Finding the Yellow Brick Road: Part 1, "Toto, I Have a Feeling We're Not in Kansas Anymore!"

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Sometimes, there is more truth in fiction than in publicly available data. This story by Warren B. Powell, a leading consultant on truck dispatching systems and Donald E. Mayoras, the president of a trucking company, about the implementation of a truck dispatching system, is too long to run as a single article; instead it appears in serial form. This is the first installment of eight.

"Finding the yellow brick road" is a story of a truckload trucking company, Allegheny Motor Carriers, which, like many similar companies, finds itself in an increasingly competitive marketplace where it is becoming harder to make money. The operations of a truckload motor carrier can seem deceptively simple. Shippers call in with loads to move from one city to the next, typically covering distances from 300 to 2,000 miles. The load requires the entire truck, and Allegheny provides the driver, tractor, and trailer. After delivering the load at the destination, Allegheny must find a new load for the driver. Most areas of the country have an imbalance of freight (either more loads originating than terminating, or vice versa). If there are too many loads, the problem is to choose the right load. If there are too few, then it is often necessary to deadhead, or reposition, drivers with empty trucks, to more promising locations.

Allegheny was very profitable in the '80s when it was much smaller. As it has grown, it has become much harder to coordinate the different sections of the business. The management team, all experienced trucking professionals, finds itself struggling to find the determinants of profitability. The president prefers participative strategies based on the principles of total quality management. The operations people would like expensive technologies, such as satellite communication that provides two-way communication with drivers at any time. Others are intrigued by the potential of mathematical optimization for assigning drivers to loads. Optimization models allow the computer to consider

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dozens of issues and balance the needs of every driver and every load, all at the same time.

As the management team becomes intrigued with optimization models, it invites Professor Walter McCormick to give a presentation on optimization for the truckload industry. Walter struggles to convey the strengths and limitations of optimization to the company. Despite many questions, Allegheny decides that this is its best option and that it should move forward with optimization.

The analogy between Dorothy in *The Wizard of Oz* and the path followed by many companies looking for improved efficiencies is surprisingly close. Management teams are increasingly looking to mathematical optimization as a way of solving their complex problems. Professor McCormick represents the beneficent and powerful Wizard of Oz, who is both frightening (mathematics replaces the fire and shouting) and comforting (in his understanding of this complex technology). Of course, those of us who are familiar with the original story also know that the Wizard is really a phony, a man behind the curtain manipulating knobs and shouting into a speaker.

And yet, is he? After all, the scarecrow does indeed discover he is intelligent, the tin man realizes he has a heart, the lion is truly courageous, and Dorothy does make her way home. In other words, the Wizard succeeded in making these people realize that they already had these qualities in themselves. In a similar manner, optimization tends to lead the way, giving people the belief that they now have the tools to conquer the world. The real success, however, lies not in the optimization model per se, but in its ability to enforce discipline and provide a way of thinking through complex problems. In most cases, the real solution comes from within the company.

Allegheny is a composite company, derived from a number of companies that have worked with Castle Laboratory at Princeton University over the years. The characters are fictitious, with two notable exceptions. The president, Dan Manning, is modeled on Don Mayoras, who has been president or CEO of a number of major trucking companies, and Walter McCormick is unabashedly modeled after Warren B. Powell.

It is June 29th at Allegheny Motor Carriers, a medium-sized truckload carrier based in Allentown, Pennsylvania. Allegheny grew rapidly through the '80s, in part because it acquired two smaller carriers that extended sales coverage to the west and to the south, Greenline Express in Anderson, Indiana and Blue Grass Lines out of Louisville, Kentucky. The Blue Grass headquarters in Louisville contained all dispatch operations and most of the sales force; a smaller sales office operated out of Memphis, Tennessee. Greenline, on the other hand, used regional dispatch centers located in Anderson; Des Moines, Iowa; and Dayton, Ohio. These centers each contained a small sales force responsible for staying in touch with local customers. The Anderson office managed larger accounts. After acquiring the two carriers, Allegheny continued to maintain their regional terminals as driver domiciles and sales offices, hoping to maintain good customer contact and the excellent relationship each of the original carriers had enjoyed with its drivers. However, in 1986 the company centralized the dispatching function in Allentown to improve its coordination of the overall fleet. Following the acquisition of Greenline in 1982 and Blue Grass in 1985, Allegheny has continued to grow at a rate of over 15 percent per year. It has also managed to retain most of the original shippers while making the transition to a common name.

