

## Writing About Ideas

I am attaching a passel of articles, case studies, and excerpts of reports, for your consideration.  
Thank you very much.

—Charles Euchner

### Articles

Missed Lessons (*CommonWealth*)

Sparking the Brain (*CommonWealth*)

How Did a 100-Year-Old Vision of Global Politics Shape Our Future? (*The Big Think*)

### Reports

Scale Up New York—excerpts

Making It here

### Case Studies

Herman Miller (Yale School of Management)

San Miguel (b) (Yale School of Management)

Martha Johnson and the GSA—excerpts (Yale School of Management)

### Reviews

Squeaky Wheels (*CommonWealth*)

Mind Games (*The American*)

The Brain's Way of Healing (*The Boston Globe*)

## Missed lessons

The pandemic created an opening for a long overdue rethinking of K-12 education. We squandered it.



**By Charles Euchner**

On Friday the 13th of March, at the order of Gov. Charlie Baker, schools shut down across Massachusetts. No one knew for how long or how schools would respond. Within days, teachers adapted their classes to online platforms like Zoom. Some held classes live, every day. Other teachers uploaded videos and assignments but otherwise had little contact with students.

After the lost spring, educators and parents lost the summer too. State and local officials, teacher unions, and parents debated the logistics of making a return to school safe. How many students could fit in a classroom? How could teachers enforce mask-wearing and social distancing? Could classes be ventilated to avoid stagnant—and potentially virus-laden—air? Where would students eat lunch? How would they get to school?

All were, of course, important questions. But the spring and summer of disruption also offered a once-in-a-generation chance for a deeper, statewide conversation about education. No one, however—not the governor, the teachers unions, or other professional or civic organizations—pushed the kind of wholesale reform that we urgently need for the post-COVID era.

“Necessity is the mother of invention,” said Ronald Heifetz, a globally recognized authority on leadership at Harvard’s Kennedy School of Government. “But if people don’t realize there is a necessity, they’re not going to be inventive.”

The failure began with a refusal to face up to the persistence of the virus. “We knew in March [that] the virus isn’t going away,” said Heifetz, who is also trained as a physician. “It’s a highly efficient spreading agent.” Despite the dangers of the virus, officials focused on how to return to “normal” as soon as possible.

“We can’t define success as returning to the status quo ante,” said Paul Reville, Gov. Deval Patrick’s education secretary, about schooling after COVID. “That was deficient in a variety of ways.”

Neema Avashia, an activist and an eighth-grade civics teacher at John W. McCormack Middle School in Dorchester, agrees. “We should be blowing up the way we think about school and learning,” Avashia said. “Let’s not replicate the way we do traditional courses.”

Businesses across the state already have begun to reinvent the way they operate. Almost half of the companies surveyed by the Massachusetts Competitive Partnership said they would continue to work remotely, at least part of the time, after the COVID crisis. Could schools do the same? Should they? If so, how?

For years, reformers have called for project-based learning, greater student collaboration, and smarter uses of technology. But classes are still dominated by teachers talking, pushing to “cover the material” rather than engage students deeply in learning. New approaches in recent years—from computers to charter schools to high-stakes testing—have simply been grafted onto the existing system.

The greatest lesson from the COVID spring, educators and reformers say, is the need to abandon the top-down model of schooling. “Learning only happens in relationships,” Avashia said. “This is

potentially a moment for creativity. But we’re not going to get it right if we try to do the same things over the Internet.”

With the old routines blown away by COVID, the best teachers discovered powerful lessons about teaching and learning. The question is whether Massachusetts has the will to use these lessons to launch a once-in-a-lifetime revolution. So far, the answer has been no. But the lessons are still there, waiting to be picked up and used.

### ***Lesson 1: Connect with the community***

When Suzie McGlone heard about the shutdown, she moved quickly to connect with her students’ families.

McGlone, who teaches civics at Orchard Gardens K-8 School in Roxbury, made business cards with her personal cell number and posters telling her students where they can get free meals. She connected with activists, doctors, and community leaders.

Then she got online and started teaching. She invited 10 guest speakers who could inspire her Cape Verdean students. The speakers included the son of the island nation’s president, authors on civil rights, a doctor and qigong master, and members of the Boston City Council. Her reasoning was simple: Only when students feel connected—to their history, to their community, to each other and their teacher—can they learn.

To combat absenteeism, McGlone texted students an hour before their online classes. She also held evening sessions. She got parents to serve as Spanish and Creole translators. Every Wednesday, she checked in with all her students’ families. She also started an evening book club for parents.

Reville, now a professor at Harvard’s Graduate School of Education, agrees that reform requires total community engagement.

“We need to emphasize relationships as we have never done before,” he said. “In high school, teachers typically see 150 kids a day. Guidance counselors see 400. One of the biggest crises of this pandemic are peer-to-peer and student-to-faculty relationships. With so much going online, we’re going to have to bend over backwards to build relationships.”

To make that happen, schools must work constantly to connect with families—with advisories,

home visits, regular check-ins, and after-hours consultations. Knowing students' families is often more important than devising a great class project or a zippy Zoom lecture.

"For years we have given lip service" to engaging families, Reville said. "Most schools have treated this as an afterthought if not a nuisance. Now, suddenly, the rhetoric has to become the reality. If parents are going to support their learners, they need help."

Here's one way. In the early days of the shutdown, community organizations in East Boston—schools, faith institutions, libraries, government agencies, barbers and beauticians, health centers, child-care providers, housing developments, homeless shelters, and employers—launched a program called The Basics to give pre-K kids these experiences.

Under the program, devised by Harvard Kennedy School researcher Ronald Ferguson, community partners agree to connect with pre-school kids in five specific ways: providing love and managing stress; talking, singing, and pointing; counting, grouping, and comparing objects; movement and play; and reading and discussing stories.



**Harvard Kennedy School professor Ronald Ferguson. (Photo courtesy of Ronald Ferguson by Kris Snibbe/Harvard University Staff Photographer)**

Without such community "saturation," kids from low socioeconomic backgrounds fall behind more affluent children at exponential rates. In a lockdown, even better-off students fall behind and

struggle to catch up. "If parents can't play their roles, someone else must," Ferguson said. "We need a collective movement to give these children what they need to learn."

The need for community saturation goes beyond toddlers. Advocates of critical thinking and creativity have long argued against the passive old model of learning: lecturing, note-taking, cramming, and regurgitating. To really learn, students need to be engaged, not just with teachers and classmates but people all over the community.

### ***Lesson 2: Keep it simple***

Soon after classes moved online, the routines of eight-period days, with students quickly shifting their attention to new subjects, melted away.

In a time of chaos—in an age when schools wrestle with virtually every social problem, from homelessness and family breakdown to mental illness and abuse—teachers need to give their students focus. Maybe teaching 150 students, whose attention constantly shifts over the school day, is not the best model for deep learning.

To keep students engaged, schools need to embrace a number of practices. To start, teachers need to greet their students as they arrive for the day's activities. Schools need uniform, accessible learning platforms. In Springfield, parents complained that they had to master seven different learning management systems to help their children. "That was well-intentioned," said Paul Foster, the system's chief information officer. "We wanted to give teachers control. But we need everyone on the same platform."

Teachers also need new curricular tools and coaching to meet their new challenges. "Let's make sure, with partnerships and online tools, to create online curricular materials," said Justin Reich, director of the Teaching Systems Lab at MIT. "So when we flip to go online with a surge of COVID or just the flu, instead of every teacher scrambling, there are some curricular materials available. Either way, teachers need a ton of resources."

Schools also need to break free of the tyranny of the eight-period school day and its assumptions about curriculum. "Let's do a few things really well," Reich said. "Let's create smaller communities—almost like a one-room schoolhouse."

