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"Our company participated in a Mafia Offer Boot Camp in late November 2006. With the ideas and guidance we received from the Boot Camp we have achieved three highly important outcomes.

We transformed our historical 60%, on time record to 100% on time, in about six weeks. We have now been 100% on time for the last four weeks. We foundhidden production capacity and also increased our profitability. We will start bringing our Mafia Offer to market this week.

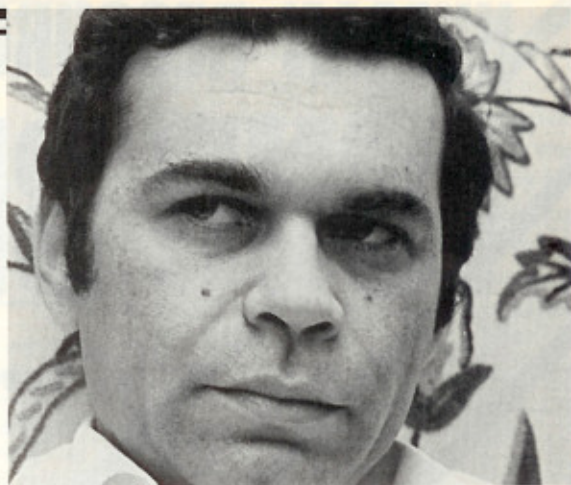
We have never had these kinds of dramatic results, or results so fast with any other thing we have tried, and we have tried everything.

This is one program that delivers what they claim."

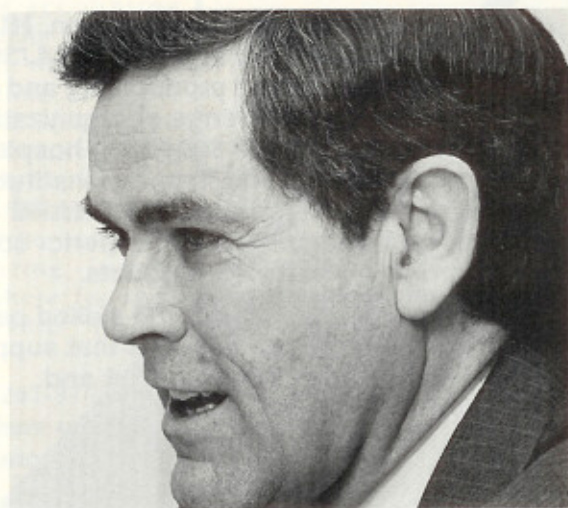
Richard Pettibone
Drewco Corporation - Designer and Builder of special workholding devices.



'We must have the guts to say cost accounting is no longer valid. We must realize the problem is in the roots, not the leaves.'



GOLDRATT & FOX: REVOLUTIONIZING



By Susan Jayson

Eli Goldratt regrets ever having called cost accounting the number one enemy of productivity.

"It took an enormous amount of courage at the time I said it, but now I believe it was a mistake," Dr. Goldratt said. Why? "Because everybody is jumping on the bandwagon condemning cost accounting when we should be condemning *cost* not accounting."

According to Dr. Goldratt (top right), creator of the Optimized Production Technology (OPT) and author of *The Goal: A Process of Ongoing Improvement*, companies need accounting and financial controls, but the cost measurements management accountants use are driving U.S. manufacturers in the wrong direction.

An Idea is Hatched

A decade ago, while studying physics at a uni-

versity in his native Israel, Dr. Goldratt invented a mathematical formula to schedule work flow for a friend who built and assembled prefabricated chicken coops. The schedule enabled the man to build three times as many chicken coops with the same work force. Unfortunately, when his customers couldn't pay for the coops they ordered, the cost of carrying the additional inventory bankrupted him.

The story had a happier ending for Dr. Goldratt. The formula became the basis for his successful OPT software system and his "goal" was established—to teach western manufacturers how to schedule their operations.

In 1979 Creative Output Inc. (COI) was founded to market the OPT software program and OPT concepts in the U.S. and succeeded in attracting such clients as General Motors, General Electric, AVCO, Ford, and Bendix.

Dr. Goldratt's associate Bob Fox (above left) took a more traditional route. He has worked as a foreman and held most line and staff manufacturing positions including vice president of manufacturing and general manager. "At the time I met Eli I was a partner at Booz Allen and Hamilton. Our firm had recently conducted an extensive survey on manufacturing systems in the U.S., Europe, and Japan. Although I really didn't understand the software, I saw how Eli's ideas were very much like those I encountered and documented in Japan," reflected Mr. Fox.

Both will admit that their backgrounds and styles are in marked contrast. However, in addition to a love of fine cigars they share the conviction that the growing dangerous imbalance of manufacturing capabilities between the West and

THE FACTORY FLOOR

East must and can be changed.

