

Nummi - Breaking Trade and Cultural Barriers in the Automotive World

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New United Motor Manufacturing, Inc. (Nummi), a joint venture between Toyota and General Motors, was created in 1984 to move past automotive trade barriers. The true obstacle Nummi overcame, however, was the barrier of combining the culture of Japanese and American car factories. No matter how successful Nummi was, cultural barriers blocked the spread of its success into other GM plants for two decades. Despite its glacial spread, Nummi was the model for the modernization of the largest American automaker and can be credited with GM still surviving today.

Historical Context

In 1982, at the close of General Motors Fremont Assembly, GM was no longer the juggernaut it had been ten years earlier, and the Japanese automakers, while still not established players, were definitely not a force to be ignored. The auto industry and America as a whole were still feeling shocks from the 1979 oil crisis. Changing consumer tastes due to the recession, crossed with American automakers' failure to adapt to the changed market, spelled trouble.¹ The Fremont assembly plant was not the only one GM closed because of this recession, and auto parts plants were shuttered as well.² It was not just GM that was having trouble. GM, Ford, Chrysler, and American Motors Corporation all laid off large numbers of employees.³

¹ Arlena Sawyers, "1979 oil shock meant recession for U.S., depression for autos," *Automotive News* (Detroit, MI), June 26, 1996.

² Lydia Chavez, "G.M. Sets Closing of 4 Parts Plants," *The New York Times* (New York, NY), February 26, 1982, sec. D, 1.

³ *Ibid.*

In the early 1980s, it was not exactly business as usual for the Japanese automakers either. Although they were getting many of the sales that the American automakers were losing, they faced the threat of protectionist US government policies if they did not act relatively quickly.⁴ The Japanese automakers agreed to a voluntary export restriction to protect themselves, meaning that they had to shift at least some of their production to US or they would be unable to maximize sales in a very valuable market.⁵ Because of this political environment, Japanese automakers began to open factories in the US.

It was under this political and economic environment that GM and Toyota decided that they could benefit from a joint venture. GM would “learn about Japanese manufacturing systems” and gain “a small car to fill a hole in their product line.”⁶ Toyota would appease their American critics and gain experience with American suppliers and labor with less risk than if they opened their own factory.⁷ A “Memorandum of Understanding” regarding the joint venture was signed in February of 1983.⁸

Trade Barriers

Toyota’s interest in Nummi can be seen primarily as a response to real and potential trade barriers that were in place. In many industries, Japanese exports to the United States

⁴ Daniel K. Benjamin, "Voluntary Export Restraints on Automobiles," *PERC Reports*, Fall 1999.

⁵ *Ibid.*

⁶ Paul Simon Adler, "Democratic Taylorism: The Toyota Production System at NUMMI," *Lean Work: Empowerment and Exploitation in the Global Auto Industry*, January 1995.

⁷ John Shook, "How to Change a Culture: Lessons From NUMMI," *MIT Sloan Management Review* (blog), entry posted September 30, 2009, accessed January 9, 2020, <https://sloanreview.mit.edu/article/how-to-change-a-culture-lessons-from-nummi/>.

⁸ NUMMI, "NUMMI Milestones," NUMMI.com, last modified April 2, 2010, accessed January 28, 2020, <https://web.archive.org/web/20100402121111/http://www.nummi.com/timeline.php>.

were growing, and this made Japanese firms an easy target for disgruntled American politicians and businessmen.⁹ The American auto industry was still feeling the oil crisis of a few years earlier, and the Reagan administration was quick to blame the Japanese automakers. In fact, the UAW petitioned the U.S. International Trade Commission seeking limits on Japanese imports.¹⁰

The Japanese automakers swiftly agreed to a voluntary export restriction, because “the likely alternative to the program was a U.S.-imposed tariff on Japanese cars.” Additionally, the Japanese government found it difficult to negotiate a proper binding trade agreement because it felt that all too frequently an executive agreement would be overturned by Congress.¹¹ This voluntary agreement protected the Japanese automakers from further government action, but they would have to start building cars in the United States or miss out on the full potential of the market.¹²

Toyota’s response to the import restrictions was Nummi. Rather than take the risk of building their own factory right away, they surprisingly decided to start a joint venture with GM, the largest American automaker. Toyota knew “[w]ithin a few years of coming on shore, [they would] become a stronger force than if they had remained mere exporters.”¹³

⁹ Steve Lohr, "Japan Will Ease Trade Barriers," *The New York Times* (New York, NY), January 5, 1982, sec. D.

¹⁰ Sawyers, "1979 oil shock"; "A short history of the lengthy US-Japan auto disputes," *Nikkei Asian Review* (Tokyo, Japan), January 25, 2017, Politics, accessed January 9, 2020, <https://asia.nikkei.com/Politics/A-short-history-of-the-lengthy-US-Japan-auto-disputes>.

¹¹ Benjamin, "Voluntary Export"; Mitsuo Matsushita, "Japanese View of United States Trades Laws," *Northwestern Journal of International Law & Business* 8, no. 1 (Spring 1987).

¹² Benjamin, "Voluntary Export."; Robert W. Crandall, "The Effects of U.S. Trade Protection for Autos and Steel," *Brookings Papers on Economic Activity* 1987, no. 1.