"Schools have to decide which [curricular] areas they're really going to take seriously," said

Ferguson. “That’s the anchor. Everything else is related to that.”

Even in the best of times, asking teachers to track 100 or more students doesn’t make a lot of sense. But in a time of uncertainty, teachers need to know their students.

A number of Massachusetts schools adopted, at least temporarily, the use of advisories. Advisories are homerooms on steroids. They bring together a small group of students with a teacher, who gets to know them and guides their development throughout the high school years. Too often, struggling students now get lost in the crowd, grow alienated and frustrated, and see their failures cascade.

When students are part of cohesive “tribes”—with students not just passively learning but also contributing to the group—they thrive. They not only develop social ties but also help each other on academic work. For decades, research has found peer-to-peer tutoring to be one of the best approaches to learning. Students could work together on common projects, from drama videos to programming marathons to mock trials.

Schools also might consider adopting some version of the “block system” of Colorado College, which gives students intensive courses for a month at a time. Under this approach, teachers get to know their students and engage them more personally.

With bigger blocks of time for learning, classes could focus on what matters. Rather than following a traditional lecture-and-discussion model of classroom learning—the “sage on a stage”—teachers could embrace more effective learning activities. They would know their students better and serve as advisors and guides.

Schools might start by experimenting with mini-blocks. Classes in the humanities and social sciences could come together for half the day, for example, while classes in math and science could come together for the other half.

The block approach could make it easier for schools to address the problems of inequality. Schools need to focus on students who struggle because of their low socioeconomic status or learning problems. Otherwise, they could be lost forever. “If we’re in a hybrid situation, they should ask: Who needs to be in the buildings the most?” Reich said. “Then make sure they get it.”

Such a scenario raises alarms about institutionalizing a two-tiered system. A better solution would be to embrace choice for learning models. Some students—not just those needing more help, but also those who thrive in buzzing social settings—might embrace a complete in-school model. Others might choose a hybrid model, with a mix of work in and out of the school building.

### ***Lesson 3: Focus on a common learning challenge***

The day the pandemic shut down Massachusetts, Sue Szachowicz was in Dartmouth to meet with school officials. Her goal was to bring to the town nestled along Buzzards Bay an innovative writing program that she helped to pioneer in Brockton.

Szachowicz was the principal at Brockton High School when the school transformed itself from one of the worst to one of the best-improved schools for MCAS in the state. With an 83 percent poverty rate and diverse population (students spoke 49 languages at home), Brockton had languished at the bottom of statewide rankings for years. Only 22 percent of Brockton High students passed the English and 7 percent passed the math MCAS in 1998.

Ideally, Szachowicz says, a school is a learning community where everyone supports everyone. People talk regularly about their common concerns and strategies to connect with students. The need for a singular focus is especially important in chaotic times.

To confront its achievement crisis, Brockton High School embraced writing across the entire curriculum. All classes—from history to science to math—taught writing, reading, speaking, and reasoning. Some teachers grumbled, but they went along. MCAS failure rates plummeted from 1998 to 2017, from 44 percent to 1 in English and from 75 to 9 in math.

The emphasis on writing gave students skills that they could use their whole lives. “Writing is thinking,” Szachowicz said. “If you can explain something, you understand it.”

Writing across the curriculum also gave students an outlet for expressing themselves and connecting with others. Szachowicz remembers spying on Vincent Macrina’s band class. Before a Veterans Day concert, Macrina passed out copies of John McCrae’s “In Flanders Fields,” a poem about the

fallen of World War I. Write down “every emotion you feel when you read it,” he said. Ten minutes later, students discussed those emotions.

“Now, pick up your instruments,” Macrina said. “I better feel every emotion when you play.”



**Sue Szachowicz in the hallway at Brockton High School during her time as principal. (Photo by Frank Curran)**

Especially in a time of crisis, everyone’s minds get scattered. Teachers can’t connect with students online if they bombard them with facts and equations. Instead, they need to create a common challenge. Then teachers need to reinforce that challenge.

Schoolwide focus doesn’t necessarily have to come from writing. Schools could focus on other topics or skills. The ideals of service or justice could be adapted to most subjects. So could history, languages, the environment—or even, *a propos* of COVID, living in a time of global crisis. What matters, says MIT’s Reich, is adopting a focus “big or capacious enough so people in different [subjects] can connect with their own approaches and values.”

Tom Eastabrook, a trainer for workplace safety at the University of Massachusetts Lowell, has a timely idea for focusing teachers and students in all subjects: studying place. “We’ve had to navigate through space, in order to stay safe, in a very conscious way,” he says of the pandemic. “This is

what students are living. They could use it to learn too.” Place could help to frame a variety of school subjects—physics, history, economics, mathematics, health, even the arts and music.

#### ***Lesson 4: Embrace new teaching methods***

During the spring lockdown, schools got a simple directive from state education officials: Don’t worry about attendance, tests, or grades. Just survive till the end of the year.

Using Zoom and other online tools, many schools managed to engage most of their students. Many students got bored with still presentations and drifted away. Others thrived. But few teachers had experience teaching online and it showed.

The summer presented an opportunity for districts to hit the reset button. Some districts used professional development money to get teachers to cut videos for class use or to revise their teaching plans. But most districts focused on health and safety issues until August.

The Milford schools hired the Cambridge-based company Better Lesson to help teachers get ready for 2020-21. The company provides resources, workshops, and one-on-one coaching. Its website offers hundreds of video lessons and teaching strategies, which teachers can fit into their learning “ecosystem.” These lessons guide teachers and students through a three-step learning process: define (problems, concepts, and goals), explore (specific strategies that address the problem), and build (summarize, make connections, and look ahead to new learning).

In the rush to return to normal, educators often embrace a false dichotomy between traditional schooling and everything else. The refrain that “nothing can replace classroom learning” is false for two reasons. First, traditional classroom routines—teacher-driven lectures and discussions, test-driven activities, pushing to “cover” material without deep understanding—are often wanting. Second, while classroom work is vital in creating relationships and engaging learners in discovery with each other, other activities often work better.

To rebuild education, after the pandemic, educators should explore what activities work best in person and online, in real time and asynchronously.

The key is to identify what lessons might be improved with video lessons and exercises and which

ones benefit from live meetings. A video might offer a better how-to statistics lesson on using Excel spreadsheets than a classroom lesson. Students can take their time, view the video over and over, and follow the steps until they get it right.

Across the country, schools report the most success with online collaboration. In Zoom meetings, classes thrive when broken into small groups to work on mini-assignments. As students work on problems in small groups, the teacher can check their progress and nudge them in the right direction. An even more powerful tool is Google Docs. Students can contribute to class projects—data from field studies, feedback from readings, questions from class—around the clock. Students who are normally mum in class and limited in assignments, teachers say, often come alive in their contributions to group documents.

With the right coaching, teachers can create “synergy” with students, said Laura Boothroyd, the director of partnerships and strategy for Better Lesson. Students and teachers can work as teams even when separated. The biggest problem with distance learning, she said, is the feeling of “second-class citizenship” online. “It’s a false dichotomy to separate them,” she said. “We have to pay close attention to both.”

Teaching online need not be bad, says Sarah Marie Jette, a fourth-grade teacher at Thompson Elementary School in Arlington. “The classroom is my happy place,” she said. But after teaching online, she realized she could also connect with students at a distance. “People form relationships online all the time,” she said. “They even find love online. We can do it.”

To master the dozens of online and in-person tools and strategies, the teaching profession needs to overhaul training and career development. Rather than going to conferences or earning degrees or credits, teachers need to be engaged in an ongoing process of improvement—preferably with peers and coaches. David Rosenberg, a partner at Watertown-based Education Resource Strategies, calls for “connected professional learning.”