To develop the know-how to change this imbalance they have established the Avraham Y. Goldratt Institute, named after Dr. Goldratt's father who was a member of the Israeli Parliament. The Institute's home base is an elegant turn-of-the-century brownstone near the campus of Yale University (see cover photo). "Today we are concentrating on getting our ideas across as fast as possible," said Dr. Goldratt. The result is a grueling travel schedule. For example, in a recent two week period, Dr. Goldratt had appointments scheduled in Israel, Scandanavia, and the States.

Added Mr. Fox, "Eli and I believe there is such a small window of time left to convince U.S. manufacturers to change their thinking."

As they describe in their new book *The Race*:

"In 15 short years we have seen an unprecedented change in a host of industries from smokestack to high tech. The ramifications for our economic well-being and standard of living have just started to be felt. It's time we realized that this sharp shift is not the result of trivial causes or the excuses we have used. It's because of an unprecedented race in all aspects of manufacturing."

What's Wrong with Cost?

In a speech at the National Association of Accountants' Cost Accounting for the '90s conference last year, Mr. Fox described the failures of current cost concepts. "They lead us to build inventory profits that are not real profits. They cause us to run EOQs that are not economical. They encourage us to be efficient locally which

destroys performance globally. We run something through the least cost machine no matter how heavily loaded it is when perhaps we should off-load it to a more expensive machine."

Mr. Fox advised the accountants attending the conference that new measures must focus on optimizing performance globally, not locally as many of our cost accounting principles force us to do.

Dr. Goldratt and Mr. Fox are encouraged by the broader recognition among accounting professionals that something must be done about cost accounting. "For example to title an article 'The Rise and Fall of Management Accounting' (see the January issue of *MANAGEMENT ACCOUNTING*) would not have been perceived three years ago," said Dr. Goldratt.

This physicist turned management guru warns, however, that although this recognition is encouraging it also is very dangerous because we are tearing down concepts without replacing them. "Financial controls are essential. We may not have the best internal controls—some of them are even devastating—but to knock all internal controls may result in no controls at all."

As an example, he points to what has happened in the area of quality. The pressure to produce quality products has resulted in companies adopting such slogans and policies as "Quality is Job 1." Today, he said, "you can murder in the name of quality and get away with it."

Consider, he says, the plant manager who wants to purchase a \$300 thousand machine. When his boss questions him about such a purchase, the plant manager justifies the expenditure by saying we need it to improve quality.

"Now the thinkers in accounting are saying we

What Is the Goal of the Race? What are we really trying to accomplish in our businesses? Did the investors and employees put their money and efforts into the company with the altruistic intent of providing better services to their customers? Or did they do it because they wanted the prestige of having the largest market share? Did they want to boast that they had lower costs than their competitors? Was the goal of these investors and employees to enjoy the pride of having the highest quality products? Is it likely that they invested their money and efforts to build the company just in order to have it survive?

We think not. All of these targets may be useful means to the goal of the company, but they themselves are not the goal. We believe that the goal of a company is one and only one—to make money in the present as well as in the future. That is what winning the race is all about. But what does “making money” really mean?

We all know the bottom line measurements of making money. A company needs to make a net profit, an absolute measurement of making money. But is this measurement by itself sufficient? If a company made \$10 million, is that good or bad? If they had invested \$20 million, it's quite good. But if the investment was \$200 million, it's lousy. We need an additional measurement that shows how much money we made relative to the money we invested in the business, a measure like return on investment. These two measurements seem sufficient, but many a company has been rudely reminded by the threat of bankruptcy that there is also a survival measurement, like cash flow. Cash flow is an on-off measurement. When we have enough cash, it is not important. When we don't have enough cash, nothing else is important.

While these three bottom line measurements are sufficient to determine when the business is making money, they are woefully inadequate to judge the impact of specific actions on our goal. For example, in what size batches should we process material through our plants? Five? Fifty? Maybe five hundred? How will these batch sizes impact the bottom line of the entire company? Or, should we buy a new robot? It certainly is going to be more efficient, but it also is expensive. What will be the resulting impact on our financial measures? Or should we accept an order for a product when the selling price is substantially below our standard price? We need some type of bridge between the specific operational decisions we must make and the bottom line measurements of the entire company.

Today, our bridge is based on the cost concept. We have developed a host of procedures and systems based on the idea of cost. We employ the technique of economic order quantities to help determine batch sizes. We analyze investment opportunities based on cost reduction to determine where to employ our capital. We calculate product costs and margins to help understand which products we should push in the market and which we should discontinue.

The cost concept and cost procedures are the current bridge between our actions and the bottom line measurements, but is this bridge taking us in the right direction? □

Reprinted from *The Race*, courtesy of North River Press, Box 241, Croton-on-Hudson, N.Y. 10520. *The Goal* also is published by North River Press.

can work within the existing framework—cost accounting can be modified. This is wrong,” he stresses. “We must have the guts to say it is no longer valid. We must realize the problem is in the roots, not the leaves.”