Daniel Manning, president of Allegheny, has arrived early at his office on Monday morning. Dan was hired in 1984 following an initial public offering when the founding family decided to cash out. At 8 AM, he is meeting with the officers and regional managers to review quarterly results. Despite its high growth, the carrier faces intense competition and has not been able to push through some rate increases needed to cover increased driver and fuel expenses. Profitability is starting to suffer, and management is starting to get worried. The business practices that were so successful in growing the company were not producing the profit margins needed to sustain the company.

Dan, "Hey Barbara, can you get me copies of the handouts for the meeting this morning?"

Barbara, his secretary since he took the position in 1984, brought in a neatly bound set of tables and graphs. Dan took the booklet and flipped through the pages slowly. Tom Gorman, Dan's chief financial officer and closest friend at Allegheny, strolled in with a cup of coffee in his hand and settled into a large leather chair in a corner of the office.

Dan looked up from the booklet. "When I started here, we had only 350 tractors. Now we are running over 1,000, handling almost 2,500 loads per week. We have grown at the expense of a lot of other carriers who have gone out of business in the last five years. But last week we lost a major account, and two months ago we lost three smaller accounts—those guys had shipped with us for over 10 years! Said we just weren't the same company—the drivers weren't as good. I wonder if the sales rep was staying in touch. And the drivers . . . why do they keep switching companies?"

Tom smiled amid Dan's musings and sipped from his cup.

Barbara knocked and poked her head into the room. "People are arriving for the meeting. Matt just arrived, and Ken and Bill are already waiting in the room."

Dan took a last look at a few of the charts and headed into the quarterly meeting.

Attendees at the Meeting

Dan Manning, President;
Tom Gorman, Chief financial officer;
Matt Peterson, Vice-president of operations;
Ken Richards, Vice-president of sales;
Bill Johnson, Vice-president of management information systems;
John Breswick, Director, driver management;
Michelle Corwin, Director, customer service;
Larry Michaels, Director, driver dispatch;
Mike Norris, Regional sales representative;
Albert Lindner, Regional sales representative; and
Frank Townsend, Regional sales representative.

Dan entered the room and walked around the table, shaking hands. He stopped briefly to talk to Mike Norris, a recent hire. Finally, he took his seat at the end of the table.

"Good morning everyone. Let's see if we can make this a quick meeting. Tom, why don't you start us off."

Tom Gorman had been chief financial officer for four years, coming to Allegheny from one of its accounts. Tom had prepared a few overheads. He stepped to the projector at the end of the table.

"Let's start with the good news." He placed his first slide on the projector and adjusted the focus. "Here are quarterly revenues over the last eight quarters. We are up eight percent compared to last quarter and up 13 percent compared to the same quarter a year ago. Total volume is up 17 percent compared to the same quarter last year."

Dan leaned forward in his seat. "Why are revenues up only 13 percent if volume is up 17 percent?"

Tom turned, "Rates are down, and we have been picking up shorter loads than in the past. Our revenue per mile is running at about $1.12, compared to $1.14 for all last year. And our new ShopMart account is mostly freight running between distribution centers and warehouses. The average length of haul is only about 400 miles—half our average."

Continuing, he put up a new slide. "This is our profitability over the last four years and year-to-date for this year. As you can see, we are starting to slide a bit. Our operating ratio is now running about 96 percent, compared to 93 percent for all last year and 90 percent or better in the previous years."

Dan jumped in. "What's happening? We ran 95 percent in the first quarter and 94 percent in the last quarter last year and 92 percent in the third quarter. Are you telling me we have lost four points in our operating ratio in the last year alone?"

Tom was trying to focus the slide and turned around to answer him. "That's the way the numbers look."

"What is the reason?"

Tom shuffled through some more slides and put a new one on the projector. "Well, one reason is certainly pressure on rates. We are down to around $1.12 per mile this year compared to $1.14 for all of last year."

"But that is less than two percent. If that were all, we would be running an OR of better than 94 percent. And fuel prices have been holding steady."

Tom shrugged his shoulders. "There is no one reason. Perhaps someone else has some ideas." He returned to his seat. Dan turned to Ken Richards. "Kenny, how about summarizing sales for us."

Ken remained at his seat and passed out a sheet of summary statistics. As the sheets went around the table, he started reading some key statistics.

"As Tom pointed out, volume is up over 17 percent compared to this time last year. We are now running about 2,475 loads per week, compared to 2,115 for the same period last year. Freight out of the eastern region is about flat, but our western and southern regions are up 22 and 19 percent. We have also landed two new national accounts, ShopMart and Munson Parts." He tipped his hand toward Mike Norris and Albert Lindner, who had landed these new accounts. "We have also attracted 30 new accounts, which are helping us spread our coverage in the midwest and south. We have done all this without adding any sales reps in the field, but I hope to get my request for three new reps approved soon." He glanced at Tom Gorman who simply nodded.

