### Transcript

# 403: NUMMI

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# Prologue

**Ira Glass** Today we have this story for you about cars-- American cars. And like most stories about American cars lately, it's more tragedy than comedy, though there is some comedy in there, too. It's the story of a factory in California that captures pretty much everything that's gone wrong in the American car business in the last 30 years. And at the heart of the story is the question, why are American cars still not as good as foreign cars?

Come with me for just a half minute to the Detroit Auto Show, OK? David Champion is one of the umpires who calls strikes and fouls in the car business. He's the senior director of *Consumer Reports* auto test division. He says that Ford has actually been improving for the last six or seven years, but Chrysler's still in the dumps, the worst of all the car makers they study, and as for America's biggest car maker, GM?

**David Champion** The big Achilles' heel with GM is their reliability. You look at things like the Cadillac CTS-- a fabulous car, I'd take a CTS over a BMW or a Mercedes any day. But unfortunately, the CTS has been poor for reliability since it was redesigned in 2007. So they still quite haven't got it.

**Ira Glass** Why hasn't GM got it yet? It's not like this reliability problem just snuck up on them. It's been nearly 50 years since it started losing market share-- 50 years since it began the slide from holding over half the US car market, back in the '60s, to just 22% today. Here's an amazing fact. Even after Toyota's recent disaster with suddenly accelerating cars that killed possibly 52 people, *Consumer Reports* came out with new

ratings just this month and it still rates Toyota as more reliable than all the American car makers.

That's because the ratings are based on overall dependability-- the likelihood of whether you'll have a problem with your Toyota, and mostly, they are still very reliable cars. In fact, the top three automakers in the most recent *Consumer Reports* survey are all Japanese-- Toyota is number three-- and the top 10 are all foreign.

Why is it taking so long for Detroit to figure out how to make a car as good as the Japanese? Well, there's some very interesting answers to that question, and all of them can be found right here-- at a car plant in Fremont, California, called NUMMI. NUMMI stands for New United Motor Manufacturing Incorporated.

NUMMI was opened in 1984 by GM and Toyota together, who decided this would be a place that they would build cars with each other. If it seems strange to you that two competitors would do this, it seemed strange at the time, also. A headline in *Car and Driver* about the partnership read, "Hell Freezes Over." But both companies had their reasons-- we'll get into that.

At NUMMI, Toyota showed GM all its secrets-- exactly how it made some of the best built, most reliable cars in the world back then. GM hoped to take these lessons from NUMMI and carry them into all their other plants, all over the country, and all over the world. And then, well, that didn't go so well, and here we are today. GM went bankrupt. US taxpayers-- you and I-- bailed them out for \$50 billion.

And next week, the NUMMI car plant, the one that seemed like it might be able to teach American car makers how to catch up to their competitors, is going to stop making cars. It's happening, no joke, on April Fools' Day. Today we have a special story for you. We are devoting our entire show to it.

For the last couple months, NPR's automotive correspondent, Frank Langfitt and one of our producers, Brian Reed, have been traveling around the country talking to GM workers and managers about what happened at NUMMI, and especially about what went wrong at GM that it had so much trouble for so long adopting the techniques it learned over a quarter century ago.

General Motors and the UAW are secretive cultures, but as you'll hear, people were blunt when they talked to Frank-- blunt in a way that you rarely hear with auto executives and UAW reps when they're being interviewed by the press. Act one of our show is about the rise of NUMMI, act two is about what prevented GM from learning from NUMMI.

From WBEZ Chicago, it's This American Life, distributed by Public Radio International. I'm Ira Glass. Our show today produced with our colleagues at NPR News. And now it is my pleasure to turn the story over to NPR automotive correspondent, Frank Langfitt.

# Act One: Act One

**Frank Langfitt** When NUMMI was conceived, General Motors was far and away the world's largest car company. Its US market share was seven times that of Toyota. But each company had a problem that the other company could help them solve. On GM's side, the problem was small cars. Under government emissions guidelines, General Motors had to build them, but they'd always lost money for GM, and they were lousy quality. So Toyota suggested a joint venture that offered two things. First, Toyota would build a quality small car for GM-- one that would finally turn a profit.

**Jeffrey Liker** And the second thing was, we have this thing called the Toyota production system, and it produces the quality you see. We can teach you the Toyota production system.

**Frank Langfitt** Jeffrey Liker is a professor of industrial engineering at the University of Michigan. He wrote *The Toyota Way*, and he's been studying Japanese auto manufacturing-- including NUMMI-- since the 1980s. He says even though Toyota was offering GM something quite remarkable-- to teach a competitor its secrets, to show them exactly how Toyota achieved such phenomenal reliability-- GM wasn't that interested.

**Jeffrey Liker** Some people in GM I think had some foresight to realize this is important. I think for many of the senior leaders, it was more, OK, well, maybe I'll learn something, maybe I won't, but it won't hurt.

**Frank Langfitt** Why wouldn't they be really interested in the Toyota production system, because at that point, wasn't Toyota building higher quality cars?

**Jeffrey Liker** Toyota was building higher quality cars. I'm not sure it was 100% accepted at that time by senior management that Japanese quality was really better.

#### Frank Langfitt Why?

**Jeffrey Liker** I think there was pride and defensiveness. I'm proud because I'm the biggest automaker in the world, I've been the best, I've dominated the market. You can't teach me anything, you little Japanese company.

**John Shook** I'm John Shook. Toyota in Toyota City was completely Japanese when I joined them. I was the first non Japanese to join them as a regular employee in Toyota City.

**Frank Langfitt** John Shook moved to Japan in the early 1980s because of his fascination with Japanese management techniques. He read books about them back home in east Tennessee. And he decided to fly halfway around the globe, learn to speak the language, and hunt for a job with the biggest Japanese company that would have him. Toyota hired him to train American workers in the joint venture.

Now, here was the problem that pushed Toyota into the deal. They needed to learn how to build cars in America. For years, the Japanese had been winning away customers from Detroit, and the US Congress was threatening to restrict car imports. Toyota could avoid that by making cars in the US. But they wanted a partner. Here's John Shook.

**John Shook** Toyota was looking specifically for things they could learn. How can we work with American workers? How can we make sure that our management system can work in North America? And they'd been pretty happy just producing in Toyota

City, doing a very good job, and the idea of actually taking their system and producing outside of Toyota City was scary to them.