Studying his cigar, Dr. Goldratt apologizes for becoming so passionate about this issue, and lists the problems with cost accounting that deter manufacturers in the western world from becoming more competitive.

To begin with, he points to the practice of using direct labor as a base for cost allocation. “That problem has been exposed very nicely in the last three years.” He adds that cost accounting causes the wrong decisions to be made because it is based on averages.

His other serious concern is that cost accounting considers as intangibles factors that are critical to our ability to capture the market. For example, these factors include superior product quality and engineering, lower investment per unit, responsiveness to the market including shorter quoted lead times.

“Cutting lead times is a very powerful weapon which we could exploit against the Japanese because they still have an ocean to cross,” noted Mr. Fox.

The most pressing concern and biggest opportunity for western manufacturers, Dr. Goldratt notes, lies in recognizing that cost accounting deals only with the local expense of an action and not its global impact. As an example, he points out that reducing the setup on two different machines may involve the same expense. However, if one machine is a bottleneck and the other is not, the impact of these actions is dramatically different.

Global Measures Needed

In *The Goal*, the highly successful novel of plant manager Alex Rogo's struggle to keep his plant open and his marriage intact, Dr. Goldratt demonstrates what direction management accountants should take to find a replacement for our current cost concepts. *The Race* provides more information on how to apply the concepts presented in *The Goal*. Large graphs quickly and easily communicate their theories. Also, sections of the book can be reproduced and displayed during staff meetings.

The message in both books is that in order to win the race for the competitive edge, the goal of manufacturing firms must be to make money. The authors demonstrate, however, that current measurements such as monthly net income or ROI do

not measure what impact decisions made on the factory floor have on the company's ability to achieve its goal.

"For example," Dr. Goldratt explained, "if I am to release a batch of parts on the factory floor should I release 5, 50, or 500. If I rely on traditional cost concepts I will release larger batches because I then reduce cost per unit. On the other hand, I am increasing the inventory and carrying cost."

Or, he adds, what about the decision whether or not a company should purchase a robot. It may be more efficient but it also is expensive.

"Clearly," Mr. Fox said, "we need to show how manufacturing decisions affect a company's bottom line."

To make this connection, three global operational measures are recommended. *Throughput* is conceived as the rate at which an organization generates money through sales. Production, however, is not necessarily throughput if the product isn't sold.

Inventory, in their scheme, comprises all the money that the system invests in purchasing things that it intends to sell. "We're only dealing with the raw material or purchase component here—no value added," said Mr. Fox.

Operating Expense includes all the money the system spends in turning inventory into throughput. "I believe we can encompass all the monies in the business in those three measures—all the revenues, all the costs, and all the investments," he said.

But how do throughput, inventory, and operating expense connect with a company's bottom line measures? "It's so beautifully simple, smiled Dr. Goldratt. As they describe in *The Race*, "The intuitively felt connection between throughput-inventory-operating expense and the bottom line measures are sharpened with these new definitions. Now we can see that when throughput is increased without adversely affecting inventory and operating expense, then net profit, return on investment, and cash flow are simultaneously increased. We achieve the same result when operating expense is decreased without an adverse affect on throughput or inventory."

Furthermore, they explain, "when we analyze the impact of reducing inventory we see that the result is not the same. Decreasing inventory directly increases only ROI and cash flow. It does not have any direct impact on net profit. Should we conclude that inventory is less important than throughput and operating expense? That seems to be the way we have regarded it.

It also is the way most managers have historically viewed throughput, inventory, and operating expenses. Net sales (throughput and total operating expense) have always been seen to be important. Inventory has frequently taken a back seat. When we look more closely, we see that inventory does impact net profit and also has an additional effect on the other two bottom line measurements."

Where Did Manufacturing Lose Sight of the Goal?

"The talent and brainpower is out there," stresses Dr. Goldratt. "The constraint, rather, is in managers' attitudes and dependence on such measures as net income and ROI."

"We've run up against many stone walls," concedes Mr. Fox. "Fortunately, *The Goal* has been extraordinarily successful for us."

More than 5,000 corporations including General Motors, Eastman Kodak, and Hughes Aircraft have bought the book. According to the publisher, approximately 2,000 copies of *The Goal* are sold each week. It has been translated into nine languages and is being used at more than 40 universities. Recently, the Goldratt Institute initiated a series of two-day seminars built around a computer game to expand on the concepts introduced in the novel.

"Once the book is read, perceptions change very quickly and it causes a level of communication among managers that we haven't been able to achieve with extensive education, lectures, and so forth," Mr. Fox explained.