¹³ Thomas M. Hout, "Trade Barriers Won't Keep Out Japan," *The New York Times* (New York, NY), April 29, 1984, sec. 3.

Cultural Barriers

The culture in General Motors plants at the time was a large barrier for Toyota. GM was not known for its quality, and the root of GM's quality problems could be traced down to the culture at its factories. GM Fremont Assembly, the factory that later housed Nummi, was considered to be the worst. Illegal activity was rampant at Fremont Assembly, and management was powerless because of the union. According to Rick Madrid, who worked at the plant both under GM and Nummi, there was a lot of drinking on the line under GM management, but "as long as you did your job, they really didn't care."¹⁴ Additionally, absenteeism was a serious problem. "On a normal day, one out of five workers didn't show up, and it was even worse on Mondays."¹⁵ This environment was part of what led to the shuttering of Fremont Assembly two years before Nummi. If Nummi was going to be successful in building cars equal in quality to Japanese-built cars, everything would have to change.

Toyota's success was mostly due to the culture fostered by its management practices. Although there is no single definition of the management techniques that made Toyota so successful, there are key elements that form the core of Toyota management. Toyota management was and is marked by effective incentive systems, teamwork, and a focus on skills development.¹⁶ Additionally, as in many other Japanese companies, managers were not to

¹⁴ *This American Life*, "NUMMI (2015)," episode 561, NPR, July 17, 2015, hosted by Frank Langfitt, accessed January 28, 2020, <https://www.thisamericanlife.org/561/nummi-2015>.

¹⁵ *Ibid.*

¹⁶ Susan Helper and Rebecca Henderson, "Management Practices, Relational Contracts, and the Decline of General Motors," *Journal of Economic Perspectives* 28, no. 1 (Winter 2014): 56; Interestingly, the Toyota's management style was not a Japanese invention. Rather, it was introduced to a war-torn Japan by American engineer W. Edwards Deming.

control those below them, but rather “to provide the environment in which the group can flourish.”¹⁷ This helps create the opportunities for communication that are so necessary to retain the good relations between workers and management that are needed for teamwork.

In contrast, “GM had an ‘us vs. them’ mindset.”¹⁸ Nummi worker Joel Smith described how hostile relations with management were under GM at Fremont Assembly:

“In the old days, we fought for job security in various ways: ‘Slow down, don’t work so fast.’ ‘Don’t show that guy next door how to do your job—management will get one of you to do both of your jobs.’ ‘Every now and then, throw a monkey wrench into the whole thing so the equipment breaks down—the repair people will have to come in and we’ll be able to sit around and drink coffee.”¹⁹

It was not just the workers who were causing problems. Management was equally bad. As Smith describes:

“Management would respond in kind: ‘Kick ass and take names. The dumb bastards don’t know what they’re doing.’ . . . The message was simply: “If you don’t do it my way I’ll fire you and put somebody in who will. There are ten more guys at the door looking for your job.”²⁰

Without the proper channels for communication, managers and low-level workers had no respect for one another. This hostile environment led to rampant absenteeism and workers trying to get back at GM. “Some workers hated management so much, they sabotaged the vehicles. They put Coke bottles inside the door panels so they would rattle and annoy customers.”²¹

¹⁷ Keith Warburton, "Japanese Business Management Style," World Business Culture, accessed January 28, 2020, <https://www.worldbusinessculture.com/country-profiles/japan/business-management-style/>.

¹⁸ Mark Graban, "Highlights from the Original 1984 NUMMI Team Member Handbook, Part 1," *Mark Graban's Lean Blog*, entry posted November 15, 2016, accessed January 9, 2020, <https://www.leanblog.org/2016/11/highlights-from-the-original-1984-nummi-team-member-handbook-part-1/>.

¹⁹ Helper and Henderson, "Management Practices," 56.

²⁰*Ibid.*

²¹ Frank Langfitt, "The End Of The Line For GM-Toyota Joint Venture," *NPR* (blog), entry posted March 26, 2010, accessed December 15, 2019, <https://www.npr.org/templates/story/story.php?storyId=125229157>.

Like the workers they represented, union leaders at Fremont Assembly saw nothing good in the relationship between workers and management. UAW Shop Chairman George Nano said that "they were the enemy and it was war."²² According to industrial engineer Mark Graban, "the default plant culture was that management blamed the workers. The assembly workers, machinists, trades, and other UAW employees were generally looked down upon, if not belittled."²³

Toyota knew that they could overcome trade barriers by building cars in the US, but would the barrier of the culture of American car factories be too high? At first, "the Japanese did not want to use union workers," and a noticeable part of the UAW "said they'd never work for 'the japs.'"²⁴ This GM-U.A.W. rivalry went beyond what passed for normal in Detroit. "[I]t took a great deal of time and effort to convince the Japanese that the job could be done by U.A.W. members - and to convince the UAW to relax some of its work rules."²⁵ This was only the first of many barriers that would be overcome at Nummi.

The Nummi System

Before the Nummi factory began operations, around 450 group and team leaders were sent to Japan for two weeks to learn about the Toyota Production System through classroom and on-the-job training.²⁶ Although the physical factory was very familiar, the way problems were dealt with was shocking to the American visitors. The culture at Toyota's factories was

²² Danieljbmitchell, "NUMMI - Part One," video file, 6:30, YouTube, July 18, 2007, accessed January 14, 2020, https://www.youtube.com/watch?v=Ng_SaOT04Ts.

