

## AN INTERVIEW WITH ELI GOLDRATT AND OTHERS *by David Whitford,* *Editor at Large, Fortune Small Business.*

**DW:** *The Goal* was published 20 years ago. Since then a lot has changed in operations. New, powerful methodologies to improve operations, such as LEAN and Six Sigma, are widespread. The emphasis on reducing lead time and improving due-date performance has become the norm. Even *The Goal's* subtitle - *a process of ongoing improvement* - is a statement that is now taken for granted by every organization. So, my first question: Is *The Goal* still relevant?

EG: How does a scientist go about judging the relevancy of a particular body of knowledge? I believe that the decisive way is to choose an organization where all the competing knowledge is implemented. We should choose a large company that is already using all the new methodologies you mentioned; an organization that is using these methodologies so extensively that there is an institutionalized organizational structure – like a formal “black-belt” central office. The next step is to choose a significant section of that organization, and properly implement in it the body of knowledge in question. In our case it will mean implementing TOC in one of the plants of that large company. Then, compare the performance of the chosen plant with the performance of the rest of the organization. Now we are able to reach a conclusion: if no real difference is detected then the conclusion will be that the examined body of knowledge in question is not relevant. But, if there is a decisive difference, then the conclusion must be that the examined body of knowledge has relevancy; the bigger and more significant the difference, the more relevant it is.

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**DW: Did you conduct such an experiment? And if so can you tell us about the results?**

EG: Fortunately, I don't have to initiate such experiments, since many readers of *The Goal* are kind enough to write to me and share their experiences. From the letters that I received over the years let's pick one that fits our conditions. Since we are discussing relevancy, it must be a recent letter. It should be from a person who implemented TOC in a plant that is part of a large enough organization, an organization that is using black-belts. And it should contain comparisons between that plant and all other plants of that company.

Judge for yourself if this letter fits our bill perfectly.

**Dow Corning Corporation**  
Healthcare Industries Materials Site  
635 N. Gleaner Road  
Hemlock, MI 48626

May 20, 2004

Dear Dr. Goldratt:

I wanted to share with you what we have accomplished within our organization by using the tools presented in your books, "The Goal" and "It's Not Luck."

When a colleague gave me a copy of "The Goal," the plant at which I work was in a similar situation as Alex's plant in the book. At that time, in 1998, our plant's on-time delivery was approximately 50%. We were carrying over 100 days of inventory and we had customers on allocation because we could not meet the demand for orders. In addition, our management had given us six months to turn things around, or else. I was the new production team leader for approximately thirty percent of the plant sales and forty percent of the plant production employees. My units performance was similar to the plant's overall performance.

As I read "The Goal" I quickly realized one person alone could

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not solve the problems within my unit, or within our plant. I ordered several copies of “The Goal,” and my colleague and I distributed them to our production manager, plant manager and manufacturing and quality engineers. Everyone was eager for a solution to our problems.

Within my unit we identified the bottleneck and began to focus our resources there. Our plant is a non-union facility and many of the workers were also interested in what we were doing. I ordered copies of “The Goal” for everyone who worked for me. By the time the six-month ultimatum came, my unit and another had started to make significant changes, and the plant was spared any ill recourse. However, the expectation was that we would continue to improve. For the five years that followed, we continued to work on breaking our bottlenecks. When one moved, we attacked it again. We got pretty good, and could determine where the bottleneck would occur next. Eventually, the bottleneck moved outside our plant as depicted in “The Goal.” However, we knew this would happen ahead of time and had already begun the indoctrination of our sales and marketing group.

I recently moved out of production, but before I left, the results within my unit were: cycle time reduction of ~85%. Operator headcount reductions of 35% through attrition; no layoffs were needed. Work in process and finished goods inventory down ~70%. On-time delivery went from ~50% to ~90% and the number of material handling steps were cut by over half. Our plant, and business unit have done very well too. And me, I received a promotion while in that position, and a compensation award. Dow Corning, like many other corporations, has downsized multiple times in the past five years. During each one, our plant, and business unit were affected very little or completely passed over. I am convinced that if we hadn’t read and followed the methods in “The Goal” and “It’s Not Luck” the situation would be much different today. There is still much to do, as our business unit is the only one to really have embraced “The Goal.” I am hoping in my new role in Six Sigma that I can further share your tools and methods.

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Thank you for signing the book Dr. Sirias has forwarded to you on my behalf. I am honored.

Sincerely,  
Robert (Rob) Kain P.E.  
Six Sigma Black Belt  
Dow Corning Corporation  
Life Sciences/Specialty Chemical Business

**DW: Impressive, but why is only one business unit of Dow Corning using TOC? What bothers me is that this person is talking about a span of over five years. If it worked so well, why didn't it spread to the other business units? Is it the Not-Invented-Here (NIH) syndrome?**

EG: Before we dive into speculation about psychology of organizations, let's examine the facts. We are talking about a middle manager who works in one corner of a large company. Why should we be surprised that, in five years, this person was not yet able to take his whole company through a major paradigm shift? And, by the way, as you read in his letter, he is making nice progress; he has already moved into a much more influential position.

**DW: Still, even with enough time, is it possible for a middle manager to influence his whole company?**

EG: Yes. But of course, such a person will need a lot of stamina and patience.

**DW: What makes you so sure that it is possible at all?**

EG: What evidence will convince you that it is possible?

**DW: Give me an example of a middle level manager working for a large company who has succeeded in institutionalizing the usage of the know-how written in *The Goal*. I mean institutionalizing it across the board.**

EG: Given that General Motors is the largest manufacturing company in the world, you should get an outstanding proof by interviewing

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Kevin Kohls. (*Eli Goldratt interview to be continued.*)

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### ***Interview with Kevin Kohls* General Motors Director of Throughput Analysis and Simulation for North American Assembly Plants.**

#### **DW: What drove you to seek help from *The Goal*?**

KK: It goes back almost 15 years, when I was starting off as a controls engineer at the Cadillac Detroit-Hamtramck assembly plant, just returning from Purdue University after completing a masters degree in electrical engineering. When I left a year and half earlier, the plant was just starting production. When I returned, they had yet to hit their production targets; in fact they were far short. As you might imagine, everyone was frustrated about not hitting these targets, and there was a lot of effort being expended to improve the system, with minimal results.

I was frustrated as well. The solutions I was putting in place rarely had a significant impact on the production of the plant, and it wasn't clear why. About that same time, Dave VanderVeen from GM Research made a presentation to Larry Tibbetts, who was then plant manager. Dave was promoting a research tool that he said would help improve throughput in the plant. Larry was very impressed, and asked me to go see Dave to find out if we could use this tool at Hamtramck. When I went down to the Research Building at the GM Tech Center in Warren, Dave explained what a bottleneck was and how his tool identified it. He handed me a copy of *The Goal* and said if you want to understand bottlenecks and how to improve throughput, this is the book to read.

I took the book home and started to read it right away. The first thing that surprised me was that it was written in novel format. The second was how much I could identify with what was happening in Alex's plant. I finally had to put it down at 2 A.M. so I could get some sleep, but I finished it the next day. I wanted to apply the concepts immediately, so I began collecting data from the systems we had, and putting it into the bottleneck program. After about a week of effort, I was fairly certain I had found the bottleneck. The scary part is that it was not 20 feet away, on the production line right outside my office!

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### **DW: What was the problem?**

KK: It was an operation where they were installing the fuzzy, felt-like material that goes in the ceiling of the car—very big and very clunky. Our data said that the mean cycles between failures was about five minutes, and the mean time to repair was about a minute. I was amazed that the line was stopping that often, and thought maybe the data was wrong, so we went and looked for ourselves. Sure enough, we watched the operator run for five cycles, stop the line, walk away, pick up five more of these big, bulky items—they weren't heavy but they were big—drag them back, restart the line, and continue to install them. Every five cycles she would stop the line. Was it considered a major problem before we looked at it? No. It's not like we were losing an hour straight of production because something had broken down. We were only losing one minute. But it was happening every five cycles.

We could see immediately why the material wasn't closer to the line. There was a supervisor's office in the way. We found out there had been a request made some time ago to move the office, but it was considered very low priority and it wasn't getting done. So I got the office moved, and lo and behold, throughput of the entire plant went up, which was a surprise, because my experience told me that I couldn't expect that. Then we used the software to find the next bottleneck and continued on with that process until we were making our throughput goals very steadily, every day. That was a real change in the way that plant operated.

### **DW: Did you take your insights to other GM plants?**

KK: Yes. We demonstrated the process when central office management visited the plant, and it became apparent a lot of plants in GM weren't hitting their throughput targets. Eventually, I left Detroit-Hamtramck and went to a central office position to help start a divisional group to implement this solution. Seventeen years later, I'm an executive at GM who owns the process for all of the North American plants, and it has been expanded to include the simulation of future manufacturing designs.

