perceived a challenge and exploited an opportunity.

Some time ago, I was introduced to a fascinating book called *Intrapreneuring* by Gifford Pinchot. The sub-title says, "Why you don't have to leave the corporation to become an entrepreneur." It used to be believed that carefully planned growth and innovation in large organisations can replace the "disorder of entrepreneurial passion". A number of studies have shown that this is not true. Innovation and growth in large organisations (as in small ones) can occur only when an individual or a group passionately dedicated to making this happen, make them happen. These corporate risk takers are very much like entrepreneurs. They take personal risks to make things happen. The difference is that they work within the organisation instead of outside. The author calls them *intrapreneurs*, a shorthand for intracorporate entrepreneurs.

An intrapreneur is one who has a functional expertise, gets set on an idea, goes beyond his conventional boundaries, enthuses a group to support him and sees it through to a definable conclusion. I am aware of a number of examples in my own organisation.

In our Heat Recovery Division, the focus had been, understandably on equipment and systems designed to recover waste heat and re-use it from primary movers like steam and gas turbines and from furnaces. Till one bright engineer realised the possibility of using waste heat for cooling. The technology was known but its application in the Indian context had not been explored. He surveyed the market, brought in the technology, worked with R&D to set up a few pilot plants and set up a new activity. Today, we are leaders in absorption chilling and the erstwhile leaders in conventional air-conditioning are trailing far behind.

Here's yet another example: Our R&D manager, having successfully developed a fluidised bed boiler to combust high-ash, low-grade coals and washery rejects, had been bitten by a bug. He was obsessed with the idea of a fluidised bed combustor to burn rice-husk. Husk has its own problems: light weight, low calorific value, moisture, the presence of silica and the high particulate emission. He set up a group to work on this project, did pilot studies,

got a patent, and cajoled a friendly customer to build a plant on a semi-commercial scale. The unit has been recently commissioned—burns husk like a charm, an efficiency of 78 per cent, particulate emission well within pollution norms, generates 1 MW of power, uses the waste heat for process (it is a chemical plant) and what's more, the husk ash has turned out to be an excellent filter medium and is being exported. Here is an example of an R&D manager going well beyond his function and role to become an intrapreneur.

Intrapreneurship is not restricted only to the innovation of a new product. It could be a new idea.

Talking of new ideas, a divisional head introduces the franchising of the service function; a plant manager develops an innovative built-in quality control; a service engineer brings in a new approach that results in a doubling of the sale of spares; a divisional manager enraged at the problem of delivery in time initiates a team building exercise; a planning manager devises an incentive scheme in a jobbing shop; a factory worker designs and manufactures a special purpose machine that reduces cycle-time in a process to a third and wins a national award; a financial adviser propagates an exciting target of zero working capital—and so on. There is no dearth of ideas. The intrapreneuring skill lies in seeing it through to its final conclusion.

Our entire people policy—by which I mean the organisation structure, the management style and the reward system—has to be designed to generate an entrepreneurial atmosphere. This manifests itself in several ways:

(i) Delegation—considerable authority is consciously delegated down the line. In our type of business, where the expertise is very diverse, where the quality of decision-making is largely dependent on the accuracy of information available and where full responsibility has to be taken by the man on the job, centralised decision-making would be both limiting and ineffective.

(ii) As part of the process of delegation, people are

encouraged to take risks. Without it, there would be no innovation in products, processes and technology.

(iii) The organisation structure is loose and flexible. People are encouraged to cut across departmental barriers and work as members of inter-disciplinary teams.

(iv) We play down status symbols, titles, size of office and the like. This is tacit recognition of the fact that contribution is not a function of hierarchy.

(v) In the entire system of appraisal, counselling and rewards, the focus is on results rather than activity. A person reading a newspaper at his desk would not be expected to put it away surreptitiously and pretend to look busy if the MD walked by. But he would be expected to work overnight, if necessary, to finish an urgent job without any expectation of overtime.

(vi) The management style is one where managers are encouraged to be facilitators of the group they lead. Their authority springs neither from superior knowledge (which they may certainly have), nor from the trappings of office, but from the group they lead and presupposes their acceptance by the group as a leader.