²³ Graban, "Highlights from," *Mark Graban's Lean Blog*.

²⁴ Susan Chira, "New Spirit at an Auto Plant," *The New York Times* (New York, NY), August 24, 1984, sec. D. Marguerite Michaels, "Fremont, Calif. Hands Across The Workplace," *Time*, June 24, 2001.

²⁵ Chira, "New Spirit," sec. D.

²⁶ Nummi, "Culture," Nummi.com, last modified April 7, 2010, accessed January 31, 2020, https://web.archive.org/web/20100407093357/http://www.nummi.com/us_roots.php.

very different. Rick Madrid described “watching assembly lines stop because some mechanic decided that he needed more time to rebolt a door.”²⁷ The rule at the factory under GM had been to never stop the line. Instead, the procedure was “to signal the defect by marking the door...so that the car could eventually be towed to a back lot and repaired.”²⁸ A sloppy repair later would mean that the car would start to come apart earlier. Interactions between workers and management also stood out to the Americans. Line workers told their bosses what needed to be done in order to fix problems on the line.²⁹ Such direct communication never would have flown at Fremont assembly, where it would have gotten workers slugged, fired, or both.³⁰ Teamwork and attention to quality were the key components that were transferred to Nummi.

Workers were expected to do their job right, not send problems down the line for someone else to fix later, even if it involved stopping the line. This was a huge shock to Nummi employees, and no one was able to change overnight. It took a visit from Tetsuro Toyoda, Nummi chairman and grandson of the founder of Toyota, for one employee to adopt this system. After having to guide the employee’s hand to pull the andon cord to stop the line,

“Toyoda faced Joe and bowed. He began speaking in Japanese. ‘Joe, please forgive me,’ a lieutenant translated. ‘I have done a poor job of instructing your managers of the importance of helping you pull the cord when there is a problem. You are the most important part of this plant. Only you can make every car great. I promise I will do everything in my power to never fail you again.’”³¹

²⁷ Duhigg, *Smarter Faster*, 143.

²⁸ *Ibid*, 142

²⁹ Duhigg, *Smart Faster*, 143.

³⁰ *Ibid*.

³¹ *Ibid*, 153.

Nummi's success was built on four key cultural components: mutual trust and respect, teamwork, equity, and involvement.³² Nummi's employee handbook claimed that this "[broke] down the barriers that have traditionally separated employee and management."³³ The value Nummi placed on equity is visible in the reduction in factory job classifications and the shrinking importance of office hierarchy.³⁴

Assembly line workers who experienced GM management at Fremont Assembly generally praised the Toyota system at Nummi. As *The New York Times* reported, paint worker Jesse Palamino said, "These people are for real. I hope Americans try to understand their system. G.M. never gave us the opportunity to create quality. They didn't care. These people really care and they prove it day by day and minute by minute."³⁵ In the same article, Jack Martinez, who worked at Fremont Assembly for seventeen years, commends management. "It's the way they treat people. You've got a say in how your job is done. It makes a person feel important."³⁶ Rather than being a barrier, the new culture developed at Nummi was the catalyst for its success.

The numbers back up the success felt by the workers. Absenteeism, once at twenty percent, fell to two percent.³⁷ Productivity improvements were huge; "labor costs are an estimated \$1,000 less per car than comparable models in other plants."³⁸ "Nummi was almost as

³² Russ Elliot, "Creating An Impactful Company Culture: A View of NUMMI From the Inside," *Conscious Culture Group Blog*, accessed January 8, 2020, <https://www.consciousculturegroup.com/creating-impactful-culture-a-view-of-nummi-from-the-inside/>.

³³ Nummi Team Member Handbook, excerpted in Graban, "Highlights from," *Mark Graban's Lean Blog* (see Appendix B).

³⁴ Adler, "Democratic Taylorism."; Elliot, "Creating An Impactful," *Conscious Culture Group Blog*.

³⁵ John Holusha, "A Blending of Cultures Produces a Car," *The New York Times* (New York, NY), April 5, 1985, sec. D.

³⁶ *Ibid.*

³⁷ Shook, "How to Change," *MIT Sloan Management Review* (blog).

³⁸ Harry Bernstein, "GM Workers Proud of Making the Team," *LA Times* (Los Angeles, CA), June 16, 1987.

productive as its sister plant in Takaoka and more productive than any other GM plant."³⁹ This is especially impressive given that Nummi's workforce was on average 10 years older than that at Takaoka.⁴⁰

Can Nummi Culture Spread?

The first attempt to replicate Nummi's success came not from the top brass at GM, but from the factory manager at Van Nuys Assembly attempting to implement the Toyota Production System there. However, because only the parts that benefitted management were implemented, workers resisted. The Nummi system was not without problems, and what was implemented at Van Nuys was only the problematic parts of it.⁴¹ Workers were expected to perform with the same efficiency they did at Nummi, but they were not properly cross-trained, and managers kept their old attitudes about not stopping the line.⁴² Without all of Nummi's version of the Toyota Production System becoming corporate policy, the barrier of the culture in the plants was too much.