### **DW: And this is all TOC related?**

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**KK:** Yes, but there are other disciplines involved. You have to understand simulation, and how it predicts throughput, and why it's important to understand where the bottleneck will be for a future design. But TOC is the basis for what we do. I still teach a two-day course. We might go to a plant and train the whole staff in how to use TOC concepts. I always give out copies of *The Goal* ahead of time and ask them to read it before the training. It's gotten to the point in manufacturing, however, where there are not that many people left to go through the training. My internal customers are usually very savvy now about TOC, bottlenecks, data collection and analysis. So I rarely have to sell the concept anymore. Demand for data collection implementation to drive the bottleneck software, for example, exceeds our ability to install. And while I'm responsible for GM North America, this week alone I have people in China and in Europe working on these kinds of issues.

**DW:** How has your use of TOC concepts changed over the years?

**KK:** What we found when we first started out is that we were dealing with the low-hanging fruit. You look at that first example I told you about, and it was very obvious that the office was in the way, and the solution was just to move it. Over time, the solutions to the problems have become a lot more difficult to find. This doesn't mean you can't solve them, it just means you might have to use more scientific techniques. Now I might have to apply statistical methods as opposed to simple observation to understand what's driving the problem at a work station.

Another thing we're doing lately is applying what we've learned from *The Goal* to the design of new plants and production lines. In effect, we're solving problems before they arise. Eli Goldratt hasn't spent a lot of time talking about using TOC in that way, but we've taken his concepts and adopted them to our needs. That's been the beauty of it for me. If you understand the logic and the reason behind the methodology, then you can apply that stuff continuously.

**DW:** It's interesting that a way of thinking about production problems that you found useful 15 years ago you still find useful today. Does that surprise you?

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KK: Yes and no. The Theory of Constraints is a very scientific, logical process. And because of that, when the game changes you can always go back to the logic. Originally we just had to find the bottleneck, walk out there, ask three or four questions, and we knew what to go and do. Now we can change the way we design whole manufacturing processes to make sure they're better from the start. But the logic behind TOC—the conflict clouds, the current reality trees, the way we ask questions to uncover the constraint—all that still applies.

I think the problem with too many other approaches is that once the first layer of problems goes away, and the crisis no longer exists, then it's, "Phew! We're done!" In the TOC world, you find yourself asking, "Where has the constraint gone, and what can I do to help break it?" So you're never done.

I'd like to be able to tell you that as soon as I started telling people about these concepts, the whole organization immediately changed to the new paradigm. The fact is that it has taken years to get the process going, and the leverage to make improvements is still significant, especially in a company as large as General Motors. It's much like the flywheel concept discussed in *Good to Great*, by Jim Collins. It's taken a while to get the flywheel turning, but it's starting to go at a pretty good clip right now!

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*Interview with Eli Goldratt continued . . .*

**DW: At Dow Corning it took about 5 years for TOC to spread from one section to a whole business unit. In General Motors it took over ten years to be institutionalized throughout North America. Does it always take years to spread from the origin to the whole company?**

EG: Not necessarily. It depends on who took the initiative. If the initiative was taken by a middle level manager, it naturally takes much longer compared to the many cases where the initiative was taken by a top manager. What is amazing is that the complexity of the organization is playing almost no role. In very large and complex organizations it takes TOC about the same time to become the dominant culture as it takes in small, relatively simple organizations.



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**DW: Can you give an example?**

EG: In order to prove my point let's take an extreme example. An example of an operation that is not only large and complex but also dominated by large uncertainties - a repair depot of the United States Marine Corps. This depot is overhauling helicopters. It's very large - several thousand people. It is very complex - the helicopters are disassembled to the smallest pieces. Even the paint is sandblasted off. Whatever has to be repaired is repaired. Whatever has to be replaced is replaced. And then you reassemble the whole airplane. One has to make sure that certain parts which were taken from the original airplane go back on the same airplane. What makes it even more complex is the fact that two intrinsically different modes of operation have to be synchronized. The disassembly/assembly lines are a multi-project environment. The repair shops that feed the lines are a production environment, and the two must work in tandem. The real challenge is the fact that the whole operation is dominated by high uncertainty - one doesn't know the content of the work until the helicopter is disassembled and inspected. Surprises all over the place. A real nightmare. Still, it took the commander less than a year to implement TOC. An implementation that was so solid that the process of on-going improvement continues with his successors.

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***Interview with Robert Leavitt, Colonel,  
United States Marine Corps retired.  
Manager, Sierra Management Technologies***

**DW: You were responsible for implementing a TOC-based program in the Marine Corps?**

RL: Yes, when I was commanding officer at the Naval Air Depot in Cherry Point, North Carolina. I started the implementation there, which they have continued. As a colonel I had in essence a \$625 million company and 4,000 people working for me. Everybody says the government is always the last to get the message. I don't know if that's true. My personal belief is that the government gives guys like me the opportunity to try things a little differently.

**DW: Tell us about your implementation.**

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RL: We had problems delivering H-46s on time. The H-46 is a 25-to 30-year-old Boeing helicopter used extensively in the Marine Corps as part of their assault support role. Because the airplane is so old and in frequent need of maintenance, anything over a single-digit number of airplanes on our hangar deck meant that you took a shadow off the flightline. If you took a shadow off the flightline, that meant they didn't have an airplane to do their mission. Our negotiated norm for turnaround time was 130 days, and on average we were somewhere between 190 and 205 days.

**DW: Sounds like you had a problem.**

RL: A problem, yes. So we implemented critical chain, and ultimately cut the number of airplanes in flow from 28 to 14. We were able to sell that to our customers. And the turnaround time went from 200 days to about 135. Now that in and of itself is probably a significant improvement. But at the same time we were starting the process, they added 30 days more worth of corrosion work to be done to the cabin. We accommodated the 30 days within that 135-day delivery. So we went from what would have been about 230 or 240 days to 135.

**DW: Why did this approach work where others had failed?**

RL: We had looked at a lot of the project management solutions, including material resource planning (MRP). TOC was the one that worked from all dimensions; building teamwork, understanding variability, and with a grounding in scientific thought. It was a holistic approach to solving the problems. It looked at the entire system and said, hey, once you find the key leverage point you'll get some significant returns. And then you can go back and find the next leverage point, or constraint.

**DW: Did it take you a long time to find the constraint?**

RL: No, it didn't. And within about 120 days we were already beginning to see the results.

**DW: What was the constraint that you found?**

RL: It was the schedule—the way the schedule was developed. The

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biggest thing was the way we applied available resources; it didn't make any sense. The estimators and evaluators really had about two days worth of work and they were taking about 14. We figured out what was going on—why that was a problem, why the scheduler set that up—and then reorganized.

### **DW: Bottom line?**

RL: Well, the way it worked with the government, we were funded for a certain number of airplanes each year. We started burning through the backlog and we actually produced a few extra airplanes. I know from talking to the new commanding officer down there that they've increased the amount of product every year as they've gone forward.

### **DW: And you had another example?**

RL: I also implemented TOC in the tail rotor blade cell at Sikorsky Aircraft, the overhaul and repair division. We were averaging somewhere between 15 and 19 tail rotor blades a month. It took us about 73 days to finish a tail rotor blade and we had as many as 75 or 80 tail rotor blades in flow. Well, we changed the flow to more than 30 tail rotor blades in process, which means our turnaround time actually was about 28 days.

### **DW: How quickly did this improvement occur?**

RL: Three months. Now you can understand why I'm trying to build a consulting practice around TOC.

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### *Interview with Eli Goldratt continued . . .*

**DW: I'd say almost everybody I've talked to who has read *The Goal* agrees with its messages. It also seems clear that many readers believe TOC to be founded on solid common sense. So why doesn't everybody implement TOC right away? Is it because TOC demands that cost accounting be discarded? Do the financial managers block the implementations?**

EG: Not at all. The notion that financial managers try to protect cost

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accounting is completely false. As a matter of fact, financial managers are the only type of managers that knew, much before TOC, the fallacies of cost accounting. Moreover, in almost any company, the VP of finance is one of the few managers who sees the overall picture and is extremely frustrated to witness so many devastating local optima decisions which do not view the organization as a whole. What we see in reality is the exact opposite; the financial managers rarely oppose TOC. On the contrary, in many (if not most) implementations, they are the driving force.

**DW: That's hard to believe. Can I interview such an enlightened financial manager?**

EG: As many as you want. As I said, such financial managers are the norm rather than the exception.

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***Interview with Craig Mead, Book Manufacturing Vice President Finance, Thomson-Shore, Dexter, Michigan.***

**DW: Tell me about Thomson-Shore.**

CM: We're in Dexter, Michigan, just outside Ann Arbor. Approximately 40% of our customers are university presses. We would be considered a short-run printer, meaning we print runs of between 200 and 10,000 copies. We're also an ESOP company—98% of the stock is owned by the employees. We've had as many as 300 employees. Right now we're at 280.

**DW: I understand that everybody in your company has read *The Goal*.**

CM: We made it mandatory reading for all our employees.

**DW: Top to bottom?**

CM: Yes.