**Frank Langfitt** Toyota was right to be scared. Compared to Japan, where auto workers and management worked together, labor relations in America were more like war. And at the GM plant in Fremont, it felt at times like hand to hand combat.

A former running back from the University of Arkansas named Bruce Lee ran the western region for the United Auto Workers, and was in charge of the Fremont Union Local 1364. Now normally, somebody like Bruce Lee is supposed to defend his union members no matter what. But even he says they were awful.

**Bruce Lee** It was considered the worst workforce in the automobile industry in the United States. And it was a reputation that was well earned. Everything was a fight. They spent more time on grievances and on things like that than they did on producing cars. They had strikes all the time. It was just chaos constantly.

**Jeffrey Liker** The Fremont, California plant for General Motors was bad by GM standards, and GM's average was bad by Toyota standards, so this is the worst among the bad mediocre plants in GM.

**Frank Langfitt** Again, that's Jeffrey Liker, who's interviewed workers and management at Fremont for his research.

**Jeffrey Liker** One of the expressions was, you can buy anything you want in the GM plant in Fremont. If you want sex, if you want drugs, if you want alcohol, it's there. During breaks, during lunch time, if you want to gamble illegally-- any illegal activity was available for the asking within that plant.

Frank Langfitt Sounds like prison.

**Jeffrey Liker** Actually the analogy to prison is a good analogy. Because the workers were stuck there, because they could not find anything close to that level of job, and pay, and benefits, at their level of education and skill. So they were trapped there. And they also felt like, we have a job for life, and the union will always protect us. So we're

stuck here, and it's long term, and then all these illegal things crop up so we can entertain ourselves while we're stuck here.

**Rick Madrid** A lot of booze on the line. I mean, it was just amazing-- and as long as you did your job, they really didn't care. Frank Langfitt What kind of booze, what were people drinking?

Rick Madrid Whiskey, gin.

**Frank Langfitt** That's Rick Madrid. He began working at the plant in 1955. He mounted tires on Chevy trucks.

**Rick Madrid** When I was mounting tires, we'd drink. You know, I'd bring a thermos of screwdrivers with me. But I never was into drugs.

Frank Langfitt Sex?

Rick Madrid Love it.

Frank Langfitt Did you ever have sex at the plant?

Rick Madrid Yeah.

Frank Langfitt Frequently?

Rick Madrid I wasn't that fortunate.

Peter Ross There was a guy in there, he would be selling the pot.

Frank Langfitt Peter Ross repaired machinery on the assembly line at GM.

**Peter Ross** I'd be walking through the plant with my tools and my radio. You see a big cloud of smoke, you don't want to inhale it, you'd get a contact high.

**Frank Langfitt** If you're wondering how people kept their jobs, well, back then the UAW was still quite powerful. Under the union contract, it was almost impossible to fire

anybody, and if management ticked off the union, workers could just shut the plant down in minutes.

With that sort of leverage, absenteeism became absurd. On a normal day, one out of five workers just didn't show up. It was even worse on Mondays. Billy Haggerty worked in hood and fender assembly. He says so few workers showed up some mornings, management couldn't start the line.

**Billy Haggerty** They brought a lot of people off the street to fill in when they didn't have enough people.

Frank Langfitt Who would they find?

**Billy Haggerty** Right across the street to the bar and grab people out of there and bring them in.

**Frank Langfitt** Workers filed grievances-- formal complaints against management-over all kinds of things. Someone who isn't your boss asks you to clean something up? Hit him with a grievance. A manager steps in to do a job that isn't his? Grievance. The strategy was simple. Pile up grievances real or imagined by the thousands, then use them to squeeze money or concessions out of management.

And Fremont workers struck back at their bosses in other ways. They'd intentionally screw up the vehicles. Put coke bottles or loose bolts inside the door panels so they'd rattle and annoy the customer. They'd scratch cars. Richard Aguilar inspected vehicles at the plant. He saw one guy do something even worse.

**Richard Aguilar** He left some loose bolts on the front suspension. That was dangerous. I went and told the system manager right away. They went out there and they checked, and there was like 400 cars he had done that to. He was mad because they had suspended him for drinking.

**Frank Langfitt** By 1982, GM had had enough and put the Fremont factory out of its misery. The company laid off thousands of workers and closed the plant. The next year, when GM and Toyota began planning to reopen the plant for the joint venture, there was one thing neither company wanted to do-- hire the same union leaders who'd

battled management and overseen GM's worst workforce. Then the UAW's Bruce Lee sat down with chairman Eiji Toyoda.

Bruce Lee And one of the first things I said is, "I've got to hire the first 50 people."

Frank Langfitt So who did you hire?

Bruce Lee The same leadership that was in the union before.

Frank Langfitt Why? I thought you would try to get rid of them.

**Bruce Lee** No, no, because I believed that it was the system that made it bad, not the people.

**Frank Langfitt** GM was against it, but incredibly, Toyota agreed. Toyota execs believed their system would turn bad workers into good ones. Then Lee had to sell the plan to the rank and file. He held a meeting and told union members that Fremont would now be a Japanese style plant. Old seniority rules wouldn't apply, life at the plant would be totally different. The workers hated all this.

**Bruce Lee** They didn't want anything changed. They wanted the plant to open exactly how it was when General Motors had it.

Frank Langfitt Bad cars and all?

Bruce Lee That's what they wanted.

**Frank Langfitt** They even hung Lee in effigy. But Lee had something very powerful on his side-- most of the workers desperately needed jobs, and Lee had them. When NUMMI opened, over 85% of the workforce were old hands from GM Fremont. But to prepare them for that moment, in the spring of 1984, Toyota started flying them to Japan in groups of 30 to begin learning the Toyota system for making cars.

**John Shook** Well, when the NUMMI workers first came to Japan, me, and certainly my Japanese bosses, had heard all these horrible things about the American worker, about the American union.

**Frank Langfitt** As the one American working in Toyota City, John Shook helped design this training.

**John Shook** We had certainly heard all these stories about the workforce there at the Fremont plant. And it was our job to show them a new, very different way of working. What would they do? How would they respond to this? How would they react? And no one knew. I didn't know. So everyone was very, very nervous.

Earl Ferguson I was kind of apprehensive about what I was going to see when I arrived in Japan.

**Frank Langfitt** On one of those planes was Earl Ferguson. He'd been working for GM since 1964.

Frank Langfitt What were you apprehensive about?