As I was putting down my thoughts on paper, I realised at this stage that I may be unwittingly creating an impression that we are some sort of a unique organisation with remarkable clarity of objectives run by a bunch of self-actualised managers. Nothing could be further from the truth. And as a matter of fact, as we grow and our numbers increase, we constantly have agonising reappraisals on where we must draw the line between freedom and licence, between order and chaos.

■ Another factor that has had a substantial impact on the growth of our company is our concern for quality—not achieving quality, but frantically working toward it.

Over the last several years, a considerable awareness has emerged that quality should permeate all that we make and sell. Setting up of a physical and non-destructive testing laboratory, developing detailed quality assurance manuals,

building and updating a critical vendor list, training a cadre of plant managers and operatives who do not require inspection, generating a system of feedback and review of rejects and customer complaints, franchising of the customer service function across the country, enlarging and strengthening a number of quality circles—all these have helped the activity evolve from quality control to quality management. As a result, our company stands in a select group of manufacturers to be awarded the ASME "S" Stamp. Our company's products can now withstand competition from well-known manufacturers in Europe and United States and our Company's standards are being increasingly accepted as a norm by consultants of international repute. But a great deal needs to be done before we can move from quality management to quality as a way of life. And this is going to be a major area of focus in time to come.*

■ The sixth factor that has made it possible for us to grow is a willingness to take risks and an ability to contain them. We are essentially a company with limited resources—resources which have been generated through ploughback or borrowings. Any activity that results in under-absorption of overheads or under-recovery of direct costs is therefore likely to make us extremely vulnerable. Large orders with unpredictability of raw materials, import licences or power, long-gestation projects with inadequate escalation safeguards, new products with substantial performance guarantees, above all, our total involvement in the business of capital goods with very little replacement demand and therefore a total dependence on the magnitude of, and the climate for new investment—all these are areas which call for a willingness to take risks.

This willingness has to be supported by a capacity to assess and contain risks. We do this in several ways:

(i) We restrict our activity and our growth to areas requiring less investment in fixed assets and more in working capital. Our value-added is substantially

in designing, engineering, marketing and service before and after sales.

(ii) We do not enter a product line which would serve a specific market, say the textile industry or the automobile industry, where our fortunes would be tied to the fortunes of that particular industry. We enter product lines which serve a wide cross-section of industry, so that a recession in a particular industry would not have a major impact on us.

(iii) Similarly, we try to achieve a balance of the markets between the private sector on the one hand and the government and public sector on the other—on the assumption that while the private sector may be influenced by the climate for investment, government spending is likely to be autonomous and follow a predetermined plan and resource pattern.

(iv) We also find it advisable to achieve a balance between the indigenous market and the export market.

(v) We try to maintain some parity between standard products made in numbers, where the demand is steady, and large custom-built products and projects, where absorption of overheads is high, but the demand can be very erratic.

Once again, I am sure all enterprises undertake an evaluation and balancing of risks. What I would emphasise is that for an organisation with limited resources and aspirations to grow, the activity has to be undertaken far more consciously and with greater finesse.

■ And this brings me to the financial strategy that has both assisted and hindered our growth: the issue of cash flows. I often ask my colleagues who are in charge of our various profit centres: what are we in business for? For generating a profit on paper or for generating a profit which can be realised in cash? This may appear a stupid question, but it nags me.

Let me tell you the story of "The Profit That Never Was". Last year a certain division showed a good profit. We were all delighted. We then asked the divisional head (and

ourselves) where the profits were. We searched high and low, but the profits were not to be found. The cash balance was nil: as a matter of fact, borrowings had increased. We thought perhaps we have used up the profits in acquiring that sophisticated CNC drilling machine with a pay-back of less than a year. And that computer network and the plot of land we have been clamouring about. But alas, neither CNC machine, nor the computer, nor the real-estate ever saw the light of day. The finance director had shot them down. The reason—no money.

"But we have made a profit," remonstrated the divisional head, "and I demand an explanation." "No money," says the purveyor of the king's purse, with his sardonic grin. "You must have used up my money to pay for the losses of that other division. That's not fair," says the divisional head, getting hot under the collar. "No money," was the laconic reply, adding that the division concerned never had the surplus funds to help a fellow-division in distress. Then where did the profits go?