ERS organizes 90-minute sessions that allow teachers to share experiences and strategies. Teachers collaborate with subject-matter peers across the country, sharing techniques and feedback. Rather than asking teachers to run their classes on their own, the ERS model encourages teachers to get

together and decide on a division of labor. “In middle and upper grades, I can get the best teacher to do the lecture and three other teachers to work in small groups,” Rosenberg said.

But these efforts are scattered and uncoordinated.

Modern learning, says Reville, the former state education secretary, will be built around modular programs—both inside outside school, online and in the community, in real-time and asynchronously. He cites the rise of “coronavirus pods,” which generally have involved more affluent families pooling their resources to hire teachers for small groups of their kids.

Such an approach raises equity issues. Just as SAT tutoring tilts the game in favor of affluent families, so might these pods. But rather than resisting pods as elitist, school systems might consider ways to support pods for all. Why not make these and other enhancements available to all, Reville asks, by creating educational savings accounts?



**A young girl on playground at the Mather Elementary School in Dorchester on October 1, the first day some students returned to in-person classes. (Photo by Michael Jonas)**

### ***A ‘Sputnik moment’?***

When the Soviet Union launched the Sputnik satellite in 1957, Cold War America went into a panic and boosted spending on math, science, and language programs to fight back. Paul Reville wants to use the pandemic to create a “Sputnik moment” for schooling.

In the original Sputnik moment, the federal government boosted funding for math, science, and foreign language programs but did not challenge the

basic model of public education. The answer then was more of the same. But the current crisis calls for fundamental change.

The late Clayton Christensen, the longtime Harvard Business School professor and father of “disruption” theory, argued for a complete rethinking of education. Rather than trying to do a better job with old approaches, Christensen called for using technology to redesign schooling from top to bottom—just as Apple disrupted the phone industry, Uber the taxi industry, and Airbnb the hospitality business.

Out of the ruins of the COVID spring, Massachusetts and other states had a historic opportunity to turn the Lost Spring into the Great Pivot. “The summer should have been used to train teachers how to teach online, to figure out the support systems for parents,” said Heifetz, the Harvard leadership expert. “What are the additional support systems [needed] to sustain families and children for the next 12 months?”

Heifetz, who has worked with state education commissioners across the country, quickly ticked off a list of lost opportunities for Massachusetts.

What if, he asks, Gov. Baker had created a statewide commission to rethink education during *and after* the pandemic, with big financial incentives to experiment with different hybrid models? What if Baker had jawboned corporations into providing free WiFi and computers? What if he

offered grants to educators who worked together—across districts—to devise teaching tools for the new reality? What if the governor had worked with unions to devise a new deal for teaching under the pandemic and beyond? What if he had worked with Beacon Hill to pump millions into training, curriculum development, and support services for vulnerable families?

Instead, the state directed districts to come up with plans to teach in the classroom, online, or with a mix of approaches. Week after week, districts debated the health risks of returning to their buildings. They managed pressures from parents as well as possible, without much guidance from the state. They got even less help taking on the ultimate challenge: devising creative and effective plans for teaching and learning.

The assumption was that schooling, for the second phase of COVID and afterward, would look a lot like education before COVID. The pandemic opened a door for sorely needed reform, but no one walked through it.

*Charles Euchner is a former executive director of the Rappaport Institute for Greater Boston at Harvard University and a former planner for the City of Boston. The author of books on civil rights, baseball, and urban policy, he is completing a book about Woodrow Wilson’s campaign for the League of Nations. Reach him at [charleseuchner@gmail.com](mailto:charleseuchner@gmail.com).*



# Sparkling *the* brain

Research suggests that ‘go-go’ exercise improves fitness and academic performance

BY CHARLES EUCHNER | PHOTOS BY MICHAEL MANNING

**M**usic from a homemade CD blares from a crackling sound system at the Millis Middle School in the town of the same name. Twenty eighth-graders stream into the gym and pick up heart monitors lying in a straight line on a desk. The students wrap the long black plastic bands around their chests, slip on wristbands that record the heart signals sent from the bands, and start to move.

Some stretch their legs. Some shoot baskets. Some run laps. After a while they start playing “ultimate ball,” a fast-paced game where teams of three kids run up and down the gym floor throwing the ball to each other. Players get the ball, run, and throw. They constantly change direction and sometimes bump into each other. With such urgency to get rid of the

ball, no one kid dominates the floor, and no one gets left out of the action.

The one constant in all this activity is nonstop motion. For a visual image, think of the hyper Jim Carrey in the movie *Mask*, multiplied by 20. The goal is to keep students in “the zone”—with their hearts beating at peak rates of at least 175 beats a minute—for 20 or 30 minutes. At the end of the class, students check the data from their heart monitors. In this March class, all but two of the students played in the zone for at least 20 minutes.

Fitness experts have long celebrated the effects of aerobic activity on the body, such as weight loss, increased oxygen supply, lower cholesterol levels, better efficiency in the nervous system, and better lung



Physical education instructor Scott Kendrick, center, created his own fitness program for Millis Middle School.

and heart capacity. Now Harvard Medical School psychiatrist John Ratey says another benefit can be added to this list: dramatic gains in learning capacity.

Ratey has been traveling around the country promoting a new model of physical education with born-again zeal. In February, he published a provocative new book, *Spark: The Revolutionary New Science of Exercise and the*

*Brain*, that details the growing evidence that exercise gives the brain greater capacity to learn.

“The brain is really no different than any other part of the body, like muscles,” says the 60-year-old Ratey, a lifelong athlete who was a high school tennis star growing up in Beaver, Pennsylvania, and began running marathons when he moved to Boston in the 1970s. “We used to think

that once the brain developed, it was set. But that's not true. It's a very dynamic thing. You can shape the brain, make it better. And exercise is one way to do it."

From the pre-teen years to early adulthood, Ratey says, we develop twice as many branches in our brain cells than at any other time, a process that scientists call "exuberance." This cranial festival makes the brain more "plastic," or capable of change, than at any other time after infancy. Not only does the brain's gray matter bloom, but a process called myelination fosters connections between the right and left hemispheres.

Exercise offers an ideal way to excite the brain, Ratey says. During periods of high-intensity exercise, chemical messengers move more freely among the brain's 100 billion neurons. With exercise, the neurons' dendrites (the antennae that send and receive signals) and synapses (the molecule-rich points of connection between neurons) become more vital, improving their capacity to give and receive messages.

Studies show that learning is greatest in the two or three hours after strenuous exercise, when the physical activity makes the brain more "plastic." Ratey says some kids can keep their learning edge for a whole day, but he suggests two-a-day workouts, once before school and once to fight early-afternoon blahs. The exercise primes the brain for learning; after physical activity it takes in more ideas and retains them longer.

"It's incredible to see all the kids able to do this," Ratey says as he watches the Millis students jump rope. Some of the students whip the rope around in a crisscross like Rocky training for his fight with Apollo Creed. "This is hard work. It's good for the cerebellum. You really give the brain a workout."

### A FALLOFF IN PHYSICAL EDUCATION

The spectacle of kids exercising with such frenzy and joy (every kid on the floor in Millis wore a smile) is a rarity in public schools these days. Statewide, and across the nation, fitness programs have suffered deep losses since the 1990s. Like art and music, fitness is considered a frill—nice to have, but not essential for kids getting ready to compete in a global economy.

Massachusetts mandates physical education for all grades, but it does not have any specific requirements for the number or kinds of classes. Theoretically, a school can provide one day of physical education a week and comply with state standards.