**DW: So what was the problem you were trying to correct with the help of *The Goal***

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CM: Our main problem was with on-time delivery. We also had problems with a department-type mentality at the company. People had a hard time looking beyond their departmental responsibilities. Everybody was functional in thought.

### **DW: Were you able to turn things around?**

CM: Yes. Before we started, we were at around a 70% on-time delivery. After implementing the TOC policies and practices, we got up to around 95%.

### **DW: Your first step was to have everyone read *The Goal*?**

CM: Yes, that was the first step. The next step was to bring in a TOC consultant. We put 30 people through a three-day training course on Theory of Constraints. From there the leadership group identified what we thought was the constraint and began to follow the Five Steps.

### **DW: What was the constraint you identified?**

CM: In our business we have two areas of major investment. One is in the press room and one is in the bindery. We basically settled on the press room as the constraint and began to manage the business with that in mind. As we focused on the constraint and began to subordinate everything else to that, we began to break down departmental barriers. It took a lot of education and training. We developed our own internal course for employees. Basically we took the three-day course, pared it down to about an hour, and had every employee go through that. The course dealt with the major concepts of constraint management, subordination, flowing work, and removing localized thought processes.

### **DW: What changes did you make in the press room?**

CM: We chartered some teams to look at the various products that we made and began to challenge assumptions on how we use the presses. We make two types of books, a perfect-bound paperback book and a casebound hardcover book. We have sheet-fed and web presses. We began to devise rules on what type of books went on what pieces of equipment, to maximize the capacities of the equipment and to meet

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customers' needs. By creating new standards we eliminated an incredible amount of waste. Before, we were constantly reworking jobs to meet what we thought were customer needs. In reality it was forever putting us farther and farther behind. Rethinking all our assumptions forced us to discipline ourselves and to maximize each component in the press room. That allowed us to flow the work more consistently.

### **DW: How did you involve the employees?**

CM: Employees at Thomson-Shore have the ability to influence the standards and the way work moves within their area of expertise. When you're strictly localized in your thinking, every person wants the job designed to benefit themselves. And that creates chaos. Before we did our TOC implementation, we could never agree on anything without a long, involved discussion. If we wanted to make a change we had to get 12 people in a room and then try to reach a compromise on everything. We could never please everybody. Having everyone read *The Goal* helped everyone understand that the basis for everything we do wasn't localized thinking anymore. So, for example, if a job had to spend a little more time in the bindery, that's okay, as long as that's what's most effective for the press, which we had identified as the major constraint. In the end we got the throughput that we needed.

### **DW: As a finance guy, what was your specific contribution?**

CM: The Theory of Constraints is built on the premise of breaking the barriers of the cost model of accounting, and we were a heavily cost-driven organization, as a lot of manufacturing companies are. Everything in the company was designed as the cost-system would dictate. That's where I began to add value—by helping to develop different measurement tools that we could use instead of the traditional cost tools. And that's what I believe began to drive real change in the organization. We are still struggling on the sales side but we've made progress in breaking away from the cost method of sales and estimating.

### **DW: How does that work?**

CM: The cost method of accounting creates departments and it allocates indirect overhead expenses. TOC, however, says you're one

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big happy family, you have fixed expenses and you have variable expenses. Your variables are your materials and your fixed is everything else. And sitting around spending all your time trying to figure out how much electricity and square footage of air conditioning and cooling goes to the press room, how much to the bindery and the prepress and how much to the office doesn't help you manage your business.

**DW: Because it distracts you from the goal.**

CM: Yes! Of meeting the needs of the customer. And flowing the work in a timely fashion. When we began to concentrate on making the work flow, that is, maximizing the capacity of the press room, and subordinating everything else to that, we began to improve our on-time delivery. The critical issue is how you measure the performance of the organization. We use two methods.

**DW: And they are?**

CM: Eli Goldratt talks about developing a constraint management tool. Ours is called TCP, for throughput contribution per press hour. When the market isn't a constraint, you choose which products and which customers to bring in based on that number. That's how you build profitability. Assuming, of course, that the constraint is not in the market.

**DW: And when the constraint *is* in the market?**

CM: For that we came up with another internal measure. We call it CRH, for contribution margin per resource hour. We try only to capture hours that represent value that customers pay for. We take the contribution—which is sales less materials—and we divide by the hours consumed and come up with a relative measure that has validity across the whole organization. It has taught us an immense amount about what we do here.

**DW: By confirming what you already suspected or by revealing what you hadn't known before?**

CM: Both. It confirms that certain types of customers, certain types of

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work, are difficult and cost us more to manufacture—it clearly pointed that out. And then it also began to show us how technology affects our margins. I mean, we get most of our books on PDF files now, and the cost difference between working with a PDF file and working with what I'll call the old conventional way is incredible. What was happening was that we were being forced by the market to reduce our prices across the board, but then any job done the old way was not very profitable. Hah! Not profitable at all! People were expecting PDF pricing for conventional work, and that just doesn't work. Bottom line: In a harsh business climate, in which the market is the new constraint, and sales are declining, we've actually built profitability. Significantly.

**DW: Does it help that you're an ESOP company? Does that make it easier for employees to align their interests with the goal?**

CM: It depends on the individual. Someone who is ten years from retirement is more interested in the value of the stock. Someone who's been here three or four years, they're looking at the individual-based bonus. So we actually began to implement team bonuses instead of individual-based bonuses. Today we're working on disconnecting the link between compensation and performance feedback. Feedback is going to be all team-based.

**DW: You said you had 300 employees before and now you're at 280. Is that the fault of a bad business climate or a benefit of being more efficient?**

CM: It's both. The business climate has not been healthy. But at the same time, some of the changes we made freed up capacity, and as people quit we didn't replace them, which built profitability. No layoffs. We just didn't replace everyone who left. And we moved individuals around.

**DW: Is the constraint still in the presses?**

CM: Well, it shifted to the bindery.

**DW: What about market constraints?**



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CM: Yeah, we have more capacity than the market's willing to give. That's an issue. I think we're prepared to meet the market when and if it comes back. And in order to do that we have to do three things. We have to fulfill the requirements of speed and delivery. We have to stay profitable to maintain our equipment and provide the quality that customers expect from us. And then, three, we have to have employees who are participating fully, who want to come to work every day, and who understand why they're here and why they're doing what they're doing. TOC has allowed us to do all three.

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*Interview with Eli Goldratt continued . . .*

**DW: I'm back to my previous question. How come most readers of *The Goal* do not rush to implement TOC?**

EG: TOC is built on the realization that every complex environment/system is based on inherent simplicity and the best way to manage, control and improve the system is by capitalizing on this inherent simplicity. That's why the constraints are the leverage points. That's why the five focusing steps are so powerful. But, what we have to bear in mind is that such an approach is a major paradigm shift. And people will do almost anything before they will shift their paradigm.

From observation, I can tell you that readers of *The Goal* proceed to implement it mainly when three conditions are met. First, there is a real pressure to improve. But that by itself is far from being enough. The second condition is that it is obvious to them that there is no remedy within their existing paradigm. In other words, they had already tried everything else. And the third condition is that something helped them to do the first step. This something might be a "how to" book, like *Production The TOC Way*, a course, a simulator, or a consultant.

**DW: Can you guide me to a case where all the three conditions exist?**

EG: Frankly, once the three conditions had crystallized in my mind it became easy to detect them in every case. It is just a matter of asking the right questions and the pattern is apparent. Actually, there is no need even to ask guiding questions, you just have to listen.

***Interview with Stewart Witt, Ongoing Improvement***  
**A consultant**

**DW: I understand that your introduction to *The Goal* came before you became a consultant.**

SW: Right. I was VP of operations at the time for a small manufacturing company, Ohmart/Vega Company, in Cincinnati, Ohio. Someone gave me the book with the recommendation to read it. And I read it, and it was very entertaining and made a lot of sense, and I promptly put it right back on the shelf.

**DW: I've heard stories like that before.**

SW: Right. I just wasn't ready yet. This company had hired me specifically to improve their operations and prepare them for growth and make them more efficient, all that stuff. I had talked the president into hiring a consulting firm, saying, "I can do these things but we can get it done that much quicker with some help," and he was fine with that. So we hired Grant Thornton, and they came in. We rearranged everything, streamlined everything. They took a look at the software we were using and made some other recommendations. We paid them about \$120,000 and in about 6-8 months we started to see some results. Everyone was very happy because we took lead times down from, like, two weeks to one week. It was, wow, that's pretty good! The problem was that the same improvements were happening in sales and marketing. So here comes 40% more orders in the same time frame, and as it trickled out into the shop, so trickled away my improvements. The capacity I had freed up was now being doubled up by all these extra orders and I was back in the same boat that I was in before.

**DW: What were you manufacturing?**

SW: Nuclear measuring devices for the oil industry. Essentially, it's a non-contact measuring system, kind of like a Geiger counter.

**DW: So, you were back in the same boat.**

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SW: Yeah, I spent all this money, all this time. All the things I knew how to do I had done. I couldn't rearrange everything again. I couldn't look at the software and come up with any new ideas. I had already employed the best consultants that I knew.