Dan interrupted at this point. "What types of rates are you getting on this new freight?"

Ken looked down at his notes. "I don't know about the new accounts, but our overall rate is running about $1.12 per mile, as Tom said. Our rates out of the east continue to be low, about $1.09, but the western region is getting almost $1.15. The southern region is operating around $1.12."

Dan continued. "What did you bid on the Munson account?"

"We could only get about $1.09 on that account, assuming they give us the freight they promised. But if we tried to get any higher, we would have lost the account."

Tom noted, "That's pretty tight. Fully allocated, our costs are running almost $1.08. There's not a lot of profit in that account."

Ken sounded a little defensive, "Look, this account is getting us some really good presence in the auto parts market. If we can provide good service, we might pick up additional business. Also, I figure our operating costs are only about $0.95 a mile; that $1.08 figure includes overhead, and this account shouldn't add to overhead."

Matt Peterson jumped in at this point, "Listen Ken, I think this new account is great, but we are getting more Texas freight out of them than we expected. I had to move three drivers the other day from Dallas to Shreveport to find some freight—that's over 100 miles."

Ken looked at another chart. "This table shows that your average deadhead for loads in Texas is about 60 miles—that doesn't look too bad."

"Yes, but that's because we are moving empty drivers in Houston over to Lake Charles (Louisiana, about 90 miles away). The problem is, we already have enough drivers to handle the Lake Charles account. We are having to move them up to Shreveport and over to New Orleans. If we didn't have all those empty Houston drivers, we wouldn't have to do these other moves."

Ken looked a little pained. "Look, this sort of stuff is always happening. I have to run on the information given to me. My target for this quarter was 510 loads per day, which we have exceeded. I think my group has done an outstanding job. And we did look at where the freight was going, but right now my numbers don't tell me that we have a problem with loads into Texas."

Dan broke in at this point. "Ken, can you get some backhaul freight out of Houston or San Antonio to help this situation out?"

Ken looked doubtful. "We can certainly try, but I don't have sales reps in that region. But we certainly want to start working on that market."

Dan brightened up. "Sounds great. Let's see if we can't get some presence down there. We've got a great service reputation, and there's a lot of new business moving down along the Mexican border. Maybe we can take advantage of that."

Ken made some notes. Dan turned to Matt Peterson.

Matt stood up and went to the overhead projector. "This time last year, we were running 878 tractors. Now we have 1,045. We have had to add four new dispatchers, one in Anderson, one in Dayton, and two in Louisville. We are on a bit of a learning curve with these new dispatchers. Our on-time performance is down a bit . . ." "He checked his notes again. "We are running about 95 percent on-time pickup performance and 92 percent on-time delivery. That compares to about 97 percent and 95 percent this time last year."

Dan was jotting down some notes and looked up. "Why the drop?"

"Sometimes we have to scramble for drivers. Sometimes it seems like we get a bunch of loads booked into Louisville and Dayton and have to really move drivers to cover them. Some drivers just can't get there in one day." He looked back at Dan, who simply nodded. Matt went on.

"Our loaded ratio (total loaded miles divided by total loaded and empty miles) is down to 89 percent. We used to run about 92 percent, but we just don't have enough backhaul freight for some of our new accounts. For example, the Munson account."

Tom Gorman jumped in, "Are you sure your customer service people are doing as much as they can? How many loads are they booking each week?"

Matt quickly responded. "Each customer service rep is now assigning over 110 loads a week. Last year, they did about 90, and in the old days the norm was about 60. In the morning when the drivers are calling in, we barely have enough time to record their check calls and give them loads. In some places, we don't always have a load, and we have to get the driver to call in every hour. We try to make sure we don't deadhead a driver more than 60 miles, but sometimes we just don't have a choice. Also, the new dispatchers don't know their areas very well."

Dan motioned toward Matt, "What are their objectives?"

Matt leaned back in his chair. "Our biggest problem is driver turnover." He nodded toward John Breswick, who gave a knowing smile, acknowledging his major problem. "We try to make sure that drivers get good loads so they all get at least 2,200 miles per week. A lot of times, a driver will ask for a load that will get him home, and we try to accommodate that as much as we can. Next, we want to make sure we don't miss any loads. Sometimes, we'll send a driver out to pick up a load and pull it into the terminal, just to get it out of the shipper's yard. This adds miles but allows me to get a driver under the load who wants to go that way.