General Motors' failure to apply the lessons learned at Nummi to other factories in a timely fashion has been the subject of much discussion. In 2010 after Nummi's demise due to GM's bankruptcy, *This American Life* ran a program about Nummi and dedicated much of it to exploring this question. The program concluded that because the cultural barrier at GM was too

³⁹ Adler, "Democratic Taylorism."

⁴⁰ *Ibid*, see table in Appendix A.

⁴¹ *The Barking Dog*, issue # 1 (August 1997) - issue #67 (October 2006); See Appendix C on *The Barking Dog's* role.

⁴² Barry Stavro, "State's Two Car Plants--Study in Sharp Contrasts," *Los Angeles Times* (Los Angeles, CA), January 28, 1990.

high to be broken without the whole company on board, no changes were going to be made until Nummi leaders became leaders of GM.

The necessary management shuffle occurred after GM suffered “the largest loss in American corporate history to that time-- \$23.5 billion” in 1992 and realized that it had to shake things up.⁴³ Many managers were fired, and Jack Smith, the executive who led the Nummi negotiations with Toyota became the CEO.⁴⁴ He saw the Nummi system as the best way forward for GM and moved to implement it as quickly as possible.⁴⁵ However, the barrier between Nummi and GM proper was so high that even with an order from the top, few people had any idea how to start. Even when taking the process one small step at a time, plant managers resisted so much that it was not until a decade later when more Nummi trained managers had risen high enough in the GM ranks to enable the Nummi version of the Toyota Production System to spread throughout the entire company.⁴⁶

Impact

Nummi was the first time that a Japanese automaker operated a factory with a unionized American workforce. Although the most obvious purpose of Nummi was Toyota breaking trade barriers, it was GM who truly benefitted from this partnership. Nummi served as the model for the modernization of GM. GM barely survived the 2008 financial crisis, and if it had learned nothing from Nummi it is very likely that it would have failed. Toyota gained a

⁴³ *This American*, "NUMMI (2015)," episode 561.

⁴⁴ *Ibid.*

⁴⁵ *Ibid.*

⁴⁶ *Ibid.*

manufacturing foothold in the US and an inside view of union negotiations. Rather than coping with the complications of union negotiations in their own factories, Toyota set up in places with no preexisting automotive workforce. GM gained a guided tour of modern manufacturing that it so desperately needed, and although it took its time to implement this lesson, it may just have saved GM 25 years later.

Appendix A

NUMMI PRODUCTIVITY COMPARISONS

	Framingham	GM-Fremont	NUMMI	Takaoka
Uncorrected productivity (hrs/ unit)				
• hourly*	36.1	38.2	17.5	15.5
• salaried	4.6	4.9	3.3	2.5
• total	40.7	43.1	20.8	18.0
Corrected Productivity ** (hrs/ unit)				
• hourly *	26.2	24.2	16.3	15.5
• salaried	4.6	4.9	3.3	2.5
• total	30.8	29.1	19.6	18.0

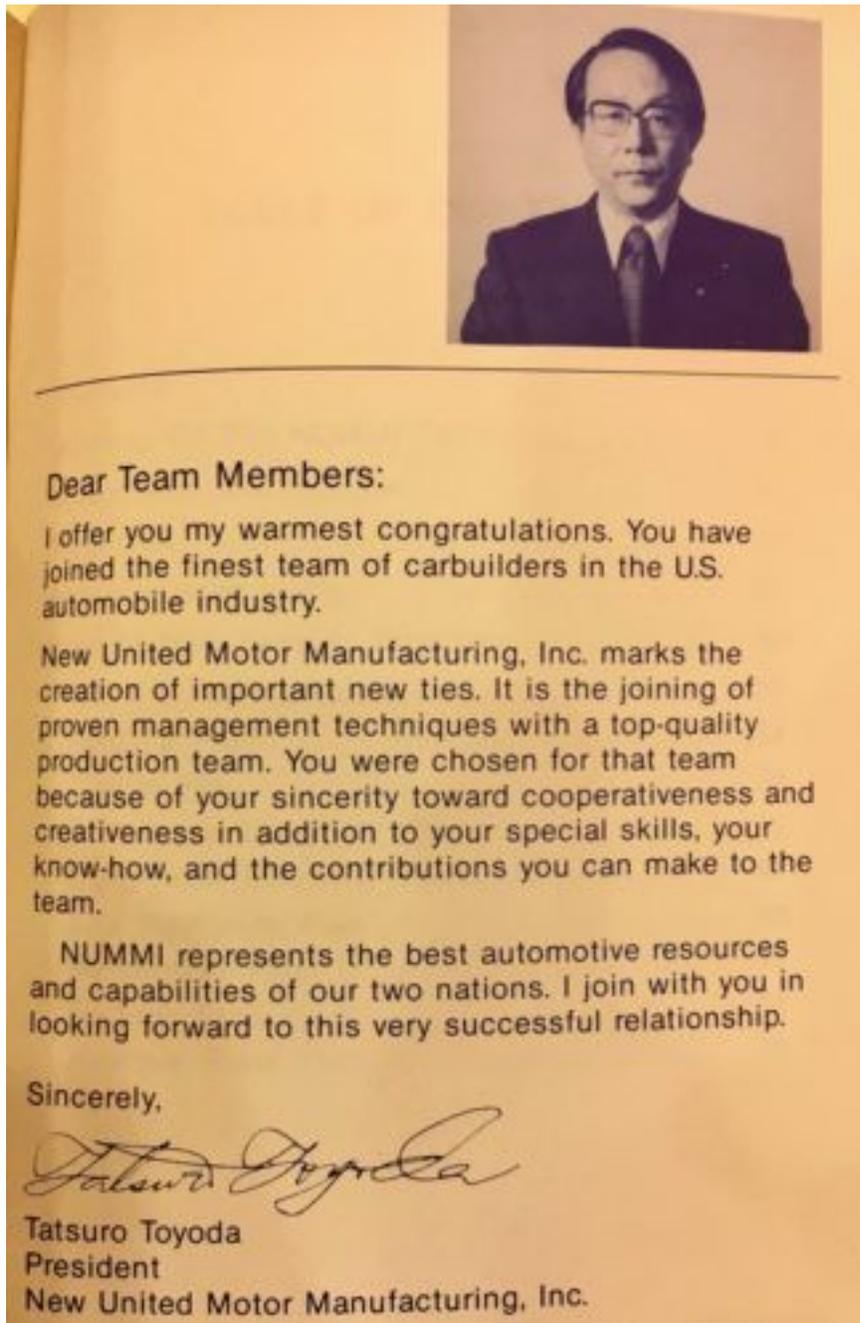
* excluding stamping, molding, and seat assembly personnel