**DW: Right. So what did you do?**

SW: I signed up for Porsche mechanic school in California. It must have been a weak moment in my life. I do amateur racing and there's a saying that goes: you didn't make any mistake when you spun the car and flew off the track; what you did was you went into the corner and ran out of talent. That's how I looked at it—I must not be cut out for this job, there must be something I'm missing. I couldn't figure it out

**DW: How old were you?**

SW: That was ten years ago; so, early 30s. Mechanic school wasn't a waste of time. I still use what I learned. I save 600 bucks doing my own tune-ups. But right before I left to go out there, someone said: "You know, in San Jose there's a software company that has been created to support the rules that are stated in *The Goal*, and by the way, the Goldratt Institute has just issued a self-learning kit that you might be interested in." So I went to my mechanic class, that was very fun. Then afterwards I stopped in San Jose, took a look at the software, and completed the workbook on the way home. I was so excited that on Monday morning I got my staff together and I said: "This is what we're going to do. We've got nothing to lose. It looks like it's possible. It almost looks too simple. Let's give it a try." They weren't very convinced. In fact they were pretty skeptical. I'd put them through a lot already. One more thing, huh?

**DW: This was their first exposure to TOC?**

SW: Yes. Short story is, it took us about a month to go through the training materials, which came with a tutor guide and a workbook for all the participants. I went through the tutor guide step by step, they went through the workbook, and eventually they said: "I think you're right, we can do this." So we started, and about two weeks later we began to see some things improve. Lead times were starting to come

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down, our on-time deliveries were starting to go up. At first I thought it was just a fluke.

### **DW: What changed your mind?**

SW: Well, a month later here comes one of my welders and he says: “Boss, I think my numbers are wrong. The lead time I’ve been measuring is now about a day and a half.” I said: “How can that be?” We were still running more orders. I had even had to fire a guy in the meantime, so we were down resources. And we hadn’t bought any new equipment. So I said, “Okay, fine, let me check and I’ll let you know what I find out.”

### **DW: What did you find when you examined the numbers?**

SW: I told my welder: “You know what? You’re right, the numbers are wrong. The lead time is *less* than a day.” Same resources, 40% more orders, a fraction of the lead time. Took us two months to do that. Cost us \$500. The company was a hundred years old and they had the best two quarters that they’ve ever had. One division that was losing a million dollars a month was now making a million dollars a month. If I hadn’t seen it with my own eyes, I would never have believed it.

### **DW: What was the constraint you exploited to make such a huge difference?**

SW: We actually worked through about three of them. One of them had to do with the fact that we were sending everything out to put a protective coating on the pipes that held the measuring equipment. It was a step that had been added at some point by the marketing department, and it had developed into a constraint. So we had to go and find one or two more suppliers to handle the load.

### **DW: And there were others?**

SW: One was the saws that cut the pipes. We offloaded some of the work to another machine that was just sitting there doing nothing. That saw ran at half the speed of the other saw, no one ever wanted to use it. But we identified just the right materials to run on it, which built just enough capacity to eliminate the saw as a constraint. And then the

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paint department was next, we did a couple of things there. At which point the constraint shifted to engineering. We were waiting for some new products to come out, and that's kind of where it ended up.

**DW: Do you believe that TOC is an infinite process? In other words, is there always going to be another constraint you can find and exploit?**

SW: Theoretically, it can go on forever. But from what I've seen, it goes through one or two cycles within a facility, and then you've kind of broken the constraint in the production operation. Then it may move to, say, engineering. Then you can apply Critical Chain to the engineering group and eliminate that as a constraint, and then the next constraint usually is the market, and typically it's the existing market. Unless you're Coke or GE or whoever, you probably don't have a dominant position in your market. So you can still find room to grow. Finally, there are plenty of cases where, using the same capabilities that you generated using TOC, you can attack new markets that you never thought you could compete in. At that point, you're probably doing all you can handle anyway.

Or maybe it goes back to manufacturing again. Could be, yeah, and you definitely know how to deal with that by then.

**DW: Alright. So then you moved on?**

SW: I actually went to Grant Thornton for two years and worked on developing other TOC skills and applying what I knew to an ERP [enterprise resource planning] implementation at a plant in Mexico, working with Navistar International. I did that for about two years. Traveled to Mexico a lot, gained about 40 pounds, got no exercise. But it was kind of fun. Then I went to work for a consulting firm. Within about a month I was put on my first project, involving TOC, at a manufacturing facility in Clarksville, Tennessee, where they made graphite electrodes for the steel industry. It was a big plant, had been there quite a while, and it was already their best plant of that kind in the world. They made it a challenge for us, saying, "If you can improve things here, then we'll consider applying your methods elsewhere."

**DW: This was a large-scale implementation?**

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SW: Huge. The plant covered half of Tennessee, it seemed like, way out in the middle of nowhere. So we put a small team together. It was me and another guy and about half a dozen folks at the site, and we went through the exact same training I had done the first time at Ohmart/Vega. Was exactly the same concept, exactly the same ideas. The only thing different was the context. We had software systems we had to integrate—five different software systems that had the data in it we needed. We identified the constraint, and did all the usual things, like making sure there was a buffer in front of it, making sure the maintenance guys were giving it top priority so if there's any trouble they could fix things right away. We put a quality check in front of it so that we weren't wasting time processing any bad electrodes at that point in the process.

### **DW: What was the upshot?**

SW: No change whatsoever in on-time delivery. The company already had an excellent record in that regard and by the time we had finished, it still had an excellent record. But the only reason they could deliver on time before was because they had more inventory than they really needed. They just stuffed the shelves full of electrodes, had them sitting all over the place. So you see, we didn't disrupt their delivery performance at all, they continued to deliver 100% on-time. But in the end they did it with about 40% less inventory. And they were very satisfied with that because that essentially freed up almost \$20 million that they could now use elsewhere to run their business. Based on those results, the CEO stood up at a big meeting one day and said that this is what we're going to do worldwide. We brought representatives from Spain, Brazil, Italy and South Africa to Clarksville as part of a worldwide implementation team. It's become a classic case of phenomenal improvement and a very satisfied client.

### **DW: So this is what you do now? TOC-based consulting gigs?**

SW: Yes.

### **DW: Do you offer TOC as one option among many, or is this your primary approach to problem-solving?**

SW: Maybe there's a third way. If I'm invited to participate in some of

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the initial meetings with the client, I may approach it differently than some of my colleagues. They'll come in and say: "We have this line of services, which one do you want?" What I do is ask questions, like Jonah does in the book. That helps me decide if there is a fit for what I do. Basically, I try to help clients understand that if you address the core problems rather than the symptoms so many people focus on, you can almost promise good results.

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*Interview with Eli Goldratt continued . . .*

**DW: What are the limits of TOC? Can it be applied also to service-based organizations?**

EG: Yes, but... And in our case the "but" is quite big.

Let me start with the "Yes." Yes, any system is based on inherent simplicity, in this sense there is no difference between a manufacturing organization and any other organization, including service organizations. Yes, the way to capitalize on the inherent simplicity is by following the five focusing steps; identify the constraint, decide how to exploit it, etcetera.

The "but" revolves around the fact that it might not be a triviality to figure out how to actually perform each of the five steps; to figure out the detailed procedures. In *The Goal*, I introduced the overall concept and, through the detailed procedures for production, proved its validity. In *It's Not Luck*, I've explained the thinking processes needed to develop the detailed procedures to perform each of the five steps. As teaching examples, I showed how the thinking processes are used to develop the detailed procedures for sales of several different cases of manufacturing organizations. So, as a result, manufacturing organizations are not presented only with the approach and the concepts but also with the detailed procedures. Detailed procedures are not available for most types of service organizations. Therefore, in order to implement TOC in a service organization, one has to follow this generic knowledge and first develop the specific procedures. This is, of course, a much bigger task.

**DW: So why didn't you write another book for service organizations?**

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EG: As you know, we use the term service organization for a very broad spectrum of totally different types of organizations. Organizations that are different from each other no less than they are different from manufacturing. You are not talking about another book, you are talking more of a library.

**DW: Can you give me an example of a TOC implementation in a service industry? Any type of service industry?**

EG: Let's start with a company that does not design or manufacture anything, and therefore is called a service organization. Still they deal with physical products; something that you can touch. An office supply company.

**DW: A distributor of office supply products?**

EG: Correct. But before you go and interview them, let me stress one point. All the TOC detailed procedures for the logistical aspects of distribution had long been developed and tested in many companies. But this particular company still had to use heavily the thinking processes to properly develop the detailed procedures needed to properly position itself in the market.