**Earl Ferguson** Whether they were going to accept us or not, you know. How they're going to react when the Americans landed in Tokyo. Everything was so new to us, you know, this is just a totally new experience.

John Shook So I will never forget--

Frank Langfitt Again, John Shook.

**John Shook** Taking a bus, a large bus, with my small group of Japanese colleagues to pick up the first group of trainees arriving from Fremont. Television cameras were there because this was big news in Japan at the time.

[SPEAKING JAPANESE]

John Shook As they got off the plane, we had signs welcoming them.

**Earl Ferguson** The news media was everywhere. We were signing autographs and taking pictures with all the young kids. Totally new experience.

**John Shook** Most of them had never been out of the United States before. None of them, certainly, had ever been to Japan.

**Les Myers** My name is Les Myers. I've worked at General Motors for 25 years. My hobbies are fishing and bowling.

Japanese Auto Worker My name is [UNINTELLIGIBLE PHRASE]. My hobby's softball.

**Frank Langfitt** The narrator in this Japanese public television program points out that the American worker is nine years older than his Toyota trainer. He also notes for his Japanese viewers that the Americans are so much larger than the Japanese they waste a second or two more each time they get in and out of the vehicles they're building, which makes them 10 to 15% less productive than their Asian counterparts.

The key to the Toyota production system was a principle so basic it sounds like an empty management slogan-- teamwork. Back home in Fremont, GM supervisors ordered around large groups of workers. The Takaoka plant, people were divided into teams of just four or five-- switch jobs every few hours to relieve the monotony. And a team leader would step in to help whenever anything went wrong.

Again, Professor Jeffrey Liker and Toyota's John Shook.

Jeffrey Liker And they spent about two weeks, and they worked in a Toyota plant.

**John Shook** Hooked up at the hip with a counterpart in the Corolla plant-- someone who did the exact same job you would be doing back in Fremont.

**Jeffrey Liker** And they start to do the job, and they were pretty proud because they were building cars back in the United States, and they wanted to show they could do it within the time allotted, and they would usually get behind. And they would struggle, and they would try to catch up, and at some point, somebody would come over and say, do you want me to help? And that was a revelation, because nobody in the GM plant would ever ask to help. They would come yell at you because you got behind.

**John Shook** Really, we wanted to give them a chance to see and experience a different way of doing things. We wanted them to see the culture there, the way people work together to solve problems.

**Jeffrey Liker** Then the biggest surprise was, when they had those problems, afterwards, somebody would come up to them and say, what are your ideas for improvement so we don't have that problem again?

**Frank Langfitt** So they'd make suggestions for a different kind of tool that would be better for the job, or a different place for bolts and parts to sit that would be easier to reach.

**Jeffrey Liker** They couldn't believe that responsiveness. I can't remember anytime in my working life where anybody asked for my ideas to solve the problem. And they literally want to know, and when I tell them, they listen, and then suddenly, they disappear and somebody comes back with the tool that I just described-- it's built-- and they say, "Try this."

**Frank Langfitt** Under the Toyota system, when a worker makes a suggestion that saves money, he gets a bonus of a few hundred dollars or so. Everyone's expected to be looking for ways to improve the production process, all the time. This is the Japanese concept of *kaizen*, or continuous improvement.

And if you look around a Toyota plant, you can see the result of all those improvements. You see mats for workers to stand on, special cushions they throw into the car frames when they have to kneel inside, hanging shelves that travel along with the car and the worker, carrying parts and bolts they need within easy reach. Similarly, workers tasks have been streamlined to the fewest possible steps, each step timed down to the second.

**Billy Haggerty** Two seconds to pick up a bolt and put it on. Two seconds to take a gun and tighten it down.

**Frank Langfitt** Billy Haggerty learned the Japanese system two decades into his tenure at GM Fremont.

**Billy Haggerty** Everything was timed out, such and such takes such and such long to do-- that's the way you did it. At General Motors, you could be running in circles for whatever you were doing, and that's the way it is. You lose time. A car a minute don't seem like it's moving that fast, but when you don't get it, you're in the hole. There's nobody to pull you out at General Motors, so you're going to let something go.

**Frank Langfitt** All those mistakes added up at a GM plant, and the results were littered around the lots outside-- hundreds of misassembled cars. Cars that came off the line missing parts. Cars that needed to be fixed before they could be shipped out to the dealers. In a Toyota plant, there was nothing like this. Why did a GM plant produce so many screwed up cars? One cardinal rule that everybody in the company knew.

**Billy Haggerty** The line could never stop. Never stop the line. Frank Langfitt Again, Billy Haggerty, Jeffrey Liker, Rick Madrid, and Bruce Lee.

**Billy Haggerty** Someone had a heart attack, kick him out the way, keep that line running.

Jeffrey Liker It was a basic sin. You're violating the 10 commandments.

**Rick Madrid** You just don't see the line stop. I saw a guy fall in the pit and they didn't stop the line.

**Bruce Lee** You saw a problem, you stop that line, you were fired.

Frank Langfitt A long time GM manager named Ernie Schaefer explained why.

**Ernie Schaefer** Because the theory was, they'll stop it all the time. They don't want to work, you know, they want to sit and play cards or whatever. You know, that was a free break for them, if the line stops, so you wouldn't give them the ability to stop the line.

**Frank Langfitt** John Shook, the American who helped Toyota design its training program, says this all goes back to the first assembly line created by Henry Ford.

**John Shook** What Henry Ford had basically designed was a system that-- he wanted the people on the floor to simply get the volume out, get the product out the door, and someone later will worry about the quality. If we have to repair it, we'll repair it.

So one of the most fundamental things that Toyota did was take that and turn it on its head. So that now we tell the plant floor, don't you worry about the production volume, you worry about quality. The last thing we want is to have a lot of defects flowing down the line that we have to repair later.

Billy Haggerty Toyota's philosophy was quality, not quantity.

**Frank Langfitt** In his old GM job, Billy Haggerty put on hoods and fenders, and saw lots of mistakes go right down the line. So we had Monte Carlos with Regal front ends, and vice versa, and they would just stick it on, run it out to the yard, and then change.

Frank Langfitt What did they look like, the cars?

**Billy Haggerty** Half Regals and half-- so those things would go out the door into the yard and be fixed out there. I did a lot of overtime in the yard changing things back.