** corrected for number of welds, welding automation, product size, relief time, and option content

[Source: Krafcik , 1986]

This table from Paul Adler's article on Democratic Taylorism shows the efficiency of the Nummi factory compared to its predecessor, Fremont Assembly. Framingham was a GM plant with comparable products and technology, and Takaoka was the Toyota plant Nummi employees were sent to for training.

Appendix B



The first page of Nummi's team member handbook highlights its focus on teamwork.



The Barking Dog

El Perro Ladrador
Ang Asong Kumakahol

Issue #14
May 17, 1999

Edited by Caroline Lund

This Is Not Fair!

My name is Santos, and I'm a damn good worker. I've worked for NUMMI for 14 years. My attendance is good. I come to work at times not feeling good, but I come to work. I have no disciplinary record.

My behavior is what you would call a little not too smooth. But I like people and people like me.

I have worked in the same group for 14 years, and now I have a gripe. I want to let everyone know what happened to me.

I was bumped from my team to another team so as to make room for an ADA [Americans With Disability Act] worker with restrictions who has 7 years seniority.

I'm not against any member who has a medical restriction. But the NUMMI-Union Agreement, page 6, paragraph 2, says that ADA people will be assigned to an open position in a group where they have "either seniority at least equal to the lowest seniority employee in the group or where the employee would be the highest seniority employee on the transfer list."

This ADA worker I will call "Person X" was placed on first shift in my area. "X" did not have anywhere near the seniority of the lowest seniority member in that group. Then "X" was bumped to night shift, where I work. Because of "X's" restrictions, "X" was given my job and I was bumped to another team.

It is unfair for management to use team member against team member. Or do you prefer me to call it favoritism?

Management and Union: What do you have to say?

YOU DID NOT ACT FAIRLY. Could it be you do not know what is in the Agreement book?

It would be good of you to correct this error. ▼

Different Rules for Different People?

By An Anonymous ADA Worker

I went out on Worker's Comp LOA over 2 years ago and was told by Safety that all LOA workers coming back to work had to rotate on the available light duty jobs, since there weren't enough for everyone to work steady.

At first there was no work available for me. When I did work, it was a week here and a week there. Occasionally a month. I would be replaced by another LOA person.

I soon became informed of other ADA workers who have been out of the plant for months, being told there was no work available when they could have done some of the same jobs I did. I know other ADA people, some with very low seniority, who had little or no time out without work.

Safety says workers are placed back on permanent jobs first by seniority, and second by if they are able to do the job within their restrictions. I was placed in an area permanently as a floater. I was told I would be assigned on a team when there was an opening.

I later requested a position that was going to be open within my restrictions. But I was told that a person from the Transfer List, not an ADA worker, was to fill the opening.

The same week this happened I went out for two weeks vacation. Now, the rules were changed!

When I returned from vacation I found that Management had placed an ADA worker on the same team I had requested and been denied. This was the same "Person X" from the previous story (the one by Santos). I have nearly 14 years seniority and "X" has 7.

Not all rules seem to be the same for all people! ▼

Canadian Auto Workers Occupy Plant

The following two items come from the Internet:

By Diane Albrecht, CAW Local 1325, Stratford, Ontario

WE DO HAVE RIGHTS, and one of those rights is meaningful employment. Workers at CanFab, CAW Local 1325, may be 90% women, but we know what we want. WE WANT JOBS, and our message was heard.

Continual outsourcing of jobs to Mexico and downsizing of our workforce resulted in workers of the Johnson Controls [CanFab] Stratford occupying the plant prior to the start of shift on April 15, 1999. Shortly after 2 a.m. last night, April 16.

