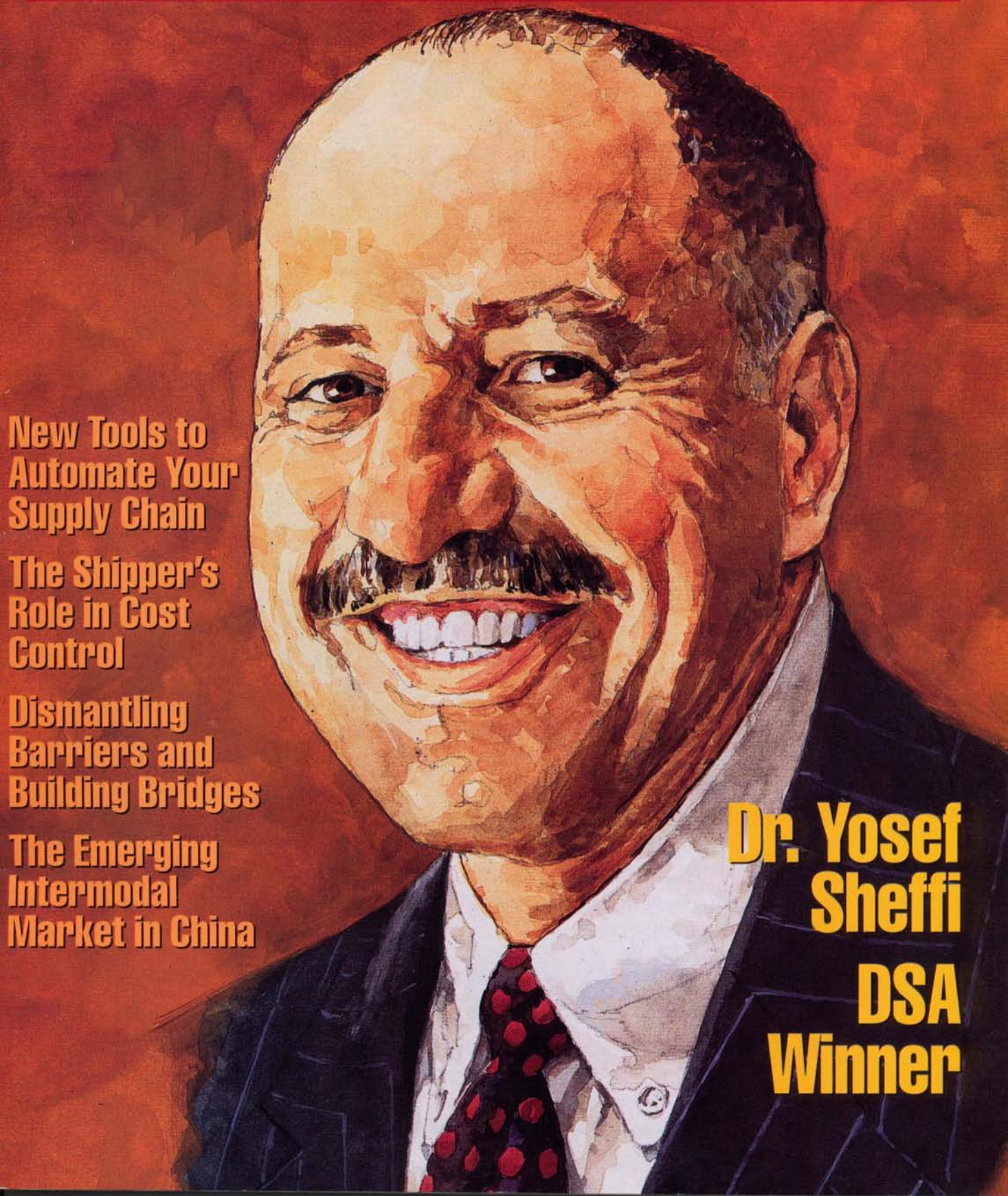
INTEGRATED WAREHOUSING & DISTRIBUTION: YOU CAUGHT THEM RED-HANDED. NOW WHAT?

A PENTON PUBLICATION

DECEMBER 1997

Transportation & Distribution

THE MAGAZINE FOR SUPPLY CHAIN MANAGEMENT



New Tools to Automate Your Supply Chain

The Shipper's Role in Cost Control

Dismantling Barriers and Building Bridges

The Emerging Intermodal Market in China

Dr. Yosef Sheffi

DSA Winner

TELL HIM HE CAN'T, THEN STAND ASIDE

DR. YOSEF SHEFFI, CLM'S 1997 DISTINGUISHED SERVICE AWARD WINNER, IS BOTH AN MIT PROF AND A SHREWD BUSINESSMAN. LOGISTICS PROBLEMS HAVE A POWERFUL FOE.

By Tom Andel, senior editor

There's one sure way to get something done. Tell Yossi Sheffi it can't be done. For example, colleagues at other universities were amazed that Sheffi was able to launch a new degree program and get all the university approvals for it within six months. (Prof. Jim Masters of the Ohio State University (OSU) commented "it would have taken us 20 years to start a new program.")