**Frank Langfitt** Workers told me they saw cars with engines put in backwards, cars without steering wheels or brakes. Some were so messed up they wouldn't start, and had to be towed off the line. Fixing them piled on more costs, and sometimes, taking them apart and putting them back together, workers damaged them even more.

On the floor of the NUMMI plant in Fremont, Earl Ferguson showed me Toyota's solution to all this. It's a thin nylon rope that hangs on hooks along the assembly line, which became a symbol of everything that was different about the Japanese way of making cars-- the andon cord.

**Earl Ferguson** These cords hanging down, that's the andon cord. It will stop the line. If he pulls the andon cord, then this light's going to come on, right here. Then it'll show up on the screen that this location is down.

**Frank Langfitt** It also plays a surprisingly cheerful little song. Workers in each area can pick the tune. You hear it all the time in a Toyota plant. The first pull doesn't stop the

line, it summons team leaders to the location. They try to correct the problem, and usually, they can do it quickly without stopping production. But if they fail, the line stops.

**Earl Ferguson** Then they'll correct the problem, then you can pull the andon cord again, and the line will start.

Frank Langfitt Now when was the first time you ever pulled an andon cord?

Earl Ferguson 1984.

Frank Langfitt Where did you do it?

Earl Ferguson In Japan.

**Frank Langfitt** Were you at all nervous, because you'd been taught for so many years never to stop the line?

**Earl Ferguson** Yeah. And it was really exciting. What got me was the fact that they had a cross bolt, and they stopped the line to repair it. Ream the hole, put the bolt back in, instead of sending it on and putting all the other junk on top of it, so you have to take it off and repair it. And whoever puts it back isn't skilled in putting trim back, so they're going to mess that up.

That impressed me. Said, gee, that makes sense, fix it now so you don't have to go through all this stuff. That's when it dawned on me that we can do it-- one bolt. One bolt changed my attitude.

**Jeffrey Liker** I think that there was a combination of feelings. One feeling was, wow, this is different.

Frank Langfitt Again, that's industrial engineering professor Jeffrey Liker.

Jeffrey Liker Another feeling was of embarrassment. We've been in this industry for how many years-- my whole adult life-- we're Americans, we're supposed to be the best, most important country in the world, and we can't build a quality car. And these Japanese are doing it. And there was a sense of hurt pride.

**Earl Ferguson** Well, it was kind of, you become a little bit ashamed, because why couldn't we do that?

Frank Langfitt Again, Earl Ferguson.

**Earl Ferguson** You know, I think most of it was pride after that. We wanted to be able to compete with what I saw in Japan. I said, I know we can do what they can do.

John Shook Only two weeks later when that first group left to go back to Fremont--

Frank Langfitt Toyota trainer, John Shook.

**John Shook** We had a party, of course, a sushi party-- and this was years ago, before sushi was as it is now. It was still a rare thing, of course. And people were crying on both sides. You had union workers-- grizzled old folks that had worked on the plant floor for 30 years, and they were hugging their Japanese counterparts, just absolutely in tears.

**Frank Langfitt** There's actually footage of this, though we don't know if it's the first group of Americans. US workers are in kimonos with the Toyota name on them. And they hand their neckties to the Japanese and hug. One man is crying.

[SPEAKING JAPANESE]

One of the Americans says, in Japanese, "Thanks to you all, we now feel confident for our success." John Shook.

**John Shook** And it might sound flowery to say 25 years later, but they had had such a powerful emotional experience of learning a new way of working, a way that people could actually work together collaboratively-- as a team. We knew it wasn't going to be easy-- there were a lot of hurdles to overcome-- but there was no question in anyone's mind that this was going to work.

**Frank Langfitt** But if it was going to work, it would mean a radically different relationship between workers and management. One where the managers trusted the workers to let them pull the andon cord and stop the line. One where the workers trusted their bosses enough to ask for help when there were problems. American Auto Worker

With teamwork, we can do it all. [? Now let's hold up your hands, and together-- with teamwork, we can do it all.

**Frank Langfitt** December, 1984, the first car rolled off the assembly line in Fremont, a yellow Chevy Nova. UAW rep Joel Smith was one of the speakers.

**Joel Smith** Mr. Toyoda, staff, and fellow UAW members, today is a historic one-- the first car. But we're also on the threshold of a new adventure and relationship between labor and management. For too long, the American worker has been maligned, criticized, called bad names, for building lousy products. Poor quality American worker.

At New United Motor, we will build a quality car, and we will only build a quality car. And Mr. Toyoda, if you would please deliver this challenge to our friends in Japan, we intend to build the best quality car in the world. Thank you.

**Bruce Lee** They hit the ground running. It didn't take a year, two years, to get quality in that product.

Frank Langfitt Again, the UAW's Bruce Lee.

**Bruce Lee** Oh, I was so proud of them, you can't even believe. The fact that they did it didn't surprise me that much, but how quickly they did it did. It was amazing. Here was these same people, who before-- I mean, hell, they'd go out of their way to make life miserable for General Motors particularly. And, you know, they were old, they were fat. Because that was not a young workforce that we brought in there.

**Frank Langfitt** The numbers coming out of the NUMMI plant were astonishing. Again, here's Jeffrey Liker.

**Jeffrey Liker** The best measure they use is how many defects are there per 100 vehicles. And it was one of the best in America, and it was for the same for the Toyota cars that were made in California as the Corollas that were coming from Japan-- right from the beginning.

Maryann Keller, a long time car analyst, devotes a chapter to NUMMI in her book about the rise and fall of GM, *Rude Awakening*. After just three months, she says, the cars coming off the line were getting near perfect quality ratings. And just as important for GM were the cost savings. One study suggested, remarkably, it would probably take 50% more workers under the old system to build the same car.

Grievances and absenteeism plummeted, and lots of workers preferred the NUMMI teamwork system to the old combative one at GM. Several told us they enjoyed coming to work for the first time.

**Rick Madrid** I didn't want to tell people I worked at the Chevy truck plant, because a lot of people had a lot of problems with them.

**Frank Langfitt** That's Rick Madrid, who spent 17 years at the old Fremont plant building Chevy trucks. He was ashamed of that vehicle. At NUMMI, making the Nova, he felt differently.

