Beyond Transportation Excellence: Lessons from the Pandemic

Ann Drake President and Founder, Lincoln Road Enterprises

Lincoln | Road

Good evening and thank you for that warm introduction, Dean Cornelli—and thank YOU for the example YOU set of investing in women as business leaders and people. You, the Kellogg School, and Northwestern are changing the world for the better.

It's a pleasure to be with you all tonight. For almost 40 years, the Patterson Lecture has been THE place for transportation leaders to share their views on the industry and its future. I'm well aware—and very honored—to be standing in the same spot as Jeff Silver, Chris Lofgren, Alan Mulally, Matt Rose, Norm Mineta, and Fred Smith.

Thanks, too, for asking me to talk about transportation and the supply chain tonight. When Hani, Bret and I first tossed around this topic some months ago, none of us knew how timely a subject it would be. I promise you I did not gin up the current crisis just to get you here.

My personal connection with Northwestern University's Transportation Center goes back twenty years to 2001, when—after speaking on leadership in one of Leon Moses's classes—he invited me to join the Business Advisory Council. Eventually, I became Vice Chair of the BAC, working in partnership with Justin Zubrod—one of my favorite mentors.

But my connection to Northwestern and engineering goes further back. My father grew up in Wilmette and graduated from New Trier. He went on to Iowa State to become a chemical engineer. My grandfather was an accountant for "old man Ryerson," as Dad put it, of Ryerson Steel, and a serious inventor late in life. I didn't find out until after my father and grandfather both died that my grandfather was a graduate of the "School of Commerce" at Northwestern, in 1917. Eventually, my own professional path also led to Northwestern. In 1982 I joined the Executive Master's program, earning my MBA from Kellogg in 1984. That was truly a life-changing educational experience, and I'm forever grateful to Northwestern for the impact it's had on my life.

I like to say that logistics is the world's *second*-oldest profession. It's definitely been around at least since Biblical times, and no doubt longer. Truly, the story of civilization is the story of trade and transport. Written language, the invention of currency, the building of roads, the rise of cities, the sharing of cultures, knowledge—and, as we now know, viruses—all have been driven by transportation.

A sidebar here: Not everyone agrees on the definition of terms like "logistics" and "supply chain." But I'll throw down a definition of logistics from the Council of Supply Chain Management Professionals. It says logistics is "the process of planning, implementing and controlling procedures for the efficient and effective transportation and storage of goods ... from the point of origin to the point of consumption." Historically, it's been easy for people to conflate "logistics" and "supply chain." And I'll point out that even the Council of Supply Chain Management Professionals has changed its name twice since I joined. When I came to the industry in the 1980s, it was known as the National Council of Physical Distribution Managers. Then it became the Council of Logistics Managers—a reflection of how this field has evolved.

But to me, "supply chain" encompasses every single aspect of a complex process that can start with raw material coming out of the ground and end with something in a customer's hand many thousands of miles and months away. Which includes sourcing, forecasting, manufacturing, assembly, data gathering, data analytics, artificial intelligence, currency fluctuations, politics, robotics, transport, climate change, labor issues, e-commerce, retail environments ... and more. It even includes ways of thinking about the world—and about our connections to one another—which is part of what I want to talk about tonight.

I literally grew up in the logistics business. In 1960, my father, Jim McIlrath, founded Dry Storage Corporation, a public warehousing company on Chicago's South Side. Just a few months later, he added trucking to the small enterprise. I worked a summer job there in which I kept inventory for Nyfty back-to-school paper products using stock-keeping cards, a pencil, and an adding machine. I processed orders by tearing apart five-part carbon forms and routing them to various departments.

Despite that illustrious start, I didn't initially consider transportation logistics as a career and became a high school English teacher after graduating from the University of Iowa. I didn't join the family business until 1990. However, as an only child and my father's only "son," I was an engineer-in-training the first 20 years of my life. I remember getting a chemistry set as a kid and doing science and math projects alongside my father. He taught me about astronomy and the periodic table of the elements. He showed me how to use a slide rule. He taught me his engineer's approach to solving problems: *Start with a yellow legal pad, Ann. Define the problem you're addressing. Write out everything you know about the situation. List all the constraints.* When you have an engineer for a dad, you do "fun" things like go out to O'Hare to watch the military planes land. Back then, a parachute would thrust out from the back to help slow the jet planes down. I also remember standing on the overpass at Harlem Avenue watching construction crews build the Kennedy expressway, and Dad telling me, "This is going to change everything in Chicago."