Under Sheffi's leadership, the MIT Center for Transportation Studies launched an innovative logistics masters degree—the first interdepartmental Masters of Engineering degree at MIT. But this is only the most recent example of his "academic entrepreneurship." He has taken an active role in starting many educational, research, and industry-outreach programs at MIT.

"Some of the best successes are achieved when people don't know something is impossible," he comments. "It is true in business, in bureaucracy, and even in science."

Larry M. Sur, president of Schneider Logistics, presents Dr. Yosef Sheffi with The Council of Logistics Management's Distinguished Service Award. Sheffi is the 33rd person to be recognized with this annual tribute to individuals who have made significant contributions to logistics management.

The fact Sheffi ended up in logistics seems remarkable, considering he started out as a civil engineer. This was after flying for the Israeli Air Force from 1966 to 1971 and then again in 1973. He got his B.S. degree from the Technion in Israel in 1975, and both his S.M. (1977) and Ph.D. (1978) from MIT. But when he came to MIT it wasn't to learn how to build roads.

He took courses in operations research and computer science and started working on network optimization theory and algorithms. Originally, this work was applied to the study of urban transportation networks. Much of his research in this area was published in his book *Urban Transportation Networks: Equilibrium Analysis with Mathematical Programming Methods* (Prentice Hall, 1985).

From theory to practice

Dr. Sheffi started his teaching career in 1978 as an assistant professor of civil and environmental engineering at MIT's School of Engineering. But his hunger to see the result of his research actually applied was not satisfied. That's why he began to apply some of the same mathematical and computer methods to freight transportation problems.

He started working with trucking companies on load planning optimi-

zation, developing methods for improving service and simultaneously reducing costs.

"I came to freight transportation and logistics from the mathematics side," he explains. "The same math used to optimize urban transportation networks can be used to analyze a carrier's service network or a complex supply chain."

And analyzing and developing new concepts in supply chain networks is where the logistics profession needs to focus, he believes, since it is the cornerstone of recognizing logistics as a crucial component of each enterprise's competitive strategy.

"When you think about logistics," he suggests, "think about extended enterprises along the entire supply chain—about flows of products, information, cash, and knowledge, and about agile and flexible structures. Developing that professional orientation is the role I see for MIT's Master of Engineering in Logistics program."

He adds that the recognition of logistics' strategic role is already taking root in academic programs around the country.

"CLM's Educators' Conference attracts logistics professors from around the globe," he notes. "It's growing even faster than the CLM annual meeting, and more and more universities are looking at logistics as an area of specialization. If MIT will get the number and quality of applications I expect we will, you will see many logistics degrees or 'majors' popping up all over the place."

But Sheffi doesn't want MIT's program to offer the same content as logistics programs based either in business schools or in industrial engineering departments. MIT's is a nine-month program, designed to be analytical and computer-based. It will start quickly with the basics—"what is logistics?"—then get into strategies for going to market, inventory management and elimination, international logistics, and concepts in supply chain management. It will even get into information systems implementation in the process of integrating value chains. The goal is to help students learn many of the organizational issues and business process changes associated with implementing enterprise resource planning and supply chain management software applications such as those from SAP, I2, Oracle, People Soft, Manugisitcs, and many others.

Another unique feature of the program is a new effort to develop a course in Design for Logistics. "Sixty to ninety percent of logistics costs are already cast in stone by the time the first prototype or 'Job 1' rolls down the assembly line," Sheffi comments.

In cooperation with professors from MIT's Mechanical Engineering department, the MIT Center for Transportation Studies hopes to develop a course that will introduce logistics considerations such as postponement, stackability, packaging, part service, recycling, and others into the product design process. Graduates of the logistics program will know that to really have an impact on the logistics costs of manufacturers, they will have to understand and get involved in the product design process.

Tomorrow's logistics professional will also need to understand the role and capability of emerging information and communication technologies.

"Global positioning, the Internet, collaborative computer-based processes, EDI, geographical information systems, low earth-orbiting satellites—all of these will change the requirements of the logistics profession," he adds. "Our graduates will have to spec and design the processes that can use those systems effectively."

Strong on business

Dr. Sheffi maintains a much broader point of view than that of a typical academic. He is an entrepreneur at heart. While fulfilling all his research, teaching, and administrative duties at MIT, he co-founded a software firm—Princeton Transportation Consulting Group (PTCG)—in 1987. The firm was a pioneer in developing large-scale computer-based decision support systems which enabled motor carriers to perform automatic dispatching, routing, and scheduling over vast networks. These technologies, based on university research, lead to lower operational cost, lower driver turnover, and better service for many of the industry's leading carriers using these systems.

"Even after we developed the first real-time optimization system for truckload carriers," he muses, "some researchers thought problems of this magnitude couldn't be solved in real time."