As late as 1996, the state required all children to get at least 90 minutes of exercise every week, and 80 percent of all Massachusetts kids took a physical education class at least once a week. Now the state has no minimum exercise requirement, and only 58 percent of Massachusetts kids

take a physical education class at least once a week. Anecdotal evidence suggests that gym classes have been hit hardest in poor school districts, which often lack adequate facilities and have cut back on faculty.

The Massachusetts chapter of the American Association for Health, Physical Education, Recreation, and Dance recommends at least 150 minutes a week of physical education for elementary school children and 225 minutes a week for upper-school children.

Nationally, the share of students participating in daily physical education classes declined from 42 percent to 28 percent between 1991 and 2003, according to *The Shape of the Nation*, a 2006 report from the National Association for Sport and Physical Education. American Association of

**Learning potential may be at its peak a few hours after strenuous exercise, when the brain is more 'plastic.'**

Health, Physical Education, Recreation, and Dance. At the time of the report, only two states, New York and Illinois, mandated specific time for physical education. Only 5 percent of schools required PE classes in the 12th grade, compared with 50 percent in grades one through five and 25 percent in grade eight. Only 8 percent of elementary schools and 6 percent of high schools provided daily PE for all grades.

The falloff in physical education requirements has coincided with a bulge in childhood obesity and sedentary lifestyles. *The Shape of the Nation* reported that the percentage of young people who were overweight had tripled since 1980. Sixteen percent of children aged 6 to 19 were overweight, and 60 percent of children aged 6 to 10 faced some risk of cardiovascular disease, such as high blood pressure or excessive levels of cholesterol. One-quarter of the children in this age group had two or more risk factors.

### LIKE 'MIRACLE GRO' FOR THE BRAIN

Naperville, a Chicago suburb, is ground zero for the revolution in fitness-based learning. Physical education classes in Naperville once focused on skills and strength, which frustrated the vast majority of students who simply needed to get fit. The district's innovators wanted to change the dynamic of physical education, so they invented high-speed games and tried to make socializing an important value. A square-dancing class, for example, not

only gets kids moving but also gets them talking. Heathers have to chat up nerds; jocks chat up brains.

Students gather at school for “Zero Hour PE” every morning at 7:10. After strapping on heart monitors, they run a mile around the outdoor track, hitting a red button that gives them times for every lap. The instant feedback gives the kids a time to beat next time around the track. The fitness routines take place before school starts so that kids are ready to learn.

The effort has paid off. In the district of 16,000 students, only 3 percent are overweight, while nationwide 30 percent of school-age children are overweight and another 30 percent are “on the cusp.” Craig Broeder, a researcher at nearby Benedictine University, dismisses claims that Naperville students are more fit because their parents are generally affluent and well-educated. “The numbers are too high for it to just be that,” he says. “Let me put it this way. You can’t say for sure that the PE program does it, but their fitness is so far off the scale that it can’t be just because it’s *Naperville*.”

## The Chicago suburb of Naperville transformed phys ed by focusing on speed and fitness rather than strength.

A fitness-learning link may also be emerging, according to research conducted by Ratey. Students at Naperville Central High School (where annual per-pupil spending was \$8,939 in 2005) outperformed the students of New Trier High School in Evanston (with per-pupil spending of \$15,403) on the state’s mandatory tests. On the Trends in International Mathematics and Science Study, a rigorous test that matches selected American schools with its toughest global competitors, Naperville’s eighth-graders finished first in the world in science and sixth in the world on math, according to Ratey. “Obviously there are a lot of factors,” he says. “But exercise is definitely one of them.”

Dozens of studies have found that when subjects are placed in physically demanding environments, they develop their brains more quickly. A landmark 1995 study by Carl Cotman found that exercise strengthens not only the cerebellum and other motion-oriented parts of the brain, but also the hippocampus, which is essential for learning. A 2005 study of nearly 900,000 students in California found strong correlation between fitness standards and scores on the SAT and other standardized tests, and a 2007 German study indicated that people learn vocabulary

words 20 percent faster after exercise. Another 2007 study found that one 30-minute session on a treadmill increases information processing and cognitive flexibility.

Research suggests that people today burn 62 percent less energy, per unit of body mass, than our Paleolithic ancestors. So how much exercise should we be getting? Ratey suggests a simple formula: Multiply body weight by eight for the total number of calories to burn in a week. A 150-pound boy, for example, would need to burn 1,200 calories a week—say, by exercising six times weekly and burning 200 calories with each workout.

High-impact exercise, Ratey says, fertilizes the brain “like Miracle Gro.” The lush the brain’s landscape, the greater the opportunity to reshape the brain every day. Exercise, he says, strengthens virtually every section of the brain, including those devoted to memory and problem-solving.

(Ratey also says he has weaned patients of all ages off medication by putting them on high-intensity exercise regimens. Prescriptions for Prozac, Ritalin, and Zoloft, he acknowledges, can help patients with depression or attention deficit disorder, but he says they do not work on the whole brain or the whole person. Exercise reshapes the brain’s whole landscape, Ratey says, without debilitating side effects.)

He practices what he preaches. Watching TV at night, he runs outside to jump rope during commercials. He says he likes what it *feels like* to play. “Play is something worthwhile in itself,” he says. “But it’s also social skills training, it’s trying things out and learning how to get along.”

Since reports of Naperville’s success have circulated, other districts have gotten into the act. Titusville, a declining industrial town in western Pennsylvania with a median income of \$25,000 and 75 percent of its kindergarteners on the school-lunch program, started a new fitness program in 2000. Since then, scores on standardized tests have risen from below the state average to 17 percent above on reading and 18 percent above in math. Titusville officials also claim that the junior high school has not had a single fistfight since 2000.

Ratey has been working with schools in San Diego, Charleston, and Chicago, and at a recent wellness conference in Boston, he pushed for the Boston public schools to be next. Meanwhile, a Kansas City–based organization called PE4Life has taken up the challenge of training teachers, collecting information on best practices, and helping districts develop new programs. (PE4Life provided materials for the fitness programs in Millis and Natick.) And now parents and school administrators are calling Ratey to ask permission to start “spark clubs” so kids can play high-speed games to keep in shape. He claims no control of the word “spark,” despite his book’s title.

“I say, ‘Go ahead,’” Ratey laughs. “Why not have as

many of these clubs form as possible? That's how change is going to happen."

### FORGING BETTER CONNECTIONS

Scott Kendrick discovered the body-brain connection while taking distance courses with Ratey as a master's student at Bridgewater State College. The former National Guardsman has read *Spark* and carries a binder full of academic journal articles on the body-brain connection. When he took the Millis job in the summer of 2006, he had only weeks to prepare for the fall, but he visited the schools in Naperville and came away impressed.

A three-year \$150,000 grant from the Metro West Community Health Care Foundation allowed Kendrick to create his own fitness program. The school's principal carved out one period a day for seventh and eighth graders, and Kendrick gets the kids every day for one semester. (During the other semester, the time is used for MCAS

## The irregular movements of 'ultimate ball'—like those in ballet, skating, and karate—engage many parts of the brain.

prep classes.) "I wish I had them for 180 days, not just 90," Kendrick says.

During one of Kendrick's classes, the students play "ultimate ball." Because the game moves so fast, the kids have to be alert at all times. Their eyes are wide open, like Little Orphan Annie, and they move with sudden stops and starts. The irregular movements—like those in dancing, ballet, gymnastics, figure skating, Pilates, and karate—engage many parts of the brain and force them to work harder, says Ratey. That leads to better connections among the brain's 100 billion neurons, he adds.

When the kids aren't playing go-go games, they learn about nutrition and other health issues. Students calculate the fat content of fast food. They watch as their teacher spoons out globs of fat from a can of Crisco, just to show how disgusting fat buildup can be. To show what's in a can of Coke, the teacher pours tablespoon after tablespoon of granulated sugar into a glass.