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***Interview with Patrick Hoefsmit, Office Supply***  
**Former managing director, TIM Voor Kantoor, 100-year-old office supply company in the Netherlands.**

**DW: What was your first exposure to *The Goal*?**

PH: I was one of the owners of a printing company. Pretty big company. Couple of hundred people, 40 presses. I was taking a course from someone who was explaining to me the difference between debit and credit—I'm a technical engineer, so I needed some explanation. And I was such a pain in the ass during the course that he gave me a book, *The Goal*. He said, "This is something for you because all the other books are nothing for you." I read it with great pleasure. I thought finally I have found someone who can explain to me the meaning of business.



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**DW: That seems to be a large part of the appeal of *The Goal*, it's accessibility.**

PH: Yes, *The Goal* doesn't go really deep into the financial difficulties of running a company. As a matter of fact it completely makes it irrelevant. So for me it was also a great message that I could just ignore all these economist Ph.D. people—if they couldn't explain to me what was going on, then forget about it! So that was my first experience with the Theory of Constraints. Then somebody gave me an article that said Eli Goldratt was in Holland to give a seminar. So I went there. At the seminar Eli told us that he just increased the price for his Jonah courses from \$10,000 to \$20,000 because otherwise top management wouldn't come; something like that. So I said to him, "I promise I will come, even at the old price!" He said he had a better deal for me. If I was to do the course, I could do so and I only had to pay him after the results were of such magnitude that the price of the course was irrelevant.

**DW: Good deal.**

PH: Yeah, it was a perfect deal. So I went to New Haven, to America. He had an institute there. Did the course, couldn't do anything with it. So a year later I went to a Jonah upgrade workshop; it was in Spain. Eli has a very good memory, so when he ran into me he said, "Hey, did you pay for your course yet?" I said, "No, no, I didn't see any reason why I should." So he invited me for a private session. Some people warned me about that! On Monday morning I had a private session here in Rotterdam. That was a hefty morning. All my homework and all the things I did were to him completely irrelevant. The point was, I was looking at my own company and looking for a production bottleneck when there was so much excess capacity and the constraint was obviously in the market! But for me that was thinking outside the box. It had never occurred to me that Theory of Constraints would apply also outside the company's walls.

**DW: That's understandable, since *The Goal* describes a production problem.**

PH: Yes. So I was one of those stupid people who couldn't see the whole picture. So then Eli explained the bigger picture and the bigger

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application of it. He slowly forced me to think—sometimes by yelling at me, “Think!” It was a hefty morning. And this story is described by him in *It’s Not Luck*—the candy wrappers case. We finally made some money over there. Actually, a lot of money. Later I discovered that my nephew, who was the other 50% owner of the company, wasn’t doing much and was taking out more money than we had agreed upon, so we decided to split the company in two. I did the split and he chose which part he wanted. I never imagined that he would keep the printing business, which I had been running, and leave me with the office supply business, which had been his responsibility.

**DW: Did you know anything about the office supply?**

PH: No, nothing at all. The company was pretty big, it was number four or five in the Netherlands. It was making an awful loss. Competition was suddenly fierce and only concentrated on price. Other companies were very subtly sending brochures to every small business in the Netherlands with prices on the front cover that I couldn’t get for myself as a wholesaler. This was really awful. All our good customers became suddenly more and more interested in price. They said, “How is it possible that we pay twice as much as what’s on the front cover of this brochure?”

**DW: It sounds like an impossible situation.**

PH: Well, it was, it was really awful. We had something like four or five thousand customers, 20 sales people. The only thing we could think of was to also lower prices, and do it only on items where we had to. That was not a long-term solution but that was what everybody else was doing. So the conventional way of doing business in office supplies was pretty soon completely gone. We got tenders for office supplies—which was unheard of—where you had to fight with three or four competitors. In the past, orders for office supplies were just given to a local good-performing company. Now everybody was focusing on price.

**DW: So what did you do?**

PH: We started to build, as Eli calls it, the current reality tree. And of course this time I didn’t make the mistake of making it about our

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company but I made it about the customers' situation: Why is this customer complaining so heavily about price? After long thought and a lot of discussions with my sales people, the only thing we could come up with is that he's thinking this is the only way that he can decrease the total cost of office supplies; that he can't do anything about the tremendous cost of having to stock supplies, and store them, and the cost of bringing the stuff to the right people in the building. Well, I know what kind of a mess customers can make out of it. In most offices where you open drawers, there's more stock in the office than anybody can imagine. While at the same time they are screaming for a specific item which has to be brought to them by taxi in crazy short delivery times. In Rotterdam we are down to four-hour delivery times! Not even 24, just four-hour delivery times, which is completely crazy for office supplies. I mean, we're not saving lives here.

So this is what we offered our customers: That we would take over all this hassle of supplying everybody in the office with the right equipment, the right articles, at the right time. We offered them cabinets with office supplies in them. We owned both the cabinets and the contents. The supplies were for a specific working group. Whatever they took out was considered sold, whatever was left was still ours. We replenished these cabinets every week. We made it very easy for them to check on us. And more importantly, we could give specific data about each department, explaining that certain items were consumed fast. For instance you might need a new pair of scissors once in three months, but not every week.

### **DW: So you could discover theft?**

PH: Well, we didn't call it theft, we called it overconsumption. But of course it was theft, yes. So suddenly this guy who was responsible for office supplies had much better tools to go after his dishonest personnel. He's not interested in how many pencils someone uses. Everybody knows that people take pencils home; you do that by accident and it doesn't cost anything. Toner cartridges, that's a bigger problem. So when the theft of these ink-jet cartridges went up very much, we advised them to buy bigger printer machines, which we could also supply, to make them different than the machines people had at home. Things like that. But those cabinets were a big, big invention. While our customers might have paid 20%-25% more for

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the actual articles, the total cost of providing office supplies for their workers dropped by 50% because they didn't have the internal hassle of misplacements, overstocking, and things like that. So they didn't care that much anymore about the original price we charged. When I sold my company a couple of years ago, the due diligence took a long time because they couldn't believe our added value.

### **DW: What were the numbers?**

PH: Normal gross margins in the industry were very much below 20%. Above 20% was suspicious. We were above 30%, which makes a lot of difference. And we were not ripping people off. They were extremely satisfied with our service.

### **DW: How did you go about selling the concept to your customers?**

PH: We had a department which was making appointments with financial directors, not the guy normally responsible for purchasing office supplies. That other guy was scared for his job when you came with this solution. And we made a short movie to show the current situation in their office and how people were screaming for office supplies and things like that, and how great it would be if we could take over their stock and their responsibility and solve this problem. And this worked really great. Something like 30% of the sales visits were successful sales. Again, the prices we were charging for supplies was no longer an issue

### **DW: For anyone?**

PH: Not exactly. We still had some customers who were focused on price. We didn't chase them away. We just gave them completely different conditions. We told them that if price is what matters most, you have to buy big quantities and you shouldn't care about delivery times: "You can get the lowest price possible but you have to stand in line." Now a good thing for us about the cabinet system was that we had one-week advance notice on our purchasing needs. I mean, what the customer used last week I didn't bring the day I was checking. I would bring it the week later. So I hardly needed any stock anymore. My suppliers could deliver in a day but I had a week. So now I could

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start buying on price. And I could combine my orders with those of the bigger customers who still wanted to do business just on price.

**DW: Those must have been a very satisfying couple of years for you as you explored this new way of doing business.**

PH: Well, yes, for a couple of years it's really fun. Because you're winning a race. Of course at the beginning I was relatively small; I was number four or five in the country. I was really afraid the bigger companies would copy my cabinet system.

**DW: Did they?**

PH: Yes, a little bit. But they didn't get the message. It was actually really funny. They were prepared to deliver cabinets but the customer had to buy the cabinet and the content as well. They were never willing to do it on consignment terms, which is what made it work. So that was a big difference to start with. Secondly, they didn't understand my replenishing system of stuffing the cabinets full enough that you could survive a couple of weeks. What they offered was so different that we could immediately show the customer that with our competitors, you'll still have to do it yourself, you'll have to take responsibility. Whereas in my case, when you change a printer, for example, and you don't tell me, I will find out you don't use this cartridge any more and I'll adjust. These cartridges are very expensive, do you want the responsibility? That's the main difference of consignment.

**DW: Later were you able to discover new constraints that opened the way to new growth?**

PH: Ultimately the constraint moved back inside the company. The new constraint became; how quickly can we measure or install a new cabinet? At first we could only do something like two or three cabinets a day. People were standing in line for cabinets. We had waiting lists for three months. So we put a second person on the job. Not a big deal. But we were fully in charge. We could grow at the pace we wanted to grow. That's kind of funny in a race where everybody was yelling about price! There are other businesses in that situation. For example, if you go to a really good restaurant, they don't care about prices. They are booked for the next three or four months; they be-

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come arrogant. And we had the same situation! It was great! And to think that we had started with all those competitors, all the problems, and 20 sales guys who were really discouraged, they didn't know what to do. And here we came with this really simple solution. I'm amazed that to this day nobody's really copying it.