Chris Greason (Plant Chair), Sue Danner (President), and Hemi Mitic (Assistant to Buzz Hargrove, President of the CAW), announced that our demands had been met. . . .

Our victory wouldn't have been as concise without the instantaneous support our Local received from other locals across Ontario and across Canada. . . . Once again workers have made their point, solidarity and support equals success. . . . And to all workers who are still involved in struggle, keep your head held high and walk proudly, this is OUR COUNTRY.

"An Incredible victory!"

By Kim Kent, CAW Local 4451, Stratford, Ontario

Last night when I went back to the [CanFab/Johnson Controls] plant there were hundreds of workers there from all over Ontario. . . . Many of the workers had been there all day and their spirits were still extremely high. There were Steelworkers, Machinists and UFCW members all lending their support. The excitement was incredible. . . .

The Barking Dog was a worker-published unofficial newsletter that mainly served to publish workers' concerns with the Nummi system.

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The Associated Press. "Last Auto Factory in Southern California Closed by G.M." *The New York Times* (New York, NY), August 28, 1992, sec. D, 3.

This article looks at what led to the closing of car factories in California. It credits Nummi's success to the Toyota Production System.

The Barking Dog, issue # 1 (August 1997) - issue #67 (October 2006).

This is a collection of an unofficial Nummi newsletter written by Nummi worker Caroline Lund. She mainly writes about problems at Nummi and how line workers are affected by them. She also gives a line worker's view of union leadership.

Bernstein, Harry. "GM Workers Proud of Making the Team." *LA Times* (Los Angeles, CA), June 16, 1987.

This newspaper article gives workers' perspectives on the culture and environment at Nummi. It also shows that Nummi team concept is no small part of what made it so successful compared to the Fremont plant.

Chavez, Lydia. "G.M. Sets Closing of 4 Parts Plants." *The New York Times* (New York, NY), February 26, 1982, sec. D, 1.

This article tells about GM closing parts plants as well as auto assembly plants. It also mentions layoffs and falling production across the American auto industry. This article was helpful for learning about the historical setting of Nummi.

Chira, Susan. "New Spirit at an Auto Plant." *The New York Times* (New York, NY), August 24, 1984, sec. D, 1.

This article explains the unusual relationship between workers and management at Nummi. It also mentions how Nummi represents a way forward for the American automobile industry.

Clines, Francis X. "Reagan Cautions Japan over Trade." *The New York Times* (New York, NY), January 20, 1983, sec. A, 1.

This article shows that US-Japan trade relations were still a subject of debate. It mentions that Japan was interested in extending its voluntary export restrictions on cars. This article was useful in finding the historical context of Nummi.

Crandall, Robert W. "The Effects of U.S. Trade Protection for Autos and Steel." *Brookings Papers on Economic Activity* 1987, no. 1: 271-88.

This paper from the Brookings Institution explores how trade protections affect the American automobile and steel industries. Much of it is dedicated to the voluntary export restrictions of Japanese cars in place during the time of Nummi.

Danieljbmitchell. "https://www.youtube.com/watch?v=zaYXSbGzDcs." Video file, 5:39. YouTube. July 18, 2007. Accessed January 14, 2020.

This is the second part of an unnamed and undated TV news piece on Nummi that appears to be from the early in Nummi's history. This part explains the Toyota Production System and credits Nummi's culture with its success.

———. "NUMMI - Part One." Video file, 6:30. YouTube. July 18, 2007. Accessed January 14, 2020. https://www.youtube.com/watch?v=Ng_Sa0T04Ts.

This is the first part of an unnamed and undated TV news piece on Nummi that appears to be from the early in Nummi's history. This part explains Nummi and includes interviews with workers.

D'Vorkin, Lewis. "Week In Business." *The New York Times* (New York, NY), April 24, 1983, sec. 3, 14.

This article describes the state of the economy in April of 1983. It specifically mentions how GM's first-quarter earnings were the highest they had been in four years, which was an important part of Nummi's historical context.

Holusha, John. "A Blending of Cultures Produces a Car." *The New York Times* (New York, NY), April 5, 1985, sec. D, 3.

This article credits Nummi's management practices with its early success. It also includes quotes from workers praising Nummi management.

———. "No Utopia, but to Workers It's a Job." *The New York Times* (New York, NY), January 29, 1989, sec. 3.

This article explains the Nummi system. It also illustrates that even if Nummi was not perfect, workers preferred it to the old style of management under General Motors.

———. "Why G.M. Needs Toyota." *The New York Times* (New York, NY), February 16, 1983, sec. D, 1.

This article explains what GM had to gain from Nummi. It also addresses the poor quality of American cars at the time.

Hout, Thomas M. "Trade Barriers Won't Keep Out Japan." *The New York Times* (New York, NY), April 29, 1984, sec. 3, 3.

This article describes how Japanese companies adapted to avoid trade barriers. It specifically mentions Nummi as well as non-joint venture auto plants.

Johnston, William B. "No Great Deal for the U.S." *The New York Times* (New York, NY), March 20, 1983, sec. 3, 3.

This article shows how Nummi may be seen as more Japanese than American. It also mentions how both GM and Toyota benefit from Nummi.

Langfitt, Frank. "The End Of The Line For GM-Toyota Joint Venture." *NPR* (blog). Entry posted March 26, 2010. Accessed December 15, 2019.