**Rick Madrid** Oh I had a stack of these postcards, and I would just drive around, if I see a Nova parked, I would put one of these under the windshield wiper. Of course, it had my name, my address on it, and your opinion of the Nova. And just basically, they dropped me a line. And a lot of people did this.

Frank Langfitt And what did they say?

**Rick Madrid** Some said they really liked it, a quality car, a good car.

**Frank Langfitt** Another worker told me he'd go to the Chevy dealership to stare at the Novas. He didn't tell anyone he built them, or that he worked at NUMMI. He just liked seeing what the cars looked like, sitting there on the lot.

**Ira Glass** That's NPR's Frank Langfitt. Coming up, so there's this great way of making cars, GM is using it in California. Not only are the cars more reliable, they're cheaper to make. Seems like a no-brainer for GM-- start putting this way of producing cars into their other factories everywhere, and declare victory. Why they didn't do that, why what happened at NUMMI stayed at NUMMI for so long, that's in a minute from Chicago Public Radio and Public Radio International when our program continues.

## Act Two: Act Two

**Ira Glass** It's This American Life, I'm Ira Glass. If you're just tuning in, we're in the middle of a story about a car plant in Fremont, California, called NUMMI. We now turn to the question, why was it so hard for GM to replicate NUMMI elsewhere in the company. In the first half of our story, we heard a lot from workers who are on the factory floor. In this half of the story, the action moves to their bosses-- the supervisors at GM, who had a chance to turn the company around with what they learned at NUMMI. Again, here's NPR's Frank Langfitt.

**Frank Langfitt** GM had gotten the first thing it wanted out of NUMMI-- a high quality small car. Now the question was, how could it spread the lessons of NUMMI throughout the rest of the company? To do that, it set up a special liaison office. Managers were flown in for tours, to work the assembly line for a few days, to learn the team concept.

And from the beginning, GM executives sent 16 of their rising stars to help start NUMMI, with the idea that later they'd come home and change the company. Two *Wall Street Journal* reporters later dubbed them the NUMMI commandos. One of the 16 was Mark Hogan. He says the top brass understood NUMMI's game changing potential-- that a Toyota style plant squeezed many more cars out of far fewer workers.

**Mark Hogan** if General Motors was able to take its many manufacturing facilities and implement that production system, each of those little changes adds up to billions to General Motors in the bottom line.

**Steve Bera** we were ready, we were fired, and we had the mental condition that says, we're going to do this, we're going to change the world. Frank Langfitt That's Steve Bera, another commando. He says once NUMMI was up and running, he and the other 15 waited to be deployed elsewhere for the next phase of their mission. But the company didn't seem to know what to do with them.

**Steve Bera** Instead of coming back to the 16 of us and saying, there's some secret sauce here, what is it? How can we use this to our advantage? No one ever asked us that question.

Frank Langfitt Why didn't they do that?

**Steve Bera** It was never part of a master plan. And if there was a master plan, none of us ever saw it.

**Frank Langfitt** Frustrated, Steve Bera quit after just two years at NUMMI. With no master plan from Detroit, the first real attempt to do NUMMI again came from a factory manager 400 miles south of Fremont, at a plant in Van Nuys. The factory was facing a possible shut down.

Its manager, a guy named Ernie Schaefer, had visited NUMMI, and he thought maybe he could save his plant if he adopted the Japanese system. But he didn't have all the advantages Fremont had-- this time, Toyota wasn't a partner in the experiment. GM had to transform Van Nuys on its own. Ernie Schaefer knew it was going to be tough.

**Ernie Schaefer** The thing that I think kept us moving forward is we had no alternative. I mean, it was pretty well known that if we didn't successfully implement this philosophy in Van Nuys, we weren't going to be around.

**Frank Langfitt** Van Nuys made Firebirds and Camaros, and its reputation wasn't much better than GM Fremont's had been. Defective cars coming off the line, battles with the union, sabotage. So Ernie Schaefer enlisted the same UAW leader who got the union on board at NUMMI, Bruce Lee, to help him win over the Van Nuys workforce.

They shut down the plant for two weeks to train everyone in team concept and quality control. For this workforce, there were no trips to Japan, no tearful sushi parties, and from the start, workers were skeptical.

Larry Spiegel The lack of receptiveness to change was so deep--

**Frank Langfitt** Larry Spiegel was another NUMMI commando. He moved down to Van Nuys to help launch the Japanese system there.

**Larry Spiegel** There were too many people convinced that they didn't need to have to change.

Frank Langfitt Hadn't General Motors threatened to close the plant?

Larry Spiegel They didn't believe it.

Frank Langfitt Why?

Larry Spiegel It's not logical. They just didn't.

**Frank Langfitt** This was one of the biggest differences between Fremont and Van Nuys. Van Nuys hadn't been shut down. Turns out, it's a lot easier to get workers to change if they've lost their jobs and then you offer them back. Without that, many union members just saw the Toyota system as a threat.

And they had a point. Under the Japanese system, Van Nuys stood to lose a fourth of its workforce, because the more efficient a plant becomes, the fewer workers it needs. And just as bad, the team concept hurt their seniority rights. This had been a problem for union members back at NUMMI also.

**Richard Aguilar** Seniority is what you work for. To me, that's what a union's about, seniority.

**Frank Langfitt** Richard Aguilar worked at NUMMI, and to him, seniority was just another way of saying fairness. He waited 15 years to get enough seniority for the job he'd always wanted in the plant. Under the new system, management could just hire someone off the street for that job. The whole idea of seniority placing you into one great job for years was impossible under the team concept. Workers had to learn every job on their team and take turns doing those jobs.

**Richard Aguilar** And the team concept, it sounds good-- I mean, team player sounds good. But it pit worker against worker, it really does.

**Frank Langfitt** This was the other thing Richard hated about the Japanese system. The whole point of a union, its most basic principle, was to protect you from management. But once people were working in teams, Richard says, union members started doing things for management that just seemed wrong.

**Richard Aguilar** People now snitched on each other. You know, they'd point fingers, oh, he's not doing his job right, you know, or she's not doing the job right. And they would even keep track of the stuff they'd missed. Because that's what the company puts in them, that the only way you can protect your job, you have to keep the team strong, so if there's a weak link, you've got to get rid of that weak link.

And I would go tell them, you can't do that. You can't build a case for management against another union member. It made me angry and disappointed that the union had gone so backwards that they forgot what a union meant-- taking care of each other.