**DW: Would you have discovered this breakthrough had you not been exposed to Goldratt's theories?**

PH: First of all, I wouldn't have known how to attack the problem. Since I was working at the printing company and my nephew was working at the office supplies company, I never expected that we would change roles. Nevertheless, I knew how much loss they made. And by then I was so convinced that just by applying Theory of Constraints, I would figure out a way to solve the problem. It took me something like three or four weeks to see the light and understand what was going on and how to solve it. I survived that month by sitting back and saying, "Okay, no panic, no panic, let's not be hasty. As long as we don't have a breakthrough idea I'm not going to make any changes." I was just sitting back and thinking and discussing with people how we could solve the problem, until we solved it. And that's one of the good things about theory of constraints. You know in these cases that eventually you will come up with a breakthrough idea.

**DW: You have only to find it.**

PH: Yes, and I became better and better at it. It takes Eli about five minutes to find the constraint and how to brake it. In most cases, I can find the same within a week. Compare it to just doing more of the same. I very often use this funny story about two guys on a safari. And after a couple of days they hear the first tiger and they think, well, great! So they go for their guns and discover they forgot their bullets. So one of them puts his pack down and grabs his running shoes, and the other guy starts laughing: "Do you think you can outrun the tiger?" He says, "I don't need to outrun the tiger, I only have to outrun you!"

*Interview with Eli Goldratt continued . . .*

**DW: Can you give me another example? Of a service company that does not deal with physical products?**

EG: To demonstrate how different one type of service company is from another, I suggest you interview both a bank and a financial advisors company. Then interview another, obviously different, type of service industry, a hospital

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***Interview with Richard Putz, A Midwest Bank  
Former CEO of Security Federal Bank.***

**DW: How did you conceive of applying the principles outlined in *The Goal* to the banking industry?**

RP: I was flying back from Los Angeles one night. And I was remembering my days as a consultant at Coopers & Lybrand, working with the folks who were handling the manufacturing engagements. That's where I was first exposed to *The Goal*. And I began to think that when you look at how a bank operates—for example, how it moves through the process of putting loans together—it's really no different than manufacturing. Why couldn't I use something that worked in manufacturing and apply it to a bank? The process is the same, we just give it different labels. So I started testing that out.

**DW: How did that go over with the staff?**

RP: In the beginning they were skeptical. I got all of the people who report directly to me into the board room, we sat down, I passed out copies of *The Goal*, and I said: "Guys, we're going to come together every week on Friday. We'll have fun, we'll have food, the whole bit, but we're going to discuss how to translate *The Goal* into banking terms." I'm looking over there at my CFO, he has this constipated look on his face. I said, "Jim, is there something wrong?" He says, "Yeah." I said "What?" He says, "There's no index in the back of the book. How do we find anything?" I said, "You read it, it's a novel." He eventually became our biggest advocate. But he was totally skeptical.

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### **DW: So how did you approach the problem?**

RP: Traditionally the tough issue within banking is how you manage all the regulatory constraints that you're faced with. Banks are just immersed in regulations. And if you actually tried to manage according to the regulatory measurements, your bank would fail. You bring that up to the regulators and they laugh. There's just this whole slew of things, some of which contradict themselves. Some of them were created when lawmakers added them onto banking legislation because they looked good, or else to fit a particular situation at the time.

### **DW: You're talking about regulations that keep banks out of certain businesses?**

RP: Right, as well as those that mandate certain loan mixes, how you approach a market, that type of thing.

### **DW: Preservation of asset ratios and so forth?**

RP: You got it. We took a slightly different approach. We decided we had to figure out what our real market constraint was. Using TOC, we found it had to do with service levels and how we were solving problems for our customers, not with the specific products we were offering. So we ended up gearing the whole bank toward solving problems for our customers. Part of the solution—the injection that broke the conflict—was the creation of personal banking for everybody, not just for wealthy people. Banks normally assume it's not worth spending time with you if you have only \$100,000 when they can spend that time with a guy who's got \$10 million. We discovered that a guy who only has \$100,000 isn't really going to spend a lot of time with you anyway; he's just not there very often. So we stopped worrying about that and began focusing on how to better manage our customer relationships across the board. People ended up coming to our bankers anytime they had a financial problem. If we couldn't solve it for them, then at least we could refer them to someone else, and we could give them good advice because we didn't have an ax to grind. All we asked is that they let us manage their cash flow. Most people gave us everything in that regard, plus all their loans.

### **DW: You had a large mortgage business, too?**



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RP: Right. We had more than 300 correspondent banks, all over the country. National City and Bank of America would sell us mortgages. What we discovered—also using TOC, and this is how we expanded this business—is that most people with a loan viewed the bank that serviced the loan as their bank. So, whether Freddie Mac or Fannie Mae or PNC or any other investor actually owned the loan, we wanted to own the servicing asset. It was more valuable in terms of building customer relationships than the loan itself.

Also, these days it's a lot easier, but it used to take forever to get a mortgage approved. That's because there are all these things you have to have in place—again, to satisfy the regulators. We looked at that and said, “Okay, what's the conflict here?” We built our conflict clouds, and we built a current reality tree, and we discovered there are only three things that end up deciding whether a loan is a go or a no-go. If we just focus on doing those three items, and worry about plugging everything else into the file later, we can speed things up. In fact we were able to cut the approval time almost in half. That made us really popular with realtors and mortgage brokers, which brought us more business.

**DW: What effect did TOC have on customers' ordinary day-to-day interactions with tellers?**

RP: Most of the tellers said they wanted to do this TOC thing, too. Well, what do they really need to do? They really don't need to know how to do future reality trees because their everyday life is not involved in future reality trees. But a teller is often dealing with conflict resolution. Tellers represent the frontline defense, especially at savings and loans. People come up to them and say: “This doesn't work, this is out of balance, they screwed this up,” and it's the tellers who have to solve the problem. So we taught them how to do conflict clouds. We created conflict-cloud worksheets for them, pads of 50 sheets, eight and a half by eleven. On the back side were the instructions, just in case they forgot how to do it. And the teller could actually fill in the cloud as he or she was talking to the customer, work out the problem, then rip off the sheet and do the next one. We had that going throughout the bank.

**DW: It sounds like one of the main conclusions you reached**

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**was that the perceived constraint—the regulatory climate—was not the actual constraint.**

RP: Correct. I would walk into the office of my compliance officer and I'd say, "Jeff, I got this idea." And he would just automatically point to this poster on his wall that basically said: If you can dream it, there's a regulation for it.

**DW: And yet even in that environment, you found ways to grow.**

RP: We did things in the banking industry that were totally unheard of. We actually had regulators visit us more often than other banks because those other banks kept calling them and saying: "They've got to be doing something illegal, you need to check them out."

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***Interview with David Harrison, Administrative Services, Founder, Positive Solutions, Newcastle, U.K.***

**DW: Tell me about Positive Solutions.**

DH: We provide management and administrative services to independent financial advisors. At present we have 755 of those people who rely upon us to help them with such things as compliance with financial services regulations, collection of commissions, and so forth. That's the company we built, 60% of which we sold recently to the Aegon group, one of the world's largest insurers.

**DW: How have you made use of *The Goal*?**

DH: In a couple of ways. First and foremost we use the five focusing steps almost instinctively now, in that we seek to identify the constraint in any problem before we do anything else. That's sort of been my mantra, if you like—before we go any farther, let's identify the constraint.

Beyond that, a big part of what we do is acquire new independent financial advisors—we want people to join our organization, and the people we use to recruit them we call our business consultants. Oded

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Cohen, of Goldratt UK, helped us build a process for that. He broke it down into very discrete steps and helped us program software which helps us track how each of our business consultants is succeeding, or not. At any point in time they may have 150-200 people they're having conversations with about joining Positive Solutions. We've got them to think of each of those people as a project. That streamlined the process and also got our business consultants to think in a more logical fashion.

### **DW: What distinguishes Theory of Constraints from other management techniques you've looked at?**

DH: I think it can be very easily applied in a simple process. As I have said, the one I use more than anything else is the five focusing steps. A lot of the problems which arise in business are about lacking focus. I guess if people were to describe Positive Solutions, it would be as a very focused organization. We don't seek to be all things to all people. We stick to what we know will be the most profitable areas to us at any point in time. We've been working on the same constraint for five years.

### **DW: And that is?**

DH: Our ability to recruit the right people at a pace which fits our business plan. The more people we have, the more profitable we become. A lot of companies by now would have given up at about 300 advisors, something of that nature. And they'd say the constraint is no longer recruiting people, what we should be doing is trying to improve the productivity of those people, or trying to get a better deal out of the manufacturers of financial products. But we've kept the focus on the fact that as long as the people that you are recruiting are profitable, then why stop recruiting them? Just because it's not getting any easier? Well, it's not actually getting any harder, either. It's just another day at the office. But we can work all of our financials back to simply the number of advisors that we have. Therefore, we don't go any farther.