<https://www.npr.org/templates/story/story.php?storyId=125229157>.

This article compares the differences in attitude at the GM Fremont plant and at Nummi. It includes interviews with workers who were employed before and after Nummi took control of the plant.

"Last Remaining Auto Plant On The West Coast Closes." *Western Transportation News* (blog). Entry posted April 16, 2010. Accessed January 9, 2020.

<https://westransnews.org/2010/04/last-remaining-auto-plant-on-the-west-coast-closes/>.

This article looks back at Nummi soon after it closed. It gives a brief history of NUMMI and how GM tried and failed to spread the Nummi style of management to other plants.

Lee, Bruce. "The GM-Toyota Team; Worker Harmony Makes Nummi Work." *The New York Times* (New York, NY), December 25, 1988, sec. 3, 2.

This article rebukes claims that conditions at Nummi are worse than they are at "traditional" GM factories. It claims that Nummi's worker involvement will ensure that jobs are efficient and appropriate for the amount of time allocated.

Levander, Michelle. "The Divided Workplace." *Chicago Tribune* (Chicago, IL), September 17, 1989.

This newspaper article gives a brief history of the management styles previously used in American auto plants. It also explains why some people do not agree with Nummi's rush for maximum efficiency.

Lohr, Steve. "Japan Will Ease Trade Barriers." *The New York Times* (New York, NY), January 5, 1982, sec. D, 1.

This article talks about the Japanese trade surplus and what the Japanese government was doing to discourage other government from implementing tariffs on Japanese goods. It also describes how Japanese firms were protected from foreign competition by tariff and non-tariff barriers.

Matsushita, Mitsuo. "Japanese View of United States Trades Laws." *Northwestern Journal of International Law & Business* 8, no. 1 (Spring 1987).

This article by a Japanese law professor explains how Japanese businesses saw American trade law. A significant portion of it is dedicated to explaining why Japanese automakers agreed to the voluntary export restrictions that the US wanted, specifically because they could not count on Congress to be consistent.

Michaels, Marguerite. "Fremont, Calif. Hands Across The Workplace." *Time*, June 24, 2001.

This article explains how Nummi blended Japanese and American factory culture. It also mentions how Nummi took so long to spread.

Nummi. "Culture." Nummi.com. Last modified April 7, 2010. Accessed January 31, 2020.
https://web.archive.org/web/20100407093357/http://www.nummi.com/us_roots.php.
This archived page from Nummi's website is about its culture. It highlights the teamwork and high level of training that was so valuable at Nummi.

— — —. "NUMMI Milestones." Nummi.com. Last modified April 2, 2010. Accessed January 28, 2020.
<https://web.archive.org/web/20100402121111/http://www.nummi.com/timeline.php>.
This is an archived version of Nummi's website. This particular page contains a timeline highlighting achievements such as quality awards.

Parker, Mike, and Jane Slaughter. "Management by Stress; Behind the Scenes at Nummi Motors." *The New York Times* (New York, NY), December 4, 1988, sec. 3, 2.
This article is critical of the Nummi management style, calling it "management by stress." It gives a viewpoint contrary to many other articles. However, many of the claims the authors make are dubious when one considers that neither author worked at Nummi or a similar factory and that Nummi employees generally praised it.

Salpukas, Agis. "General Motors Reports '80 Loss of \$763 Million." *The New York Times* (New York, NY), February 3, 1981, sec. A, 1.
This article shows the state of the American auto industry in 1981. It specifically mentions that American automakers sales were falling because of their lack of smaller, more fuel-efficient cars.

Stavro, Barry. "State's Two Car Plants--Study in Sharp Contrasts." *Los Angeles Times* (Los Angeles, CA), January 28, 1990.
This article compares the Nummi factory with a GM factory. It shows how the entire Japanese management system must be implemented to achieve any success and that managers cannot implement only the parts that they like.

Secondary Sources

Adler, Paul Simon. "Democratic Taylorism: The Toyota Production System at NUMMI." *Lean Work: Empowerment and Exploitation in the Global Auto Industry*, January 1995.
This article gives a detailed explanation of the management style at Nummi. It highlights the "active participation" of workers as one of the keys to Nummi's success.

Benjamin, Daniel K. "Voluntary Export Restraints on Automobiles." *PERC Reports*, Fall 1999.
This article explains what led to voluntary export restrictions, the main trade barrier that led to the creation of Nummi. It also mentions how the key result of these restrictions was Japanese automakers building factories in the US.

BezatVideoGroup. "NUMMI Toyota and General Motors.mov." Video file. YouTube. Accessed January 9, 2020. <https://www.youtube.com/watch?v=ZkiwJSAXgLw>.
This is a short video history of Nummi. It includes short interviews with managers and workers who explain what Nummi meant to them.

Duhigg, Charles. *Smarter Faster Better*. New York, NY: Random House, 2016.
This book is about the science of productivity and how it applies to home and business life. The section on managing others uses Nummi as an example and gives many anecdotes about the management style there.

Economicshelp.org. "Trade Barriers." Economics Help. Accessed January 9, 2020. <https://www.economicshelp.org/blog/glossary/trade-barriers/>.
This web page defines trade barriers and defines a few important ones. It highlights voluntary export restrictions, which were a force in play at the time of Nummi.