Dan interrupted, "What about empty miles?"

"Of course we try to keep empty miles down. We do our best to keep deadheads under 60 miles, but if it looks like a driver is going to get stuck in a region, we may have to move more than that. Sometimes, we will checkerboard drivers out of a region. A good example is the Houston drivers I was talking about earlier. We move drivers empty from Houston to Lake Charles to handle loads out of Lake Charles. At the same time, we will take Lake Charles drivers and move them over to New Orleans or up to Shreveport."

Dan pursued the issue further. "What about across regions? Will you move an Ohio driver empty into Indiana?"

"Sometimes, but the customer service rep doesn't show the Indiana loads on his screen. But if we start backing up drivers in Ohio, he'll talk to the Indiana rep and see if she has some loads she needs to cover."

Dan frowned a little and made a few marks on his pad. Looking up, he turned to John Breswick, who was responsible for managing the drivers.

"How about a report on our driver situation?"

John had over 30 years of experience in trucking, 10 spent on the road himself. He didn't follow all the economic analysis that the younger managers depended on but felt that he had a true understanding of the issues important to the drivers.

"Dan, as you well know, our biggest problem is driver turnover. This quarter, our turnover was over 110 percent!" He paused, since he had only just calculated this number and knew that it would surprise a management group accustomed to lower turnover. There was a murmur around the room. Satisfied, he turned back to his notes. "We have hired over 300 drivers in the last quarter alone, some to fill the new tractors but most to keep our existing fleet running. At this rate, we may finish the year with the driver turnover pushing 120 percent. This is still pretty good compared to some of our brethren in the industry—a lot of guys are hiring two drivers per year for every tractor. I know one carrier who is hiring three drivers for each tractor. So compared to industry, we are still doing pretty well."

Dan interrupted, "What are we doing that is special?"

Matt jumped in, "Well, part of it is the dispatchers really pay attention to the drivers. We have organized the drivers into groups of 50. We call them driver fleets and treat them as a team. Every driver always calls in to the same dispatcher, and it is the responsibility of that dispatcher to get to know the driver. We try to make sure we get good listeners so the drivers feel that someone cares about them."

John continued. "The driver teams are the key. The dispatchers' job is to know all their drivers, where they live, who their spouses are, how many kids they have, what they do in their off hours, where they like to run, how they perform, when they need to get home, how long they have been out on each trip, and so on."

Matt went on. "We try to make sure that every driver gets home every two weeks, although we have trouble doing it. We also recognize drivers who do well, such as the Six Mpg Club (the drivers who maintain more than six miles per gallon with their rigs) and the Safe Driving Club. The drivers feel a sense of achievement. And the good drivers get to keep their own trucks—keep their own stuff on the tractor and nobody else sleeping in their bunks. It helps develop a sense of responsibility."

"The driver domiciles are also pretty important," added Larry Michaels. "Drivers are paid locally at their domicile terminals. Also, when they pick up their checks, the manager gets a chance to talk to them to find out how they're doing."

Dan asked, "What is our hiring cost?"

John looked toward Tom Gorman, who pulled out another table, "It is running about $3,000 per driver hired. This is up a bit from previous years, but sometimes we have to pay moving expenses, and we are getting more trainees who don't pass our training program."

Finally, Dan turned toward Bill Johnson, "What's the situation with the computers?"

Bill looked around the table. "Over the last two years, we have upgraded to the new AS/400s, and we are running a new dispatch system. People seem pretty happy, and response times are good. I think we can handle about 50 percent growth before needing more capacity.'' Bill was especially proud of the on-line system. Although they had started with an existing package, Bill had modified the system with the help of one of his programmers so that he felt it was really his own. Among his revisions was a new screen that would display loads and drivers in the same area. The design helped dispatchers match drivers to loads.

Tom Gorman added, ''MIS costs are running about 1.5 cents per mile. This is higher than in the old days, but low by industry standards. I think we are in pretty good control here.''

Dan smiled, ''Good. Nice work Bill. We really appreciate the job you've done with the dispatch system.'' After making a few notes, he looked up and addressed the entire group, ''We're making money, but not as much as before, and based on Tom's numbers, we are heading downhill. Our growth rate has been exceptional, but we don't seem to know how to make money with the new freight. I am also concerned by the rise in driver turnover and the loss of some old accounts. If we don't do something soon, we may be losing money in a few years. What do people suggest?''

(To be continued.)