BUT ... I was also a girl. I grew up in Park Ridge, Illinois, in the 1950s and 60s. I went to a giant public high school. And, while Dad might have been teaching me the periodic table of the elements at home, in Home Economics class I learned to make an apron and a jewelry box.

Decades later, when I finally joined the family business in 1990, we talked about ourselves in terms of function: We had warehouses and we had trucks. We stored boxes and we moved them. Yet the phrase that ultimately drove our business—and my career—was "supply chain management." Supply chain management was a figure of speech that started popping up in the 1980s. The story goes that a consultant at Booz Allen Hamilton invented the term during an interview with the *Financial Times*. He was trying to convey something about the whole business process and customer experience journey that was bigger and more complex than people realized.

A quick trip through history here: In the first decades of the 20th century, an Austrian biologist named Karl Ludwig von Bertalanffy—which has got to be one of the great names of all time—was trying to do for the life sciences what Einstein wanted to do for physics: Define a unified field theory to explain complex phenomena. What von Bertalanffy was up against was the idea of "reductionism." For hundreds of years—we can thank Decartes for this—Western science had leveraged the idea that phenomena can be understood as the sum of their parts, like a machine. Reductionism says that we can take the world, shatter it into functional bits, and study each bit individually. Then we can reassemble the machine, assuming the individual bits will behave in ways we can predict.

But by the beginning of the 20th century, reductionism was faltering. Scientists studying things like subatomic particles couldn't explain what they saw in the lab using classic or Newtonian physics. It was impossible to study the particles in isolation; their interactions with the other particles determined how they functioned. They were, absolutely, unpredictable!

von Bertalanffy said: To understand, look at the *interactions* among the pieces as well the individual pieces. It's not a tidy universe, people. Sometimes a phenomenon is *more* than the sum of its parts. The name he gave to this approach, which was a paradigm shift in Western thinking, is "general systems theory."

I remember reading Peter Senge's *The Fifth Discipline* and thinking, "OMG. *Yes*." Senge applied systems theory to business. But it's changed how we look at a lot of things besides business: Climate. Engineering. Psychology. Urban planning. Politics. And so on. Senge pointed out how you could find the implicate order in seeming chaos by looking at the system. It may not be a tidy universe, but it is a connected and interactive one, with feedback loops within feedback loops.

This spoke to me … because I was already starting to have the experience at DSC Logistics that we and our work were more than siloed *functions*. Historically, companies thought about logistics and their supply chain as something linear: Stuff starts here and goes there. But I was beginning to see it as a kind of ecosystem, with all these interrelationships … all this potential … with different parts of the system impacting each other and owning their interrelatedness.

This idea faced headwinds from the get-go. Customers were accustomed to thinking of logistics as pure *overhead*. It was a back-office function, and excellence was defined as accuracy, control, and cost-effectiveness. Customers were also used to viewing their logistics provider as strictly an order-taker:

[PRETEND TO TALK ON A PHONE] *Hello, Ann? Get this box to Wal-Mart in Omaha, Nebraska in 5 days*." Then we'd say, "*Could we also look at the other orders going to Nebraska? Because we think we can help you consolidate a more effective way.*" Collaborative partnerships. "*Please see us as your team member or thought partner. Consider bringing your supply chain person into your board room.*" In other words, think about supply chain as a *business strategy*. It's not just your *product* competing against the other guy's product; it's your *supply chain* competing against the other guy's supply chain.