**Frank Langfitt** At Van Nuys, it wasn't just union members who resisted the Japanese system. Managers didn't like it either. They had their own privileges to protect. Some opposed the idea of stopping the assembly line because their bonuses depended on the number of cars that rolled off that line-- never mind how many defects they had. And under the team concept, executives and workers all share the same cafeteria and parking lot. Managers at NUMMI didn't have a problem with that, but the managers at Van Nuys?

Bruce Lee They rioted.

**Frank Langfitt** The UAW's Bruce Lee remembers getting a phone call from plant supervisor Ernie Schaefer about his managers.

**Bruce Lee** They'd basically told Ernie, you do that and we're out of here. We're going to quit en masse. Because Ernie called me, he said, "Bruce, I can't do it. I can't do it. I can't do those things." I said, "Just think about it, that's a nothing. So they have to walk 20 yards more." I said, "Isn't that foolish that some grown man would come up and tell you, I'm going to quit if I can't have this parking place right here."

**Frank Langfitt** So people fought the new system from both sides. Managers gave Ernie grief, and a dissident faction sprang up in the local union, which elected a staunch opponent of the Japanese system as their chairman. And as if that all wasn't enough, Ernie Schaefer ran into another obstacle. Workers could only build cars as good as the parts they were given. At NUMMI, many of the parts came from Japan, and were really good. At Van Nuys, it was totally different.

**Ernie Schaefer** That was perhaps one of our biggest failures, in that an isolated plant can't do this by itself.

**Frank Langfitt** The team concept stressed continuous improvement. If the team got a shipment of parts that didn't fit, they were supposed to alert their bosses, who would then go to suppliers and engineers to fix the problem. All the departments in the company worked together.

But Ernie's suppliers had never operated in a system like that. If he asked for fixes, they blew him off. And if he called Detroit and asked them to redesign a part that wasn't working, they'd ask him why he was so special-- they didn't have to change it for any other plant, why should they change it for him?

**Ernie Schaefer** You had asked the question earlier, what's different when you walk into the NUMMI plant? Well, you can see a lot of things different. But the one thing you don't see is the system that supports the NUMMI plant. I don't think, at that time, anybody understood the large nature of this system.

General Motors was a kind of throw it over the wall organization. Each department, we were very compartmentalized, and you design that vehicle, and you'd throw it over the wall to the manufacturing guys.

**Frank Langfitt** And if something didn't work, or was impossible to assemble, that was their problem.

**Ernie Schaefer** And they had to deal with it. And you're in there, you've kind of put your heart and soul into making this whole team concept work, and now you're the messenger that has to go out and say, "Look guys, even though this is the way the

system's supposed to work, and these are my issues, I'm not going to be able to solve them, and you're going to have deal with it." And it was destructive, it was detrimental, I mean, no question about it.

**Frank Langfitt** Schaefer says, when he realized how much of the Japanese system happened off the factory floor, it answered something that had never quite made sense to him-- why had Toyota been so open with GM in showing its operations?

**Ernie Schaefer** You know, they never prohibited us from walking through the plant, understanding, even asking questions of some of their key people. I've often puzzled over that-- why they did that. And I think they recognized, we were asking all the wrong questions. We didn't understand this bigger picture thing.

All of our questions were focused on the floor, the assembly plant, what's happening on the line. That's not the real issue. The issue is, how do you support that system with all the other functions that have to take place in the organization?

**Frank Langfitt** Quality at Van Nuys didn't improve, and in 1992, GM shut the plant down for good, leaving 2,600 people without jobs.

This is what the NUMMI commandos were up against-- entrenched, defensive bureaucracies and workers many of the places they turned. They were not only trying to change the biggest corporation in the world, they were trying to change a corporation that had been essentially a collection of individual car companies--Cadillac, Oldsmobile, Pontiac, Buick-- each with its own design team, own leadership, and its own way of doing things.

**Dick Fuller** It's a whole new process, a whole different process than the one they'd grown up with. And it was a huge--

**Frank Langfitt** Dick Fuller was another commando. He ran the information technology division at NUMMI, which used some of the same streamlining concepts employed on the factory floor. He says when GM managers visited NUMMI, instead of trying to figure out how they could benefit from the system, some of them attacked it. Fuller remembers one IT manager who visited from a plant on the East Coast.

**Dick Fuller** And when he came back, he wrote a report, which if I put a title on it, would say, won't work here. And I think part of that was a threat to him. It was a threat to him to see that that was working so well.

**Frank Langfitt** Do you think this guy looked at this and said, well, if this works here and they try to spread it, I'll lose my job?

**Dick Fuller** Well, I don't think he was going to lose his job, but he could lose some of his-- you know, he'd probably have to give up half his staff. You know, that's power. People is power in General Motors.

**Frank Langfitt** Getting all these mini empires to embrace the kinds of radical changes that happened at NUMMI would have taken an almost Stalinesque leadership from above-- a combination of charisma and fury in the corner office. And NUMMI commando Mark Hogan says no one at GM fit that bill.

**Mark Hogan** I was very convinced that we had to change, and we had to change rapidly, and I think all of us that were NUMMI alums, so to speak, were frustrated at the lack of urgency.

**Frank Langfitt** Did you have those kinds of conversations with people in the '80s back in Detroit?

Mark Hogan I did.

Frank Langfitt What would people say to you?

**Mark Hogan** Yeah, I think there still wasn't a recognition that the-- the formidability of the competition, particularly from Toyota. I think a lot of people were in denial, or just not willing to recognize it. And even though GM had gone from 50% market share in the early '70s, to mid 30s, it was gradual over time and there wasn't this sense of reaction or urgency that other companies that lost that much market share might have felt.

**Frank Langfitt** Those exact numbers-- GM went from 47% of the US market in the mid 1970s to 35% a decade later. One reason car execs were in denial was Detroit's

insular culture. Yes, unions and management were always at each other's throats, and yes, GM and its suppliers had a destructive relationship that seemed to almost discourage quality, but everyone had settled into comfortable roles in this dysfunctional system and learned to live with it. And in the late 1980s, with their market share in free fall, Jeffrey Liker says they were more apt to blame others than themselves.

**Jeffrey Liker** I worked with all the big three at the time, automakers, and it was common in all three automakers. They all believed that if the consumers think we have quality problems, it's because *Consumer Reports* is misleading them, and they're biased toward Toyota. They all believed that *Consumer Reports* was against them, that there was somewhat of a myth of Japanese quality.