The finance head calmly brings out the fund flow statement. What does it reveal? Profits were there all right, but they were used up in adding to debtors and adding to inventories of finished goods. Simultaneously creditors came down and advances from customers had reduced. As a result, profits were there, but borrowings had increased to alarming proportions.

"Well," says the divisional head with a sheepish smile. "I agree there is a little cash crunch, but it is a temporary phase. As soon as I liquidate my debtors and my inventories and tighten my creditors and improve on our advances from customers, you will get your profit." "As soon as you do this," says the finance director, "you will have your CNC machine and your computer and your plot next door."

The story does not end here. As we looked at the figures more closely, we found that the accretion to debtors came largely from retentions on projects, which would take a year or more to erect and commission. The additions to inventories were primarily on account of a product which was made in anticipation of orders but where the market is shifting. "We will sell them", says the divisional head bravely, "just give me a little time."

"Well done, my boy," said the chorus of bankers, "Keep it up." At this, the consortium raised their glasses to the profit that never was, and downed their after-dinner cognacs, while endorsing their enhanced CAS limits—with interest at 18 per cent—more the merrier.

"Come all ye faithful. Giving and rejoicing," sang the taxman, clapping his hands with unabashed glee. At 60 per cent tax, paid in advance, on a profit that never was, he had a great deal to rejoice about.

And so ends the story of "The profit that never was." The manager earned his increment; the banker got his business; the taxman picked up his bonanza. The only sucker in the game was the Emperor—the Emperor is stark naked.

The moral of this true-to-life story: profit is not enough. Profits have to be realised, and realised in cash. The cash flow is a better yardstick of performance than profits per se. The name of the game is not PBT or PAT, but CN—Cash Now.

I am aware of many organisations, big and small, which come to grief for want of liquidity. There is no substitute for a close monitoring of cash flows—right at the top.

Well, I guess I can go on and on, but at this stage let me try and put together some of my rambling thoughts:

Thermax is a case study in growth, but growth through diversification. Some of the issues which have contributed to our growth have been:

- An irrepressible urge to grow.
- Our strategy of diversification—we were quick to react to events and opportunities; we were constantly defining and redefining our business; we moved into areas which had a synergy either in terms of the technology or the market; and we went into products which made it possible to use the same assets and infrastructural facilities.
- A growth of the type that we are talking about

requires a sense of mission—understanding the market in depth, stretching it to its fullest potential, creating new unfulfilled needs, putting all of one's talents and that of the entire team in clear focus and being obsessed in the process.

- The single most important contributor to our company's growth has been the development of an entrepreneurial culture in which entrepreneurs within the organisation flowered and found fulfilment.
- Our concern for quality—how can we make it a way of life?
- Our willingness to take risks and an ability to contain them.
- Happiness is a positive cash flow, remember "The Profit That Never Was."

Where do we go from here? A lot has been achieved, but so much more remains to be done:

- Professional management of large projects, as we move into very large systems in energy and environment.
- Decentralisation of the accounting function, much to the discomfort of finance managers who believe that this would erode their authority.
- Management of information—we have all shapes and sizes of computers—how do we give it a sense of direction and focus?
- Re-structuring leadership in the also-ran divisions; it is amazing how the same activity can perform immeasurably greater with the right leader.
- Reducing cycle time—we pride ourselves on our productivity, but productivity in disparate parts of the organisation without having a finished saleable product in good time only adds to work-in-progress.
- Our concern for quality—making quality a way of life.

These are some of the challenges in the years ahead.

But everything begins and ends with people. And as we grow in numbers and the organisation grows in complexity, keeping up morale and commitment is an on-going organisational challenge. So let me end this chapter with our Mission Statement on People—People with Power:

> To make things happen. To innovate. To change things. To change themselves. To grow. As individuals and as teams. Thermax people. Helping them to grow is the committed training policy of the company. Add to this a challenging and congenial work environment. Where differences coexist.
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> All this has significantly helped our people to maintain their position at the leading edge of technology and business practice. In other words, growth and success.
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> Thermax believes in nurturing a human organisation which understands the paradox that the total organisation is more important than the individual but this does not make the individual less important.
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> Though Thermax has registered a 250 per cent increase in turnover in the last five years, it believes in remaining a customer-sensitive and innovation-driven business organisation.
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> Where profit is not only a set of figures, but of values.

And, if I may add here, an organisation where people take on ownership without owning.*