At the same time that we were challenging the silos in our customers' organizations, we were also challenging the culture inside DSC. I was inspired by Stephan Haeckel, who was Director of Strategic Studies at IBM's Advanced Business Institute. He taught about moving from a make-and-sell business mindset to a sense-and-respond business mindset. In other words, in an environment where change is constant and unpredictable, how do you prepare for demands you can't anticipate? I thought this fit where the whole supply chain world was going. In a sense-and-respond mindset, business becomes an adaptive system, not something driven by a five-year plan or by forecasting more perfectly. Flexibility over predictability. Responsiveness over planning. Dynamism over control. Collaboration over competition.

I have to say, all of this was like spitting into the wind. My key advantage was that I came from outside the industry. So I wasn't steeped in traditional thinking about logistics. I just had this gut sense that opportunity lay in breaking down barriers—everywhere. More collaboration, less competition. More "we;" less "mine."

Honestly, it's where I want to see us go as a planet … but I'm getting ahead of myself.

The changes going on at DSC Logistics and in our world were reflective of bigger changes afoot. Over the last three decades, lower-cost parts of the world—China, South Korea, Taiwan, Vietnam—started coming online as manufacturing partners. Globalization has transformed the supply chain. Yes, offshoring has held costs down. But it's also vastly driven up supply chain complexity. For many companies now, the supply chain spans multiple continents and countries, time zones, languages, currencies, political systems, labor laws, and more. Each of these elements increases risk, and therefore vulnerability if something breaks down. It also increases supply chain fragility. Are we actually saving money … by saving money?

Another factor is just-in-time manufacturing. Toyota pioneered this concept in the 1970s, but Dell Computer and Harley-Davidson brought it to the U.S. in a big way. Dell's innovation was to tell suppliers, "I'm not holding inventory on my books anymore. Just get stuff here when I need it." Making the supplier responsible instead of the manufacturer. The pressure to drive down Days of Inventory on Hand has been relentless—until it caught up with us during the pandemic. Shortages of material are one of the reasons the consumer price index has risen 6.2% in the last year, the sharpest increase in 31 years.

Here's another factor changing the game: E-commerce. This has brought us the "Amazon effect." Have you asked your children lately about shopping? Chances are, they think it means logging on and ordering

something, not visiting a bricks-and-mortar location. AND … they expect it to arrive tomorrow. We've gotten very used to getting whatever we want, whenever we want it: A frictionless shopping experience with instant results. This has ignited what one writer called "a supply chain arms race." And this genie is not going back in the bottle. Once we've gotten used to "fast," we like fast. But this means supply chain becomes more of a consumer-facing activity. "Next day delivery" also creates a lot of partially filled trucks driving around, which has implications for the environment. And for retail stores. And for city traffic. And for cost.

Still, all this increasing complexification was working, more or less, until March 2020. If I can borrow the urban legend about boiling frogs, we were sitting in the pot for some time, not noticing how hot the water was getting. It took the pandemic to show us that the supply chain we've tried to think of linearly … logically … as a string of individual bits we could manage and study … is actually an ecosystem—a brittle web of interdependencies in a dynamic environment wherein, if one element changes, the whole system torques. Yes, it is important to be excellent. And in the name of excellence, we've worked very hard to drive out costs, to deliver just in time, to raise expectations, to go faster, to engineer processes to the nth degree, to measure everything perfectly and worship results in metrics. But has that actually gotten us … excellence?

I like to say it took 100 years to get manufacturing right. We don't *have* 100 years to get supply chain right. The pandemic has handed us big lessons very fast. These are lessons we might otherwise have taken a couple generations to learn. Instead, we're getting a crash course. I'm sorry it's taken a pandemic to drive home how vast, vital, and vulnerable the supply chain is. But, as the saying goes … when the student is ready, the teacher appears. What are some of those lessons?

Lesson #1: Respect the supply chain. For years, the most talented young people in business didn't go into supply chain management; it wasn't a path to the C-suite. Today, we're finally seeing the supply chain team in the boardroom. Beth Ford, CEO of Land O' Lakes, came up running the company's supply chain. So did Annette Clayton, CEO and President of Schneider Electric North America. So did Roz Brewer, CEO of Walgreens Boots Alliance, who started in supply chain at Kimberly Clark. McKinsey & Company recently reported that the companies doing the best job of recovering from the pandemic are including their supply chain executives in high-level planning. We are finally waking up to the fact that the supply chain is how *every tangible thing in this world happens*. As *The New York Times* recently noted, "We didn't even have a logistics beat before the pandemic. Now we do."