The 29-year-old Kendrick stresses fun. He tries to get kids to be in the zone for as much as possible of their 30-minute games. He cheers when students tell him that their heart rates have reached 175, 180, or even 190 beats a minute. "Good going," he tells a student who reports a heart rate of 190 and peak rates for 23 of the game's 32

minutes.

"The heart-rate data and the weight issue [are] secondary," Kendrick says. "I would never ever, ever, ever mention their weight or even heart rate unless they asked about it. I could be really brutal with an exercise routine. But when the kids have a great time, they're more likely over the long time to be healthy. The weight issue is so sensitive. They're so self-conscious. Once you focus on things like that, it makes them obsess. If they're having fun and feel great about themselves, they'll do it and keep doing it."

The emphasis on fun helped seventh-grade student Vanessa Pourier thrive during the roughest period in her young life. Vanessa's parents worried that family tensions—the breakup of their marriage, her mother's struggle to get back on the job market, her older brother's battle with depression, and Vanessa's ongoing problems with being overweight—would sabotage Vanessa's school work and social life.

But despite the family problems, her grades and spirit actually improved after she started participating in the Millis exercise program. She also lost weight and started feeling better about herself. When she came home from school, she sought out her mother to chat about fitness and nutrition. "We never talked about any classes like this before," Janine says. "Something was happening. It was an emotional relief and gave her hope that maybe [by] getting in shape, with the right tools, she could achieve her goals."

Another Millis mother, Shefali Desai, also noticed changes in her child's health and learning after taking the fitness class. Karishma, also a seventh grader, lost more than 10 pounds and became more energetic and alert throughout the day. "She manages her time much better, and she's less distracted," says her mother. "She is more enthusiastic about all subjects. If she sees an A-minus now, she wants better. She's paying more attention."

Other parents and teachers tell similar stories—of kids losing weight, embracing exercise for the first time, improving their scores on tests, arriving in class ready to learn. But with the Metro West grant expiring after the 2008-09 school year, who knows whether the program will become a permanent part of the school's offerings? The program is easy to set up—all the district needs is a teacher who cares about go-go exercise and a time slot for students to meet—but the traditional gym class is the only program guaranteed to continue.

Kendrick, who hopes to stay and earn tenure after the 2008-09 school year, is philosophical. "It's all pretty simple, you know?" says Kendrick. "You just have to do it." **CW**

---

*Charles Euchner, a New Haven writer, was the executive director of the Rappaport Institute for Greater Boston at Harvard University from 2000 to 2004.*



## How did a 100-year-old vision of global politics shape our future?

*In 1919, Woodrow Wilson attempted to rally the U.S. behind the League of Nations. His failure suggested the way forward.*

**BY CHARLES EUCHNER**

25 September, 2019 • *Big Think*

One hundred years ago, at the end of a 10,000-mile speaking tour to promote the League of Nations, President Woodrow Wilson delivered an emotional appeal that left his audience weeping. Wilson's address in Pueblo, Colorado, would be the last speech of his voluble political career.

Wilson envisioned the tour as an extended graduate seminar. He would explain, in his professorial way, the logic and intricacies of the Paris Peace Treaty ending World War I. Frustrated by weeks of fruitless talks in Washington, where the Republican Senate majority was uniting to defeat the treaty, Wilson hoped his rhetorical marathon would create a new national consensus—and force reluctant senators to support Wilson's vision of the League of Nations.

“What of our pledges to the men that lie dead in France?” Wilson asked, quivering as he addressed the Pueblo throng. “We said that they went over there, not to prove the prowess of America or her readiness for another war, but to see to it that there never was such a war again.”

Speaking of the mothers of the war dead, Wilson said: “They believe, and they rightly believe, that their sons saved the liberty of the world. They believe that wrapped up with the liberty of the world is the continuous protection of that liberty by the concerted powers of all civilized people.”

The grueling September tour took Wilson from the Midwest (Ohio, Indiana, Iowa, Missouri, Nebraska, Minnesota), then to the Upper West (the Dakotas, Montana, Idaho), the Pacific (Washington, Oregon, California), and inland again (Nevada, Utah, Wyoming, Colorado).

Wilson failed. Even as he aroused great crowds, including 50,000 people at a San Diego stadium, the treaty opposition got stronger along the way. Majority Leader Henry Cabot Lodge and his Republican allies raised serious questions about American sovereignty, Japan's takeover of a Chinese province, the prospect of a new arms race, and the failure to address the Irish question and human rights.

Americans supported the treaty, but not enthusiastically. Surveys of newspaper editors, party leaders, and civic organizations showed a willingness to try Wilson's experiment, as long as American interests were protected. Mostly, Americans wanted to get on with their lives.

America in 1919 was as divided as America in 2019. In that fateful year, workers staged more than 2,000 strikes. Race riots and lynchings ripped apart cities and towns across the country. Nativism soared, with politicians attacking "hyphenated Americans" and vowing to restrict future immigration. Civil liberties were under attack. Hundreds of war opponents, including Socialist presidential candidate Eugene Debs and major labor leaders, were jailed under the Espionage Act for speaking against the war. Wilson's postmaster general shut down even mildly critical newspapers and magazines by denying them access to the mail. Some 2,000 German-Americans were held in internment camps while German newspapers, schools, churches, and fraternal organizations were shut down. Ordinary Americans struggled to make ends meet with flat wages and spiraling prices.

The Western Tour ended early when Wilson suffered a physical breakdown after giving his speech in Pueblo. That would be the last time Wilson ever spoke in public. Days after returning to the White House, he suffered a major stroke that left him incapacitated for the last year and a half of his presidency. As his wife Edith managed the flow of visitors and information in the White House, Wilson was invisible. But he told Democrats to vote against alterations that would have soothed the concerns of many critics—and could have won the two-thirds Senate majority needed to ratify the Paris Peace Treaty.

Ever since then, historians have wondered: Could the League of Nations have prevented the rise of the Nazis and the Second World War?

## **The ideals of the League**

In promoting the League, Wilson claimed that the new global body would prevent "98 percent" of future wars. Had it existed back in 1914, Wilson argued, the League would have prevented the spiral to global war after the assassination of Archduke Franz Ferdinand. The League, he promised, would prevent an even more destructive second world war.

But even if the League had created a new vehicle for promoting peace, it lacked sophisticated incentive structures that are necessary to shape behavior on the global stage.

The League was seen as a unitary world body. Like national governments, the League would include both executive (the executive council) and legislative (the general assembly) actors. Like a judicial body, the League would settle disputes between member states. Wilson usually rejected the idea that the League would be a "supergovernment," but that's just how most people envisioned it.

In reality, the League of Nations could have been anything. In supporting the League, Senator J.C.W. Beckham of Kentucky noted that

the U.S. Constitution offered just a guide to the leaders of the new American republic. Only when people of good faith acted—starting with the Bill of Rights, Hamilton's determination to pay the war debt, and landmark cases like *Marbury v. Madison* and *McCullough v. Maryland*—did that document gain real authority.

Even the greatest skeptics—at the Paris Peace Conference and in the U.S. Senate—supported creating some kind of global authority to set basic rules for behavior and then enforce those rules. Senator Henry Cabot Lodge and Theodore Roosevelt, the treaty's biggest foes, had long argued for such an arrangement. Once begun, that version of the league could have evolved.