Elliot, Russ. "Creating An Impactful Company Culture: A View of NUMMI From the Inside." *Conscious Culture Group Blog*. Accessed January 8, 2020. <https://www.consciousculturegroup.com/creating-impactful-culture-a-view-of-nummi-from-the-inside/>.
This article lists the key parts of Nummi's culture that made it such a success. It explains what each one was and why it mattered.

Gomes-Casseres, Benjamin. "Nummi: What Toyota Learned and GM Didn't." *Harvard Business Review* (blog). Entry posted September 1, 2009. Accessed January 8, 2020. <https://hbr.org/2009/09/nummi-what-toyota-learned>.
This article gives an overview of what each company gained from Nummi. It also shows how GM did not learn as much from Nummi as it could have.

Graban, Mark. "Highlights from the Original 1984 NUMMI Team Member Handbook, Part 1." *Mark Graban's Lean Blog*. Entry posted November 15, 2016. Accessed January 9, 2020. <https://www.leanblog.org/2016/11/highlights-from-the-original-1984-nummi-team-member-handbook-part-1/>.
This post highlights key parts of the original Nummi team member handbook. It shows how NUMMI focused on teamwork and worker responsibility.

———. "20+ Years Ago at GM: The Quality Death Spiral of Bad Management & Blaming Workers." *Mark Graban's Lean Blog*. Entry posted April 10, 2018. Accessed January 19, 2020. <https://www.leanblog.org/2018/04/20-years-ago-at-gm-the-quality-death-spiral-of-bad-management-blame/>.
This article explains the decline in quality at GM. Although it mainly focuses on declining quality in the 1990s, many of the problems mentioned were also present at Fremont Assembly.

Helper, Susan, and Rebecca Henderson. "Management Practices, Relational Contracts, and the Decline of General Motors." *Journal of Economic Perspectives* 28, no. 1 (Winter 2014): 49-72.

This article explains the decline of General Motors. A large portion of it focuses on Nummi and why GM failed to apply what it learned there to other factories.

Inman, R. Anthony, and David A. Victor. "Japanese Management." Edited by Gerhard Plenert. Reference for Business. Accessed February 2, 2020.

<https://www.referenceforbusiness.com/management/Int-Loc/Japanese-Management.html>. This webpage is a guide to Japanese business management culture. It details the structure of large Japanese companies. It also focuses on Japanese businesses' focus on efficiency and respect.

Niedermeyer, Paul. "The Toyota Cavalier And The Truth About Japanese Import Barriers." *The Truth About Cars* (blog). Entry posted January 19, 2010. Accessed January 9, 2020.

<https://www.thetruthaboutcars.com/2010/01/the-toyota-cavalier-and-the-truth-about-japanese-import-barriers/>.

This article tells about GM's attempt to sell their cars in Japan. It shows that even though Nummi may have seemed strange at first, it was nothing compared to earlier attempts to compete with the Japanese.

Nikkei Asian Review (Tokyo, Japan). "A short history of the lengthy US-Japan auto disputes." January 25, 2017, Politics. Accessed January 9, 2020. <https://asia.nikkei.com/Politics/A-short-history-of-the-lengthy-US-Japan-auto-disputes>.

This article gives a brief history of US-Japan trade disputes pertaining to the auto industry. It shows that these problems always existed and Nummi was not a magic solution for them.

Parker, Mike. "'This American Life' on Auto Workers: A Hack Job." *Labor Notes* (blog). Entry posted July 21, 2015. Accessed January 24, 2020.

<https://www.labornotes.org/blogs/2015/07/american-life-auto-workers-hack-job>.

This article highlights complaints about the Nummi system. It is useful as a direct contrary response to *This American Life*. However, it ignores the fact that workers generally preferred Nummi to Fremont Assembly.

Sawyers, Arlena. "1979 oil shock meant recession for U.S., depression for autos." *Automotive News* (Detroit, MI), June 26, 1996.

This article focuses on the 1979 oil crisis and what it meant for the American auto industry. It specifically mentions how consumer tastes seemingly changed overnight.

Shook, John. "How to Change a Culture: Lessons From NUMMI." *MIT Sloan Management Review* (blog). Entry posted September 30, 2009. Accessed January 9, 2020.

<https://sloanreview.mit.edu/article/how-to-change-a-culture-lessons-from-nummi/>.

This article provides an in-depth exploration of the culture at Nummi. It also includes a not-insignificant section on how operations at Nummi were different from operations at the Fremont plant under GM management.

This American Life. "NUMMI (2015)." Episode 561. NPR. July 17, 2015. Hosted by Frank Langfitt. Accessed January 28, 2020. <https://www.thisamericanlife.org/561/nummi-2015>. This program discusses the history of Nummi. Half of it is dedicated to how Nummi came into existence, and the other half is dedicated to why it took GM so long to implement the lessons learned at Nummi in other factories.

Warburton, Keith. "Japanese Business Management Style." World Business Culture. Accessed January 28, 2020. <https://www.worldbusinessculture.com/country-profiles/japan/business-management-style/>. This website gives overviews of business cultures in different parts of the world. This specific page focuses on Japanese management style, which is part of what Toyota brought to Nummi.