### **DW: That's your focus?**

DH: That's our focus. We've identified the constraint, now let's ex-

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plot it, make the most of it. Therefore we have easily one of the best recruiting machines in the UK in this sector. We approach recruitment very differently from all our competitors. Our competitors will advertise, they'll try to acquire businesses, for example, rather than the approach that we have, which is to recruit people one by one. Our rate of growth might at first appear to be slow. But because our advisors have been recruited in the right way, we don't lose many of them. That's the beauty of TOC: as you really dig in to identify the constraints, you begin to understand these things.

**DW: Have you thought about what the next constraint will be?**

DH: Of course, at present there is still a market for further independent financial advisors to join us. There are about 25,000 of these people in the UK and we have less than 1000 of them. Now the quality of some of those 25,000, and the fact that not everybody will join us in any case, means at some point the effort needed to increase the capacity just won't be worth it versus the energy we could put into something else. At that point, you say, "We've now changed our plan. What is the constraint in our new plan?" Frankly, it's about retaining the clients' money. At present what we do is introduce clients to a variety of manufacturers of financial services. The money goes to the manufacturers and they give some of it back to us in the form of commissions or fees. The next step really is for the clients to give us the money, and for us then to give some of it to the fund managers and the life insurers. So once we're a certain size, the constraint will begin to move. We'll have a brand, and the revenue needed to communicate that brand, so there won't be quite as much effort to get people to join us. At that point the constraint shifts.

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### *Interview with Dr. Antoine Van Gelder* **A South African Hospital, University of Pretoria**

**DW: You're not a typical Eli Goldratt disciple, are you?**

AV: I'm a university professor with a dual appointment, head of the department of internal medicine at the University of Pretoria and head of the department of internal medicine at Pretoria Academic

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Hospital. In 1992 I got an invitation to attend one of Eli Goldratt's courses in Pretoria. Not one run by him, himself, but by a subsidiary of the Goldratt Institute. At that time I knew nothing about Theory of Constraints and I had not read *The Goal*. I got myself into this out of curiosity more than anything else.

### **DW: Why? What kind of help were you looking for?**

AV: Let me put it this way. I was literally sitting in my office, with my head in my hands, highly frustrated, with piles of paper all around me, going through correspondence. I opened a letter, saw that it was another invitation to a course, threw it away, and as I threw it in my wastepaper basket my eye caught the price of this particular course. It was the South African equivalent of about \$18,000. That caught my attention. I thought if any course was worth that amount it was worth looking at. This was a two-week course in production management; the invitation was addressed to the engineering faculty. It had gotten to the medical faculty by mistake. The course was actually offered free to university professors. So because of my deep frustration with some of the management issues I had in my department, and because I had some time off the next week, I phoned. I planned to only go for the first week, because this was the time I had available. I was told that I had to attend the full two-week course. I said, "Yeah, we'll see about that."

### **DW: But you went?**

AV: I went the first week. The course was taught with reference to a production environment and the logic around it. Now you don't find much of this logic—the reality trees and that sort of thing—in *The Goal*. Quite a lot of that is in *It's Not Luck*, which was published later. But the logic grabbed me because I was this frustrated man who was running a department of medicine and I had not been trained to do that. I had no insight into management issues. Suddenly I saw that here was a potential way of analyzing my department.

### **DW: What were the parallels?**

AV: My department was in chaos, total chaos. Everything coming and going, not knowing what was what—much as things were in the

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factory that is the setting of *The Goal*. During the course, *The Goal* was mentioned. I bought it, read it through in one night, and I thought to myself, that's *my* environment. A chaotic system is not necessarily a factory. It could be a hospital with people coming and going. It could be a department with a whole lot of prima donnas—the doctors—who need to be managed. That parallel struck me.

Now if I can answer your question a bit more precisely. When one is introduced to Theory of Constraints, the first thing you see is a system where the causality is hidden. In other words, it's chaotic. Things happen, you have no control. Suddenly, though, it becomes a system that can be analyzed in terms of certain key points—leverage points. And one learns that addressing these key points—rather than launching a symptomatic firefight—is the way to exert control over these systems. Remember, this was in the early 1990s, before frameworks like systems theory had moved to the forefront and become part of the main buzz. Though the Theory of Constraints doesn't talk about systems theory, already it was offering an approach by which a complex system could be managed in terms of a few key leverage points.

### **DW: Did you wind up attending both weeks of the course?**

AV: Correct. Then I came back to the hospital. There are two points I want to make. The first was that I underwent a mental change. Instead of thinking that things were too complicated, too complex and not manageable, I now saw that if I could analyze the system correctly, it *was* manageable. That was the first important breakthrough that I had, and many people I've taught this to subsequently have had the same breakthrough. There is a way—find it!

Second, our outpatient clinic, like most hospital outpatient clinics at that time, and even now in many parts of the world, was plagued by inefficiencies and long waiting lists. The more we fought the inefficiencies, the more money we poured into the system, the longer the waiting lists seemed to become. This is the problem with the national health system in Britain as we speak. Now in my department, it seemed to me as though the processing of patients by doctors could really be viewed as a production line, just as in *The Goal*. The times are different, and obviously people aren't machines. All of those issues I acknowledged. But I saw that parallel.

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### **DW: How did you attack the problem?**

AV: The manager in charge of that clinic and I sat down and I told her about the principles used in *The Goal*. Between the two of us—with her doing most of the work—we identified our constraint. We realized that we lost a tremendous amount of capacity whenever patients or doctors wouldn't show up for scheduled appointments. That time lost was not recoverable. So we developed a call-in list, which we called the patient buffer. A day or two before a scheduled appointment we would phone patients and make sure that they would be coming into the clinic. If not, we would find substitute patients. The result was less loss of capacity. Our waiting list at that time was about eight or nine months long, which is common for this type of waiting list. As a matter of fact in the UK now some of these waiting lists are over one year. In about a six month period we got our waiting list below four months, which was roughly half of what most other hospitals were doing in South Africa at that time.

### **DW: Yours is a public hospital?**

AV: Yes, we're part of the state health system. In other words, not for profit. Patients pay only a small amount for services. Later on, after I started consulting with the Goldratt Institute in South Africa, we looked at a large private hospital, 600 beds, a flagship hospital with neurosurgery and all the high-tech stuff. The issue there was loss of capacity in the operating rooms. The spin-off effect of that was that surgeons were leaving the hospital and going to other private hospitals. It was a serious situation. We found that instead of focusing on local optima—making sure that my little department comes first—the real question people should be asking is, what can I do to achieve the larger goal of the hospital, which is to throughput new patients? It's a simple concept, but implementing it took about two months of meeting with staff. Each person then developed an action plan aimed at making sure more patients moved through the system more efficiently. In a period of a year, this hospital moved from a 20% shortfall on its budget to where it began showing a profit.

### **DW: So you've become a Goldratt consultant yourself?**

AV: Yes. I presented the results from our hospital's outpatient clinic

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at one of the Goldratt symposia in the early 1990s. This was the first report of a medical implementation of the Theory of Constraints. Eli Goldratt was there to hear my presentation, and afterwards he invited me to join the Goldratt Institute as an academic associate. I was based at the university but involved in the implementations of his consulting company. I did quite a bit of work in the mining industry—nothing to do with medicine! It was pure theory of constraints, straight out of the book. It allowed me to develop my own skills.

### **DW: What's a doctor doing advising mining companies?**

AV: It's interesting that you say that. I'm a physician, not a surgeon, In other words, I'm a thinker, not a doer. I say that facetiously, but as a physician, it's all about diagnosis. And the whole process of diagnosis, whether it's a patient or an organization, is the application of the scientific method. Eli Goldratt says that his Theory of Constraints is simply the application of the scientific method. So it's almost natural that an advisor to a mining company—in terms of diagnosing what's wrong and what to do about it—could be a physician. In fact, some of the teaching materials that the Goldratt Institute uses refer to the medical model. It asks trainee consultants: How does a doctor approach the problem? It gives them a parallel for how you diagnose problems in organizations.

### **DW: That's interesting. Eli has said that his overriding ambition in life is to teach the world how to think.**

AV: Right. And nothing he has done in the almost 14 years that I have known him suggests to me that that is a facetious statement. The Theory of Constraints is about thinking processes, it's a subset of logic. In other words, the scientific method.

### **DW: Has any of this made you a better teacher of physicians?**

AV: Absolutely. Absolutely. I've told you that diagnosing a patient and diagnosing a business is the same thing. But a doctor learns to diagnose by watching other doctors. It's not taught as a science. The processes of diagnosis are taught, but what might be called the philosophy of diagnosis is not taught as it is in the Theory of Constraints. The traditional approach is, watch what I do. The approach that I've



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since followed is, let's look at how the scientific method works, then let's see if we can apply this to a patient. Most students take to this very well.

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*Interview with Eli Goldratt continued . . .*

**DW: That will do it.**

EG: Please, one more. The jewel in the crown, at least in my eyes, is the usage of TOC in education. Yes, in kindergartens and elementary schools. Don't you agree that there is no need to wait until we are adults to learn how to effectively insert some common sense into our surrounding?