At the very least, the U.S. and other nations might have continued the work of Presidents McKinley, Roosevelt, and Taft and expanded the network of arbitration treaties. Those treaties obviously did not prevent the Great War, but they helped prevent war from breaking out in previous conflicts. The challenge was coordinating those treaties, making sure they did not create perverse commitments. The Great War had started, after all, when Austria-Hungary and Serbia called on their allies to back them in the conflict over the assassination of Austrian Archduke Franz Ferdinand. Because of a series of mutual-protection pacts, Germany, Russia, France, and Great Britain; later, Italy, Japan, and the Ottoman Empire joined the conflagration.

Even a weakened League of Nations could have led to something like the North Atlantic Treaty Organization. Beyond that core group of Western nations, it could have spun off a larger body to represent all of the world's nations, like the United Nations, to address issues like colonialism, the environment, trade, and natural resources. Perhaps another body could set international standards for trade and finance, like the World Trade Organization.

Wilson's fatal flaw was his unwillingness to see his vision as an experiment. Proud and reluctant to negotiate, he considered the League a complete solution to global problems. But what if Wilson had been willing to accept a flawed League? What if he had been willing to bargain and compromise? What if he saw the League as an opportunity to experiment with different tools to prevent war and promote global cooperation?

Wilson's stubbornness not only doomed his vision for a League of Nations. It also short-circuited the public debate about the most effective ways to foster global peace and cooperation.

But Wilson held fast to his singular vision of the League, which was originally drawn up by Jan Smuts, the soon-to-be prime minister of South Africa. The Smuts plan fit with Wilson's Progressive mindset, in which technocrats manage conflict by asserting top-down control over public affairs. As the Smuts plan gained the assent of the Paris conferees, Wilson refused to consider alterations or alternatives.

However, there could have been a more nuanced approach to conflict resolution.



Lord Robert Cecil, for example, proposed an annual meeting of the heads of state of great powers. Every four years, the world's nations would meet to adopt plans for preventing war and maintaining peace. This alliance could evolve, test which practices worked and which ones didn't. Maybe, Cecil suggested, the League of Nations did not have to emerge whole, like Athena from the head of Zeus. Maybe the League could have tried different arrangements and incentives to see what worked best.

On the Western Tour, Wilson acknowledged that the League would evolve—usually to parry criticism about the League. Whatever the problem, Wilson promised that the League would rise to the occasion and address it. But in the thick of battle, Wilson stood firm by the covenant he brought home from Paris.

## **Overcoming the free rider problem**

The challenge to any collaboration, of course, is the "free rider." In any group, members seek to reap collective benefits while allowing others to make the sacrifices and pay the bills. The bigger the group, the easier it is for one or more free riders to evade their responsibilities.

Whether or not the U.S. joined, the free-rider problem would undermine the League of Nations. The League was organized along the familiar, old-fashioned ideas about sovereignty and power. Stated simply, both proponents and opponents of the League believed that authority is exercised from the top down, with sanctions to punish whoever defies the rules. Like most institutions in that day, discipline and punishment were the primary means of enforcing standards.

Consider the primary mission of the League: To prevent war. Under Article X, potential belligerents must agree to a 90-day "cooling off" period to hash out their differences. If one nation should invade another, the League would impose an economic boycott and then, as a last resort, take military action against that nation. Under Article XI, member nations were told to bring issues of aggression to the League of Nations—a version of "if you see something, say something."

Over time, the League could have added other tools to its repertoire—not just sanctions (sticks) but also benefits (carrots)—to counter military aggression. With this broader repertoire, the League could develop more effective approaches to promoting public goals like peace, financial stability, free trade and oceans, fair labor standards, environmental protection, health, colonial development, and infrastructure.

Meeting certain basic standards for key priorities could have been the "price of admission" for engaging League of Nations members.

To combat the arms race, for example, the League could have taxed military spending that exceeded 1 or 1.5 percent of the nation's Gross Domestic Product. Excessive levels of military spending could be taxed and the funds returned for investment in public goods. (In 2014, NATO members agreed to spend 2 percent of GDP on defense spending by 2025.

The U.S. now spends 3.6 percent, the United Kingdom 2.1 percent, France 1.8 percent, and Germany 1.2 percent.)

That "club" approach, later championed by Yale Nobel laureate William Nordhaus, could have provided a strategy for engaging nations on war and peace—and, decades later, a strategy for addressing the existential threat of global warming. Nations that joined the "club" of reducing carbon emissions would enjoy free trade and other benefits, while countries that did not would face tariffs and other barriers. Would-be free riders would have both positive and negative incentives to contribute to a solution.

If the League had developed a critical mass—with such incentives that even rogue states would desire to enter into its orbit—it might have gained the capacity to entice and coordinate global action on important issues.

As it was, the League's champions and foes understood the power of sanctions like boycotts and military action—but not subtler enticements and incentives. Their vision, alas, lacked the insights of today's "behavioral economics," developed by Nobel laureate Daniel Kahneman of Princeton, the late Herbert Simon, and others. Policy wonks in Wilson's day also did not understand the "evolution of cooperation" and complexity theory championed by the University of Michigan's Robert Axelrod.

The League's top-down, sanction-oriented approach doomed it, no matter who joined and who stayed out. The League began operations in 1920, without the U.S., and had some minor successes. It collapsed after the 1935 Abyssinian crisis, when the League failed to get Italy to arbitrate its conflict with Ethiopia (then known as Abyssinia). The next year, Italian dictator Benito Mussolini created the Italian East Africa by merging Eritrea, Somalia and Ethiopia. His alliance with Hitler was not far off.

## **Why did Wilson fail?**

Wilson's Western Tour failed to rally enough support to force the Senate's hand. Early in the tour, North Carolina's Democratic senators, Furnifold Simmons and Lee Overman, announced they would not support the treaty without changes. Other senators followed suit. Throughout the tour, skeptics and supporters alike grew more dubious of Wilson's master plan, especially when the president dismissed criticism as ignorant or unpatriotic.

"The future is what President Wilson must look to for his vindication," Senator Henry Ashurst of Arizona said in the tour's early days. "It may that 25 years from now, we will be saying, 'Would to God we could have one moment of Woodrow Wilson.' ... But that is not true now and it will not be true by 1920, I'm afraid."

The League failed, mostly because of Wilson's inability to see that a more flexible approach could win supporters and also expand the League's vision and authority. But whatever his and the League's flaws, Woodrow

Wilson pointed the way to new possibilities of global cooperation on matters of life and death.

---

*Charles Euchner, who teaches writing at Columbia University's Graduate School of Architecture, Planning, and Preservation, is the author of Nobody Turn Me Around: A People's History of the 1963 March on Washington (2010) and a forthcoming book on Woodrow Wilson's campaign for the League of Nations. He can be reached at [charleseuchner@gmail.com](mailto:charleseuchner@gmail.com).*

# SCALE UP NEW YORK

Excerpt from “Scale Up New York,” by Charles Euchner, published in November 2016 by the Center for an Urban Future

**New York City is humming with small business activity. The city’s entrepreneurial environment** has expanded greatly in recent years, thanks to an explosion of new businesses in fields from financial technology and digital health to artisanal food manufacturing and film post-production. Over the next few years, turning more of these small companies into larger businesses is one of New York’s greatest opportunities for economic and employment growth—and one of the best chances to expand the number of middle-class jobs.

The opportunity is clear. The city is home to more than 207,000 businesses with 20 or fewer workers. The number of businesses employing fewer than ten workers has increased by nearly 12 percent since 2008. Over the same period, Brooklyn added more than 8,000 new businesses with fewer than ten workers, growing nearly 22 percent.

Unfortunately, too few of the city’s small business manage to scale up and achieve sustained growth. Despite the surge in the number of new small businesses, growth among businesses with more than 100 employees has been largely flat since 2008 and the number of businesses with more than 1,000 employees decreased 1 percent during the same period.