**Frank Langfitt** If all of that wasn't enough to stymie attempts to learn from NUMMI, GM was distracted by other projects-- massive projects. It bought Ross Perot's company, Electronic Data Systems. It bought Hughes Aircraft for \$5 billion. It decided the future was robotics. It decided the future was a massive, costly reorganization. It started Saturn, which produced cars that were better marketed than they were built. Then came the 1991 recession-- car sales slumped. Again, Mark Hogan.

**Mark Hogan** It was really its first significant wake up call. GM unfortunately had a massive loss, 1992-- General Motors lost more than \$20 billion. So I think at that point in time, there was a complete rethinking of the way we ran the company-- that thing's had to change, and they had to change fast.

**Frank Langfitt** It was the largest loss in American corporate history to that time-\$23.5 billion. GM's board of directors responded with what the press called a boardroom blood bath, purging a long list of managers. Jack Smith took over as CEO. He was the executive who'd led the negotiations with Toyota to create NUMMI. He saw NUMMI as a way forward for GM. Mark Hogan and some of the other commandos felt they finally had a champion.

**Mark Hogan** Jack Smith was installed, and started to rapidly implement the Toyota production system into General Motors.

**Frank Langfitt** Rapidly by GM's standards, which wasn't nearly rapidly enough. Jack Smith declined to talk to me for this story, but he told a reporter a few years ago, "I just

wish it had happened a lot faster than it did." Pick your nautical cliche-- reforming General Motors was like turning around a battleship, one manager said. Another compared it to steering the Titanic with a canoe paddle.

**Jeffrey Liker** says the cultural gap between NUMMI and the rest of GM was so vast that even with clear marching orders to change, some of the people running the company didn't know where to begin.

**Jeffrey Liker** There was no vocabulary, even, to explain it. So I remember, one of the GM managers was ordered, from a very senior level-- came from vice president-- to make a GM plant look like NUMMI. And he said, "I want you to go there with cameras and take a picture of every square inch. And whatever you take a picture of, I want it to look like that in our plant. There should be no excuse for why we're different than NUMMI, why our quality is lower, why our productivity isn't as high, because you're going to copy everything you see."

Immediately, this guy knew that was crazy. We can't copy employee motivation, we can't copy good relationships between the union and management. That's not something you can copy, and you can't even take a photograph of it.

**Frank Langfitt** The first round of changes put andon cords and Japanese style inventory control into the GM plants. But there was no change in the culture. Workers and managers continued their old antagonistic ways. In some of the factories where they installed the andon cord, workers got yelled at when they pulled it. A few plants even cut the cords down.

So the second round of changes included some team concepts. They put together a book explaining how each plant should run, and the reasoning behind it. Geoff Weller was one of the people dispatched in the 1990s to convert the company plant by plant. Weller says some factory managers were receptive, but in the sprawling, decentralized system, the plant manager was still king and ran the factory the way he wanted.

**Geoff Weller** We had some tough goes in some of our facilities, where we spent more time trying to convince the plant leadership, versus actually going on and doing the implementation. I would say-- I was asked in one plant to leave, because they were not interested in what I had to sell.

Frank Langfitt How did he actually ask you to leave? What'd he say?

**Geoff Weller** We're finished, and you can leave.

Frank Langfitt And what did you do?

**Geoff Weller** I left. Because, you know, I was in his home, so to speak-- his territory, his plant.

Frank Langfitt Now, whatever happened to that plant manager who asked you to leave?

Geoff Weller That plant manager eventually retired.

**Frank Langfitt** This may sound like a naive question, but why didn't the CEO pick up the phone and say, you're fired?

Geoff Weller Well, it's a big company, and I'm not sure that-- it doesn't work that way.

**Frank Langfitt** Lots of people in GM still didn't see the need to change. By the late 1990s, the company was posting huge profits selling trucks and SUVs, which made the loss in market share seem less urgent. To make real progress, managers had to leave the United States. One overhauled GM Germany. Mark Hogan took over GM Brazil in 1994 to enact NUMMI principles there. In Brazil, he had a big unionized workforce, but he could avoid GM's bureaucracy, its supplier network, and the United Auto Workers.

Frank Langfitt How long did it take you to implement the lessons of NUMMI in Brazil?

**Mark Hogan** It took us about 18 to 24 months, which at the time I was quite impatient about. I mean, I wanted it faster.

Frank Langfitt And what did that mean for the bottom line for GM?

**Mark Hogan** Well, in that time frame, particularly '94 though '97, GM Brazil was one of the most profitable entities within GM.

**Frank Langfitt** But in America, everyone I talked to said it took about a decade and a half after NUMMI for change to even begin to take hold at GM. By the year 2000, GM finally started to see a generational transformation. Jeffrey Liker says, so many managers had come through NUMMI for training, for a day, or a week, or a year.

**Jeffrey Liker** Over time, you start to get 10 people, 20 people, 100 people, 300 people, and you now have a critical mass of people in GM who've all been in NUMMI, they've lived it. Now they're managing people and teaching them what they learned, and it snowballs, and suddenly the world is different in GM, and nobody can even tell you exactly why.

**Frank Langfitt** By the early 2000s, GM had developed a production model with the UAW based on Japanese principles that would go into all of its plants. It was called the global manufacturing system. And although GM quality still lags behind the imports, it's improved a lot. Again, Jeffrey Liker.

**Jeffrey Liker** If you look carefully at the quality of a GM product, and you look with a fine tooth comb, with a magnifying glass, you're going to see a level of quality that you didn't see 15 years ago.

**Frank Langfitt** You want to show me for a sec, do you mind? There's one right here. I did my interview with Jeffrey Liker at this year's Detroit Auto Show. And we walked over to the GM exhibit, to the Cadillac SRX, which is a small SUV. Jeffrey pointed to the gap between the door and the car frame, which is supposed to be uniform.

**Jeffrey Liker** And if we look down here, it looks really good. The gap is about the same between the front and the back door, the surface is very smooth and very uniform. Frank Langfitt And 15 years ago, what would that have looked like?

**Jeffrey Liker** You would see, maybe at the top, it would be more narrow than at the bottom. If you look inside the car and you open the glove box, it falls very gradually down, the way it's supposed to. You close it-- I barely have to touch it and it closes tightly.