Lesson #2: We all need to become systems thinkers. We are going to get through this pandemic. But—as one author wrote—"the black swan of disorder is always waiting in the wings." Future shocks are inevitable. I'll propose that climate change will generate a number of them. // The largest source of carbon emissions is the global supply chain. Wal-Mart has acknowledged that about 95 percent of its carbon emissions comes from its supply chain. But Wal-Mart also can't tell you where exactly in the supply chain those emissions are happening because Wal-Mart has so many suppliers.

So, how do we build more resilient systems? The state of California is about to invest millions in revamping its ports and other infrastructure to eliminate bottlenecks. Another source of vulnerability is that we've come to depend on a limited number of providers in countries that happen to be our geopolitical rivals. Some are calling for us to build shorter, more diversified supply chains—what's been called "distributed simplicity." Others are proposing we "re-shore" more of our production capacity to ease dependence on foreign providers. All these choices have merit—and consequences. The point is to think about all the possible ripples before choosing, and to use a bigger metric than cost containment.

Lesson #3: Collaboration is the currency of the 21st century. That's a principle I learned from Dipak Jain, former dean of the Kellogg School. We're so trained to think there's only so much pie available and we must compete for our slice. But what if we assumed we could make more pie? In my work at DSC Logistics, I would watch different profit centers at the same customer company compete against each other. No one was asking them to collaborate for the larger good of the company … to work in the same way with suppliers and vendors. If we keep looking at discrete costs of supply chain elements and don't look at total system costs, we will miss the game. We will keep pitting suppliers against each other in a kind of supply chain *Squid Game* until we bleed everyone dry. I'll propose that collaboration is not the death of competitive advantage, but the way to a future in which agreeing on shared goals and working toward them together creates success.

For decades, the model was to identify a company's core competency and then hire providers to fill in the gaps. Now, mega-retailers like Costco, Wal-Mart, Amazon, and American Eagle Outfitters are buying their own freighters, their own warehouses—even their own ports—to cut risk. If I'm a logistics provider, what do I do with that? How do I turn collaboration into actual value that keeps me a trusted team member?

Lesson #4: Practice transparency. The world is awash in data. But we have too much in some places and too little in others. One factor slowing our recovery in the current crisis is difficulty identifying chokepoints. And we have difficulty identifying chokepoints because mid-tier suppliers and others are afraid to share their information. What if it's used to replace them or cut their profits? And so we have partners shielding data from each other, even in the same operation, which only hampers forecasting and problem-solving. When we all own up to our interdependence in the global supply chain, we see that your problems become my problems very quickly, and vice versa. Most people who've gotten an MBA in the last 30 years have played the beer game in class. In the beer game, you learn that there's more to gain from sharing than there is to lose from hoarding. I recently had a reporter tell me, "Oh, supply chain: You're an information broker." I hadn't thought of it that way. But with advances in technology and the digital ocean we're all swimming in, why not? How much easier is it to work with barriers down and channels open? Interrelationships are the future.

Lesson #5: The thinking that got us here is not the thinking that will get us out. In 2012, I received the Distinguished Service Award from the Council of Supply Chain Management Professionals. It was the industry's highest honor. I was the first woman in 47 years of association history to receive it.

That night, I gave my acceptance speech. I quipped, “Remember when this used to be all men?” Then I looked out over the audience. And I thought, “Oh. It still is.”

A few months later, in response, I founded AWESOME. AWESOME stands for Achieving Women’s Excellence in Supply Chain Operations, Management, and Education. Our mission is to support women leaders “to advance and transform the future of supply chain leadership.”