Not every small business has the potential to expand. And some business owners are content to stay small. But there is a clear opportunity for many more of the city’s small firms to grow to the next level. As this report details, the path to growth for small businesses in New York City is exceedingly difficult. Among those small firms in the five boroughs with growth potential, a significant share get tripped up along the way. Many don’t even try.

A strategy to help more small businesses scale up would do more than just bolster the city’s strong economy. It could be the city’s best opportunity to boost its supply of middle-class jobs.

Firms with fewer than ten employees tend to be top- and bottom-heavy, with many of their jobs in executive positions or at the lowest rung of the job ladder. But as small businesses grow, they often add middle-wage positions and increase benefits for their workers, including paid sick leave, time off, and subsidized healthcare.

This report—the latest publication of the Center for an Urban Future’s Middle Class Jobs Project, a research initiative funded by Fisher Brothers and Winston C. Fisher—examines the potential to boost the number of middle income jobs in New York by scaling up small businesses. It takes a close look at the challenges and barriers facing small businesses and identifies strategies for helping more of them to grow. Although it is difficult to predict which industries are best positioned to add jobs over the long term, one thing is clear: New York City has enormous potential to grow more of its small businesses of all kinds, creating thousands of middle-wage jobs in the process.

For this report, we interviewed dozens of small business owners from all five boroughs and in a bewildering array of industries, as well as government officials, economic development professionals, and other small business experts. Our goal was to better understand the pain points that emerge as small businesses struggle to grow and to offer concrete ideas for helping more New York City companies to scale up.

## Barriers to Growth

Despite the city's advantages as the most dynamic and connected economy in the Western hemisphere, New York's small businesses often struggle to grow. Companies with fewer than 50 employees accounted for nearly 98 percent of the growth in businesses citywide from 2000 to 2013. As of 2014, nearly two-thirds of the city's private sector businesses had fewer than five employees, and these very small businesses were responsible for nearly a quarter of all new hires between 2007 and 2012.

New York's high tax rates and demanding regulatory burdens are well known. So, too, is the city's expensive real estate market. These barriers often prompt companies to look outside the city to expand operations. But most business owners accept these burdens as a cost of doing business in a city that boasts 8.5 million residents, attracts 60 million tourists a year, and stands as one of the globe's leading cultural and economic centers.

The greater challenge, say New York City's small business owners, is the opacity and complexity of the city's business environment and the lack of coordinated resources along the way. Small business owners struggle to understand the taxes and regulations that affect their firms' operations—a more frustrating hurdle than simply affording the bill. Even when business owners think they are obeying the city's regulations, they are too often surprised by a fine or a new demand for paperwork. If they are able to find a suitable facility in which to expand, they struggle to secure a reasonable lease or outfit it with the necessary equipment and services. And although they are impressed with the diverse pools of talent in the city, they struggle to find workers with the right mix of technical and soft skills.

Too many businesses in New York City run into obstacles when they try to add employees. Labor costs are compounded by the additional costs of growth, including office space, training, human resources, middle management, and mandated benefits such as sick leave, healthcare, workers' compensation, and unemployment taxes. In a costly, competitive, and complex business environment, growing from a handful of employees to 20 or more often requires rethinking every aspect of business operations. The more

that small businesses succeed, the more complex—and overwhelming—their operations become. Many owners lack the expertise or connections to make the transition from everybody-does-everything companies to large-scale organizations based on extensive specialization and division of labor.

With every new contract, revenue stream, and employee, businesses take on new challenges. A city law mandates paid sick leave at five employees and the Affordable Care Act requires companies with 50 or more employees to provide health insurance coverage to all full-time workers. At the same time as the initial costs of growth are kicking in, however, a financing gap emerges. For far too many small businesses, this creates a perfect storm of obstacles that can stop growth in its tracks.

“New York is strong with the start-ups employing one to four people, but there is no growth with the 50-or-more-employee companies,” says Michael Simas, the executive vice president for the Partnership for New York City. Part of the problem, he says, is an inadequate bridge from coworking spaces to large-scale factories and private offices. “When you stick your head up from the collaborative work spaces, when you have to pay your own bills and take care of permitting and other issues, it's a big challenge,” says Simas. “As you grow it gets more expensive—you have to deal with HR, with legal, with workers' comp, not to mention other expenses. All that starts to add up and New Jersey doesn't look so bad.”

Companies face a “Death Valley” of uncertainty and limited resources as they grow their companies, says Kinda Younes, the executive director of the Industrial and Technical Assistance Corporation (ITAC), which provides below-market consulting services to manufacturing companies. When they succeed, companies in all sectors need a whole new strategy to handle growing demand, add workers and business locations, fund and deploy machinery and equipment, source local materials, and decide what parts of the business to outsource and what to handle in-house.

Managing growth “itself is a full-time job that they are expected to flawlessly execute, while still being understaffed and running their business,” Younes says. “There are lots of initiatives around start-ups—entrepreneurship programs, accelerators, incubators, et

cetera—but much less of a focus to actually help [companies] grow.”

Too often, small business owners say, they struggle to benefit fully from the city’s advantages, while remaining unable to escape its high costs and burdens. When they seek help—from government agencies, banks, consultants, and bigger firms—they have no reliable place to go. To grow in the city, businesses need a complete roadmap tailored to industry, location, and customer base. Longtime business owners and advisors caution that although certain kinds of tools and advice can be shared across sectors, much has to be adapted to each company’s particular circumstances. In addition, the vast range of information available only exacerbates the complexity. So small businesses improvise, adapting their traditional practices, piecemeal, to chase new programs and opportunities.

The major challenge of small businesses in New York, then, is a disconnect between everyday operations and the opportunities for growth and development. What small businesses need, above all else, are rational systems that help them understand their business operations, access local and regional markets, and identify broader opportunities for growth.

Even when the government offers services, business owners say they are often difficult to find and use. “There are so many resources out there, it can become overwhelming,” says Jill Johnson of the Workshop in Business Opportunities, which provides business services to underserved communities. Adds Sabrina Valle of Jam Stand, a Brooklyn-based jam manufacturer: “There are like a bajillion resources but I don’t really know how to navigate them. The city is trying to do things. Most of us don’t know where to look if we wanted to.”

### **Help from City Hall**

The de Blasio administration’s Small Business First (SB1) program, a \$27 million initiative announced in July 2014, has developed a three-pronged agenda. First, SB1 aims to make information and compliance procedures more accessible online. Second, the program seeks to provide more direct and responsive services to small businesses to help them understand the regulatory environment and stay in compliance. Third, SB1 proposes evaluating the small business regulations on

the books to determine which ones might be consolidated, simplified, or eliminated.

At the same time, SB1 leaves many of the specific obstacles to small business growth unaddressed. From attracting and retaining employees who can drive new opportunities, to coping with wage pressures and benefit mandates, to financing for equipment and real estate, to seeking new markets and breaking into supply chains, the barriers to small business growth are distinctly different from the burdens facing small businesses in general.

In order to grow more of its vibrant small businesses, New York City should develop a multifaceted strategy to bridge the disconnect between the city’s unparalleled advantages and its eager, entrepreneurial companies. Given that the challenges facing small businesses mount as they grow, it is not enough simply to reduce the barriers to starting a business. A strategy to create middle-class jobs by supporting small business growth should focus on the challenges facing New York City’s smallest companies at each pivotal step on the path to growth.

As part of this strategy, the city needs to identify gaps in government services and programs for small businesses. These service gaps—which include investments in facilities, capital equipment, revolving loan funds, and training and consulting programs—should focus on helping businesses deal with the issues that emerge as they grow, not just supporting businesses as they first get off the ground. Companies that invest in their own equipment upgrades, operational systems, space expansions, and marketing—and combine those investments with investments in their workforce—not only succeed but also create real opportunity for their workers.