In 1992 he became the firm's principal and installed new management, improving dramatically the firm's business results. In 1996 he sold PTCG to The Sabre Group (a subsidiary of AMR, which also owns American Airlines), but continues to serve as a consultant. Following the sale, the Boston office of Sabre (the former PTCG) accelerated its growth and established a thriving logistics software business.

Many of Dr. Sheffi's innovative ideas regarding logistics processes were implemented by LogiCorp Inc., which he co-founded in 1988. The firm was one of the first in the US to provide third-party logistics services, and the first non-asset-based contract logistics provider. The firm started as a subsidiary of the automotive division of Rockwell International and was built on two years of market research

and a needs-assessment conducted with a friend, who ended up as the president of LogiCorp. Sheffi served as a technical and business process consultant. Then, in 1991, Sheffi and his partner joined forces with an investor and bought the company from Rockwell.

"Large companies, in general, are not always the best home for small entrepreneurial operations," he explains. "In addition, there was a suspicion among the motor carriers providing the transportation capacity for LogiCorp, that there was a bias towards diverting business to truckers who were Rockwell's customers."

The buy-out proved to be wildly successful. LogiCorp has grown so fast that Sheffi and his partners could not keep up with the pace.

"New business, new employees, and new service offerings were coming fast and furious," he explains.

From 1991 to 1994, the firm grew ten-fold, which was hard to manage for a service business. They finally sold the company to Ryder Integrated Logistics. Since then, LogiCorp has continued to grow as part of Ryder. Sheffi says the fit was a natural.

"Ryder was strong in the asset and project management business, and the LogiCorp acquisition helped them grow the knowledge, non-asset-based side of the business. In fact, Ryder top management has said that even though they made hundreds of acquisitions, LogiCorp was their best."

Logistics future

Sheffi says industry should expect competition from non-traditional sources and channels—and logistics will have to take a leading role in waging the battle. For example, the competition for supermarkets in many urban areas is coming from Internet-based delivery services. Dell's sophisticated build-to-order and direct-distribution of computers proved very successful, challenging retail-based channels. And Barnes and Noble, the large book store chain, had to imitate a cyber-competitor, Amazon.com, in order to respond competitively to the new entrant, who could sell books without keeping distributed inventories at retail stores.

"Other changes will come in the way we perform tracking and tracing," he adds. "We'll trace at the individual part or item level by imbedding communication capabilities in the packages we ship—the way stores add security and inventory control devices to individual items. If the item can transmit location and status through low-earth-orbiting satellites, or a GSM network, shippers will be independent of the carriers in terms of tracing. Thus a shipper will know where each truck carrying its shipment is, when the shipment was picked up, and when it is delivered, without any digital feed from the carrier."

Dr. Sheffi is writing a logistics textbook and has already started on a separate management book on supply chain alignment. He also plans to develop further MIT's logistics program and to link with several universities in Europe, the Far East, and South America. He envisions creating a logistics "cyber learning community" of professors and students from around the globe. He is also looking at several projects outside the university, dealing with communication and software for supply chain collaboration.

Longer term, Sheffi sees huge opportunities in emerging markets in Eastern Europe, South America, and the Far East. In a throw-back to the start of his academic career, Sheffi says he would like to get involved again in devising solutions to urban congestion. Many of the problems stem from truck traffic in and out of urban areas and the solutions, he believes, will require new public-private partnerships. Part of the solution may involve the development of "logistics centers" on the outskirts of urban areas, which will help consolidate the flow of trucks and increase utilization. Another part of the solution involves the development of better transit systems.

"I see a convergence of interests between motor carriers—and the shippers who use them—and the traditional transit advocates," he says. "Both would like to get more and more passenger cars off the road. Transit advocates are driven by environmental and social objectives and logistics professionals want delivery operations to be less expensive and faster. You see, trucks do not have an alternative to the use of the road, but people do—if government will provide it."

In tandem with such efforts, Dr. Sheffi advocates congestion pricing, involving the use of electronic sensors to charge vehicles for road use in rush hours. The collection process can be done automatically and unobtrusively. In fact, the charges can vary by time of day, location, and the level of congestion. This will also ensure that commercial vehicles will get the priority they need, at the time they want, for the use of the road. But they will have to pay for it. Private automobile drivers who will choose not to pay should have realistic transit and other alternatives. Naturally, this may encourage car-pooling, tele-commuting, flexible hours, and other methods of congestion relief.

"These ideas are neither new nor original," he adds, "but their time is fast approaching."

Yossi Sheffi's contributions to logistics were recently summed up at the Council of Logistics Management's annual conference in Chicago. In presenting him with CLM 's 1997 Distinguished Service Award, Larry M. Sur, president of Schneider Logistics and chairperson of the award selection committee, said "He has proven that industry experience can make one a better researcher and teacher while a strong theoretical background can make one a better practitioner."

For someone who admits he came to logistics a little late, it seems Yossi Sheffi has made up for lost time. Maybe somebody told him he'd never make it in logistics. **T&D**