John W. Annick, a project manager at General Electric, praised the book for being a typical representation of the environment managers often must cope with. "Many businesses flounder and not because of a lack of effort or time that is expended by those in charge. Rather, management gets caught up in the problem and the respective boss does not give leadership in helping to solve the problem—but threatens or demands action. This causes management to panic and dig itself a deeper hole. Less time for home or relaxation and more pressure only result in further deterioration."

One former skeptic was Matt Canfield of the Torrington Company, a division of Ingersoll-Rand. "I thought *The Goal* would tell me about yet another system that would solve all manufacturing problems. Instead, it was very different. OPT is a concept, a philosophy, and approach that happens to have as part of its offering a software tool that allows a more intelligent method of

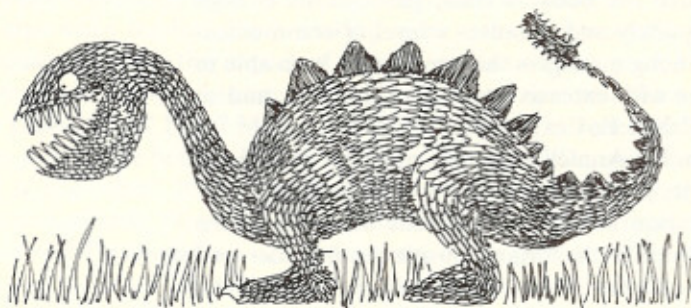
scheduling activities to help assure the attainment of our goals through the most effective use of resources."

Testimonials about results achieved on the factory floor also are impressive. According to Tom Knauf, senior administrator of Synchronous Manufacturing at the General Motors Saginaw Division, lead time has been improved by approximately 30% in those departments where a concentrated effort using OPT concepts occurred. "We attribute most of our improved performance to budget to the synchronous concepts which include OPT," said Mr. Knauf.

The Race for a Competitive Edge Is Accelerating—Rapidly

The challenge that the Western manager faces is how to become much more competitive very quickly. We have entered a period unlike any since the days of the industrial revolution. The implications for companies, countries, and our standard of living are every bit as profound as when the first industrial companies began to appear in England years ago.

It is no longer a question of a cycle of good times and bad. We cannot batten down the hatches and hope to survive, as if this were another passing storm. We can no longer use the conventional ap-



proach of cutting expenses and firing people in the bad times. We must find a way to continually improve—in good times and bad. We must choose to be in the competitive edge race. The companies that elect to shrink in order to pass the bad times will simply disappear. The ones that survive will be those companies that will find a way to participate in this ever-increasing competitive edge race.

The magnitude of our problem is revealed once we accept that we are behind and recognize that we have only a little time left. Our resources, particularly management, are severely limited, and our funds are not sufficient to allow us risky experiments. We must make the correct decisions this time or be prepared to live with the consequences. □

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The Saginaw Division first contacted Creative Output in 1983 to find a better way to schedule its shop floor. The division has approximately 20,000 employees manufacturing mechanical components to be sold to other General Motors divisions, Ford, Chrysler, and overseas to companies in Japan.

OPT has had a major influence on the traditional manufacturing culture of the Saginaw Division, Mr. Knauf reports. "For example, we used to avoid changeovers because it would cause more scrap. Today we have many more changeovers to reduce the batch size, and quality has improved."

Dick Bombardieri of GE explains that the OPT philosophy has encouraged the company to think in terms of global effectiveness. Copies of *The Goal* are on many of the managers' desks. Mr. Bombardieri, formerly with Creative Output and now with GE's consulting group, reports that OPT concepts have played an important part in the improved results of GE's printed wireboard assembly unit.

Specifically, he cites, cycle reduction time or the time from when the materials leave the stockroom to the time the product is ready to be shipped has gone from 28 days to less than one day. Another operation reports of a reduction from 63 to 1 1/2 days.

The company's work-in-process inventory was reduced from 2,500 to less than 50 units in one operation, and from 1,000 to less than 100 units in another area. Direct labor was reduced from 6 1/2 to 4 1/2 and from seven to five days in another area. "These results have been achieved without the elimination of jobs," he notes.

A Race Against Time

Testimonials from such major manufacturing firms as GE and GM indicate that Dr. Goldratt's efforts to produce a cultural revolution on the factory floor are succeeding. And, in the accounting profession, where he made his name criticizing cost accountants and cost accounting as enemies of productivity, resistance to his views is turning to acceptance and respect.

"We rebelled at these thoughts initially," said Alfred King, managing director of the National Association of Accountants. "Now that we understand the implication of their approach, cost accountants are working with production executives, not at cross purposes."

Eli Goldratt and Bob Fox will agree that this recognition has come not a moment too soon if we are to win the race for the competitive edge in today's—and tomorrow's—world economy. □