AWESOME is in its ninth year now. We’ve grown; today we are a community of more than 1,500 senior women in supply chain leadership. Our members are leaders at some of America’s best-known companies: McDonald’s. Home Depot. Johnson & Johnson. Nike. JB Hunt. We host an annual symposium; we partner in awarding graduate-level fellowships in supply chain management; we underwrite college students in supply chain programs who want to attend industry events; we provide women in supply chain with a trusted network of peers. In AWESOME, women can see ample evidence that rewarding careers await in transportation, logistics, and supply chain.

In 2006, author Daniel Pink published a book called *A Whole New Mind*. In it, he wrote, “The future belongs to a very different kind of person with a very different kind of mind.”

“For nearly a century,” he went on, “Western society in general, and American society, in particular, has been dominated by a form of thinking and an approach to life that is narrowly reductive and deeply analytical. Ours has been the age of the ‘knowledge worker,’ the well-educated manipulator of information and deployer of expertise. But even that is changing.”

Actually, the *world* is changing.

In his book, Pink argues for a new kind of thinking in business: More intuitive. More collaborative. Less linear. More context-sensitive.

If there’s a lesson from the pandemic, maybe it’s that to borrow from Albert Einstein // the thinking that got us to where we are // is not the thinking that will get us to where we want to be. Simply: This is the world’s most complicated problem. It has taken the supply chain breaking to realize how dependent on it we are, how connected we are to each other, that those connections need attention, that we’re called upon to be good stewards of the entire web.

In 2020, Gartner shared results of its fifth annual Women in Supply Chain Survey, conducted in partnership with AWESOME. We already know that the most gender-diverse companies are 21% more likely to outperform on profitability. Which makes sense: They are drawing on a larger, more multi-faceted talent pool. They will have more viewpoints at the table. They will have more ways available of looking at problems.

That diversity is presently lagging in most industries. But there is also good news. In the organizations Gartner surveyed, 17% of Chief Supply Chain Officers are now women, up from 9% five years ago and up from 11% the year previous. Change is happening, but there’s room to grow.

I have seen women rise exceptionally well to the challenges that supply chain presents—not just supply chain, but supply chain *during a pandemic*. What makes them good? The ability to collaborate across borders, across departments, across oceans. They are boundariless in their thinking. *They are gifted at systems thinking, communicating, collaborating, consensus-building, and sharing information*.

In 2019, I founded another organization to advance women's leadership. Lincoln Road Enterprises is dedicated to fostering and recognizing the contributions of women in public and private enterprise, global supply chain, engineering and technology, infrastructure, design, astrophysics and space. Our vision is a world without barriers to excellence and accomplishment. I think women have a big role to play in making that vision real.

Can I tell you where I think we are headed next in our thinking about supply chain? To space. Yes, we're going back to the moon, but not as a final destination. I think the moon will become an outpost housing research, manufacturing, and logistics for forays to Mars and beyond. NASA is already looking to logistics experts to help design this future. And women will be part of it. Almost half of the current NASA class of astronauts is women. The first woman is expected to set foot on the moon in 2024. She'll be part of the lunar landing program named Artemis … for the goddess of the moon.

Thank you for this opportunity to talk to you. I don't pretend to have the next great new idea. But here is what I think I have learned: That the answers lie in working together, and sharing information, and taking the total systems view, and building in flexibility and responsiveness. I think it's our job to train people to expect the unexpected, not just work towards functional or siloed excellence. *The pandemic has shown us just how interconnected we are, not just in all areas of the supply chain but across all supply chains. It's no longer about being excellent at what we do, but excellent at what we do together.*

I mean, my father was an engineer. He trained me, and in the end I'm sort of an engineer of thinking. Which makes me a walking contradiction. I started out the engineer's only "son." Today, I am proud to tell you: I am the engineer's *daughter*.

If Dad were here, he'd say, "*Start with a yellow legal pad, Ann. Define the problem to be solved.*" OK. Well, let's build a better world.

Write out what you know about the issue. List all the constraints. That's a long one. Let's put "fear of change" at the top. And "thinking small." Also, "sticking with what we know."

What are possible solutions? More diversity at the table, more holistic thinkers, more people who realize we are better together. Building a more sustainable world.

Beyond transportation excellence … is a galaxy of possibilities.

Thank you.