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*Interview with Kathy Suerken, CEO*

**TOC For Education,**

**An international nonprofit dedicated to teaching TOC thinking processes to schoolchildren.**

**DW: You're a middle school teacher, not a plant manager. How does *The Goal* fit with the work you do with children?**

KS: Well, it all started almost 15 years ago. I was kind of a new teacher at a middle school but I had been a parent volunteer for a while. I was running a voluntary math program for kids and my husband was giving me advice on how to manage it. The program was already a success; we had 100% participation. I asked him, "Well, what do I do now? Go to a different school?" And he said, "Kathy, you'll have to find another goal." Six months later he said, "There's a book you have to read, we're passing it around at our office and everyone's signing the back if they recommend it." That was my introduction to *The Goal*. Within six months, I wrote a letter to Eli Goldratt that began, "Dear Dr. Goldratt, if you were to walk into the office of Frank Fuller, Ruckle Middle School's principal, on his desk you would find a copy of *The Goal* . . . and thereby hangs a tale." I went on to say how I was using the ideas and concepts to run this project.

**DW: Did you hear back from Eli?**

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KS: Within four days, with a copy of his newly revised book. And then within about a week or so I heard from Bob Fox, who was president of the Goldratt Institute at that time, and they offered to send me to Jonah school on scholarship. So I went through the course. Later I went through a facilitator program on how to become a trainer of Jonah processes. And then I went back and taught a pilot course to kids. By the end of the year my kids were using the thinking processes, which they learned brilliantly. They were the most Socratic learners and teachers of other kids that you ever saw. It was pretty convincing evidence to me that this stuff works with kids, and it launched me into the role I have now.

**DW: Was it a course about TOC or a course that used TOC methods to teach other content?**

KS: It was a class on world cultures—basically a class on perspectives, which of course this is so aligned with. We used methods derived from TOC to advance the curriculum. Later I taught a critical thinking skills course that was pure TOC. In that course I was teaching cause and effect as a skill. We used concepts like the conflict cloud to analyze conflicts in real-life situations.

**DW: What evidence do you have that the kids were absorbing the concepts?**

KS: Here's an example. One day I read to the students the section about the hike from *The Goal*, and then I gave them an evaluation sheet. I asked them, "How is this relevant to real life? What's the weakest link?" Stuff like that. It wasn't a test. I just wanted to know if they were getting it. That night I looked at their answers and I realized maybe half of them got it and half of them didn't. So I went back the next day and I asked them again, "What determines the strength of the chain?" I called on one boy—let's say his name was Mike—who I knew was struggling. He was rambling on and on. He did not get it. And I did not know what to ask Mike to get the answer out of him. So then I looked at my other students. And I knew if I called on John, for example, who did get it, he would just tell Mike the answer, and that's not what I wanted. So I said, "No one can give Mike the answer. You can ask Mike a question to help him think of the answer." And that is when one of my other students raised her hand. She said,

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“Remember when we were doing the cloud on teach fast, teach slow? The problem of making sure everyone understands but the fast ones don’t get bored?” That’s when I saw what was happening. As the other students began asking Mike questions designed to draw the answer out of him, I could see that everyone was engaged. It was a wonderful example of cooperative learning. Because everyone had to think. Even if they already knew the answer, they were thinking hard about how to guide others to the answer.

**DW: How do you introduce TOC to schools where it has never been taught before?**

KS: We usually start with teaching TOC as a generic process, then figure out how to apply it to a specific curriculum. Initially it was easier to get it in through the counseling element of the school the behavior application. That seemed to be the most obvious way in.

**DW: How do counselors use TOC?**

KS: Let’s say the child is sent in to the guidance office with a behavioral problem. The counselor who’s been trained in TOC will use tools like the negative and positive branch: “What did you do? Why were you sent here?” And then they go into the cause and effect consequences of the behavior, and how that leads to negatives for the student. The student will say, “If I do this, I get in trouble, I get grounded, I get sent up here, my parents get called.” It’s almost predictable, this branch. Then the counselor asks, “Okay, what would happen if you didn’t do these things?” Then the student writes the other branch, the positive one. Then the counselor asks, “Okay, which would you prefer? It’s up to you.”

One of the first teachers that was using this in a classroom in California was working with at-risk students. They were at risk of failing academically and behaviorally. She was teaching the process outright, as a skill. And she had her students do cause and effect branches. One boy did it on, “I’m going to steal a car, go on a joy ride.” She went to help him, because he couldn’t get the branch started. She said, “What’s the problem?” He said, “This is the first time I’ve ever thought of something ahead of time.” In the end he had to go to the driver education teacher and get some information to finish the

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branch, which is great. He found out what would happen to him if he got caught, because he didn't really know. How do you quantify the results of something like that?

### **DW: You've since developed other applications?**

KS: Yes, and they're interconnected. Because behavior changes attitudes. Or maybe I should say that attitudes impact behavior. If a student can make a more responsible decision, and he gets a favorable impact, his attitude toward the teacher and what he's doing in school changes. That's bound to have some impact on his learning. But additionally, we have, in the past two years, really worked on how to deliver the TOC learning process through curriculum content. Or, again, maybe it's the other way around: How to teach content using the TOC processes. Because teachers do not want to interrupt class to teach a life skill. They have to teach the curriculum.

### **DW: I understand you've introduced TOC to young people in prison settings.**

KS: I went into a juvenile jail in California about five years ago. I spoke to a new group of juvenile offenders; this was their first day. They were all gang members. Later the teacher who invited me told me he had been very worried because I was female and most of them had been abused by their moms. He was afraid they would back me into a corner and be quite rude. There I stood in a polka dot dress, from Niceville, Florida, looking like the person who had put them in jail. I'm sure I didn't look very empathetic. But I tried to get them to tell me what they wanted out of life. They said things like. "We just want to get out of here, lady." I said, "Do you think that's enough to keep you out of here?"

Finally, one boy said to me, "I just want a better life for my kids." These were 16-19-year-old old black and Hispanic males. I looked at this guy and I said, "I'm sorry, I don't understand. What do you mean? You have kids?" He said, "Yes, I have a two-year-old and a baby."

Anyway we had this goal on this rickety old chalkboard, "A better life." I said, "Okay, what is preventing you from having a better life?" They said, "Jealous people." I turned around and I said again, "I'm sorry,

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I don't understand what you mean by jealous." Because I'm thinking to myself, and not facetiously, "who could be jealous of them, they're in jail?" And that's when they said, "Oh, but if you go back and try to get out of the gang they'll be jealous, they don't want you to leave the gang, you can't leave."

They also mentioned prejudice as an obstacle. And as I'm making this list I am thinking, "I am in over my head." There was nothing I could think of that would overcome the obstacles these kids were facing. But I didn't need to worry about it. Because they had the answer. They went down the list and they added more obstacles like, "my past," and "criticism," and about halfway through they gave me something brilliant: "Me. Myself. I have to change myself. Right away."

I later received letters from some of those kids. One of them said, "Before we had that talk, even making it to 21 was hard to see in my future. But you gave me hope." Now I ask you, did I give him the hope? No! It came from him! But he wrote, "You gave me hope that I can make it if I just follow those steps." That last part is so important. This is not just wishful thinking. It's giving somebody a process they can use, so that when the person who's giving them the attaboys isn't there, they have the know-why, not just the know-how to keep going.

**DW: Does TOC have the same relevance to kids who don't have such severe obstacles to overcome?**

KS: Absolutely. What it helps people do is to make sense of things. Many times, even in affluent communities, students are motivated only because their parents want them to achieve. But learning does not make sense to them. It doesn't seem relevant. They're doing it only because they have all the right environmental factors. What could be unleashed from those children if we could present information to them in such a way that they could derive their own answers instead of providing answers that were simply memorized? It's all about unleashing people's potential. I have felt many times as a teacher that disruptive behavior comes from the high achievers as well as the low achievers—because the high achievers are bored! In TOC we have a way to differentiate instruction with one learning process. To bring them all with you.

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### **DW: What is your goal for TOC For Education?**

KS: I see empowered learners, enabled learners, and the real joy of lifelong discovery. All those platitudes that we aspire to, I see them being practically achieved. As well as people being kinder to each other. I see this as the real language of civility. Once I had to give a presentation about TOC to a group of teachers. We put on a play with some of my students. And afterwards the students were saying, “Mrs. Suerken, what’s going to happen? This is so effective, there won’t be any problems left.” I thought, that will probably never happen! But that’s the way they saw it. I wish you could come to our conference in Serbia in May! We’re going into Thailand this month through an organization called the Girl’s Brigade, like the Girl Scouts. We have somebody in Singapore who is taking it into the sports council, into sports applications. We’re in Malaysia. My new director in the United States, he’s going to start a private school next fall and he’s writing all of the curriculum based on TOC. Really, I think we’ve just touched the tip of the iceberg.

*The foregoing interviews were conducted in 2004, and appear in the 20th and 25th anniversary editions of The Goal: A Process of Ongoing Improvement, by Eliyahu M. Goldratt and Jeff Cox, published by North River Press. All rights reserved. ©2004 North River Press*