**Frank Langfitt** Precision in all these details makes for a better looking, more reliable car, where things work like they're supposed to. But this improvement didn't come

soon enough. Some cars and some plants improved less quickly than others. And while GM was getting better, so were its competitors, leaving it still near the back of the pack.

**James Womack** Well, one of the ironies of GM was that at the moment it went bankrupt, it was probably a better company than it had ever been.

**Frank Langfitt** That's James Womack, co-author of a seminal book comparing the Toyota and GM production systems, *The Machine that Changed the World*.

**James Womack** In the factories, they had really dramatically closed the productivity gap that they had had for many, many years. And on the new products, they have much better quality. So that the company that failed was actually doing better than it had ever done. But it was too late, and that's really sort of hard to forgive-- that if you take 30 years to figure it out, chances are you're going to get run over. And they got run over.

**Frank Langfitt** In the end, what did them in was the 2008 recession. It destroyed the car market, and next year, General Motors became the largest industrial bankruptcy in US history. Its bailout cost taxpayers more than \$50 billion. I asked Mark Hogan, the NUMMI commando who went on to run GM's small car division in North America, if GM had adopted NUMMI earlier, could it have really changed all that?

**Mark Hogan** Definitely. I think if General Motors had moved in the late '80s to implement this system across the board, it may very well have saved GM from going into bankruptcy.

Frank Langfitt Explain that.

**Mark Hogan** Well, I just think the productivity and the quality changes that come with that would have been so profound that this ever increasing loss of market share would have been stopped.

Bruce Lee Well, I think they'd have been building a higher quality product.

Frank Langfitt Again, the UAW's Bruce Lee.

**Bruce Lee** You know, they sold junk for a while. Just any kind of piece of crap they could roll out there, they did. And they paid a tremendous price for it, and even when they turned the corner in quality, people didn't trust them. They'd say, well, gee, they're building a good car now, why aren't they buying them? Because they don't trust them. But had they adopted and embraced the team concept in an honest way-- we're going to do this-- I think it might have dramatically changed what happened in the American auto industry. There's no question in my mind.

**Frank Langfitt** Of course, quality and reliability weren't the only problems that brought GM down. Executives made other big mistakes. Over the years, General Motors negotiated contracts with the UAW with such generous health care coverage that by 2007, it amounted to more than \$1,600 for each vehicle GM produced in North America.

And initially, some GM executives dismissed hybrid cars, like the Prius, as a publicity stunt. Instead, they bet the company on SUVs and trucks, only to see sales crash when gas hit four bucks a gallon.

One odd twist to this story-- over the last decade, as GM became more like Toyota, Toyota became a little bit like GM. In 2008, they took over the title from GM of the world's largest car maker. But Toyota executives now say the company did this by making one of GM's old mistakes-- stressing quantity over quality.

**Akio Toyoda** is the company's CEO. He's the grandson of the founder, and he cut his teeth at NUMMI. In a congressional hearing last month about Toyota's sudden acceleration problem, he said the company's crucial mistake was growing too fast.

**Akio Toyoda** We pursued growth over the speed at which we are able to develop our people and our organization. And I am deeply sorry for any accident that Toyota drivers have experienced.

**Frank Langfitt** It was 15 years before GM took the lessons of NUMMI seriously, and they spent the next 10 years slowly implementing what it learned. And all the time, the NUMMI plant kept pumping out vehicles-- 6,000 a week on average, two shifts a day. Toyota got what it wanted out of the deal. A year after starting NUMMI, it began opening other factories around the US using what it had learned in Fremont.

GM and Toyota continued to run NUMMI together, until 2009 when GM went bankrupt and pulled out, leaving Toyota to run the plant alone. Now Toyota has decided to pull out of the plant. It's their only unionized plant in the United States. Next Thursday, NUMMI will produce its very last car, a Corolla. 4,500 people will lose their jobs. This is the first factory Toyota has shut down since it was founded 73 years ago.

**John Shook** Toyota is not perfect. GM is not perfect. But I think anyone who touched NUMMI will never forget it.

**Frank Langfitt** One last time, that's John Shook, the first American Toyota hired for NUMMI.

**John Shook** It does represent something that was special at a point in time. It was a laboratory. My learning curve, it wasn't just a curve, it was a 90 degree right angle. I loved every minute of it. And almost every one, I think you'll talk to, who worked on NUMMI will say the same thing.

**Rick Madrid** I'm so fortunate that I ended my career in the auto industry at NUMMI.

Frank Langfitt Rick Madrid retired from the assembly line in 1992.

**Rick Madrid** I just hate to see the plant close-- oh, that just hurts me. End of an era. It changed my life from being depressed, bored-- and like my son said, it changed my attitude. It changed me all for the better. I really hate to see it go.

Billy Haggerty I look at cars, and I see a lot of the cars that we built.

**Frank Langfitt** That's Billy Haggerty, who ended up putting in 18 years at NUMMI without a vacation day. He says just the other day he saw one.

**Billy Haggerty** I just seen a-- what was it-- '86, '87 Corolla, pulled in right over around this corner here. I was heading for the bank, and I just looked at it, said, boy, that one's old. I looked down, it was a Corolla. I know we built it, right there. It's still running. It's still kicking. It feels good.

**Frank Langfitt** This is also NUMMI's legacy. In the end, it's not just a symbol for so many things that went wrong with GM. It's also a really good car plant-- one that turned out nearly 8 million high quality cars and trucks.

Ira Glass Frank Langfitt is NPR's automotive correspondent.

Frank Langfitt's story about NUMMI was produced by me and Brian Reed. NPR's Uri Berliner helped us edit it. Our show today was produced by Lisa Pollak, with Alex Blumberg, Jane Feltes, Sarah Koenig, Robyn Semien, Alissa Shipp, and Nancy Updike. Our senior producer is Julie Snyder. Old Japanese TV footage in today's show comes from NHK in Tokyo.

Our website, thisamericanlife.org, where our online store is now back up in operation, and where you can find the new update of our iPhone app. This American Life is distributed by Public Radio International. Support for This American Life comes from Kohler. WBEZ management oversight for our program by our boss, Mr. Torey Malatia. I overheard him in the hallway telling someone how surprised he was at the quality of our shows this year.

**Bruce Lee** Because that was not a young workforce. And, you know, they were old, they were fat.

Ira Glass I'm Ira Glass, back next week with more stories of This American Life.