In addition, the city should develop a comprehensive online tool that connects New York’s businesses with their obligations and opportunities. This system should gather all of the essential information for businesses to succeed in New York—including taxes and regulations, labor market data, real estate assistance programs, training and workforce development opportunities, government-backed financing programs, and consulting services—so that every aspect of the business environment is transparent and understandable, and services are centralized in a single location.

Finally, the city should redouble its efforts to invest in its infrastructure. The city has always benefited from coordinated investments in transportation, utilities, industrial spaces, parks, neighborhood revitalization, and environmental reclamation, which have the added benefit of creating additional jobs. These investments make business operations more efficient and effective, while improving the quality of life for employees and employers alike. By strengthening communities all over the city, investments in public spaces and resources cement the bond that both companies and people have with New York City.

### The Levels of the Challenge

Small businesses face obstacles to growth at four distinct levels.

The challenges begin with people, as companies struggle to find the talent necessary to grow their

businesses, streamline their operations as they grow more complex, finance investments in facilities and equipment, and connect with markets and supply chains to sell their goods and services on a larger scale.

At the level of business operations and the built environment, businesses cite three major obstacles to growth: difficulties securing financing, a lack of affordable real estate, and decaying public infrastructure. Not only is real estate expensive but the search can take months and even years. Leases for most small businesses are short and subject to exorbitant rent increases, which can kick in just as a business is beginning to invest in its own growth. Investment in capital equipment also proves a challenge. Banks usually require a level of cash flow or collateral that many small businesses lack. Venture funding is available to high-growth companies but almost never to small independent businesses.

## SMALL BUSINESS IN NEW YORK CITY

Small businesses (fewer than 20 workers) dramatically outnumber big businesses (500 or more workers). The U.S. Census Bureau estimated that there were 207,619 small businesses in the city in 2014, compared with 755 big businesses. In all but a few sectors—manufacturing, wholesale trade, construction, and finance and insurance—the number of small businesses has slowly but steadily increased in recent years.

Still, the biggest companies employ almost three times as many workers as the smallest companies. Roughly 1.8 million New Yorkers work in big businesses, compared with 646,563 people who work in the smallest businesses. Workers in big businesses also earn higher average wages than workers in the smaller businesses. Annual wages at big companies average about \$98,000, while wages at businesses with under 20 workers average about \$49,000.

Business size	Number of companies	Total payroll (billions)	Employees	Average annual pay	Average revenues
<20	207,619	\$31.7	646,593	\$49,091	\$880,602
20–99	21,263	\$33.8	563,722	\$59,930	\$10,545,354
100–499	4,306	\$35.3	518,535	\$68,024	\$35,815,650
500+	755	\$174.7	1,785,080	\$97,839	\$194,055,433

Source: U.S. Census Bureau.  
Note: Payroll and employee data is from 2013 and revenue data is from 2012, as these are the most recent years available.

At each jump in company size, the average wage increases substantially. But with every increase in size, there are fewer companies.

New York’s small businesses are not concentrated into any one or two major sectors. Three sectors have 20,000 to 30,000 or more small companies. Five sectors have between 10,000 and 20,000 small companies. Six sectors have from 4,000 to 10,000 small companies.

Number of Small Businesses by Sector					
Sector	2010	2011	2012	2013	2014
Retail trade	30,135	30,671	31,298	31,693	32,085
Professional, scientific, technical services	23,417	23,775	24,284	24,804	25,393
Other services (not public administration)	22,133	22,725	23,363	24,010	24,426
Health care and social assistance	19,146	19,443	19,692	19,893	20,110
Real estate and rental and leasing	18,104	18,300	18,401	18,640	18,994
Accommodation and food services	17,140	17,403	17,728	18,286	18,459
Wholesale trade	15,098	14,955	14,941	14,962	14,916
Construction	11,209	11,145	11,373	11,931	12,323
Finance and insurance	9,684	9,608	9,763	9,874	9,497
Administrative/support and waste/remediation	6,879	6,976	7,134	7,277	7,335
Manufacturing	4,998	4,875	4,808	4,650	4,644
Arts, entertainment, and recreation	4,818	4,906	5,030	5,159	5,359
Information	4,749	4,739	4,882	5,103	5,254
Transportation and warehousing	4,274	4,461	4,487	4,506	4,696
Educational services	2,283	2,339	2,527	2,635	2,674
Management of businesses	742	694	738	748	766
Industries not classified	536	485	258	446	587
Utilities	57	52	58	66	69
Agriculture and forestry	14	14	17	12	14
Mining, quarrying, and oil and gas extraction	13	18	18	21	18
Totals	195,429	197,584	200,800	204,716	207,619

Source: U.S. Census Bureau.

Within the broader New York City Metropolitan Statistical Area (MSA), small businesses employ 1,496,310 workers—or about 20.35 percent of employment in the MSA. Employers with over 500 employees make up 48.11 percent of overall employment. In this bimodal economy, the extremes of size employ almost 70 percent of all workers.

At the level of government and policy, firms struggle to meet their obligations and to make the most of New York’s advantages, especially as they seek to grow and add employees. Taxes and regulations are more burdensome in New York than most other cities—and their complexity makes them even more onerous. Procurement offers small businesses contract opportunities worth billions, but too often the process is opaque, confusing, and too time-consuming.

Scaling poses a daunting challenge across sectors. Once producers reach a certain threshold, they need more space, equipment, and workers. Growth typically takes place in leaps rather than steady increments. That puts companies in the uncomfortable position of taking huge risks without a high degree of confidence in the prospects for success.



# MAKING IT HERE

**New York City's manufacturing sector received another dose of bitter news in January** when Cumberland Packing, the maker of Sweet'N Low, announced it was shutting down its Brooklyn factory and eliminating all 300 of its jobs in the borough. The decision was only the latest example of a large New York City-based manufacturer opting to close its doors or relocate operations out of the city, following recent exits by pita manufacturer Damascus Bakery, jewelry maker Frederick Goldman, Inc., matzo baker Streits, and adhesives manufacturer AP&G.

But unlike years past, the departure of traditional manufacturers like Cumberland is now being counteracted by a new wave of modern manufacturing companies that are adding jobs in the five boroughs and breathing new life into a sector that was all but presumed dead as recently as five years ago.

The city lost an average of 8,370 manufacturing jobs a year between 2001 and 2011, bringing the sector's employment total below 75,000 jobs for the first time since the rise of the industrial city. But since then, from April 2011 to April 2016, the city's manufacturing sector has grown by 3,900 jobs, including 1,100 jobs in the last twelve months. This hardly makes manufacturing one of the city's leading growth industries. Manufacturing accounted for just 0.8 percent of the 513,500 new private sector jobs added citywide over the past five years and the sector now makes up just 2.1 percent of all private sector jobs in the city, down from 5.7 percent in 2000 and 9.1 percent in 1990. But it represents the city's longest period of sustained manufacturing growth in several decades and a much-needed shot in the arm for a sector that still provides a crucial source of middle-class jobs.

This report examines whether this growth can continue and which segments of the city's manufacturing sector offer the greatest promise. The report—the latest publication of the Center for an Urban Future's Middle Class Jobs Project, a research initiative funded by Fisher Brothers and Winston C. Fisher—also assesses what obstacles might inhibit additional job creation in the sector and what government policies could help ensure that the city's manufacturing revival continues.

We conclude that there is clear potential for additional manufacturing growth in the five boroughs. However, our research suggests that some parts of the city's manufacturing ecosystem offer significantly more promise than others. In particular, we find that three sectors are well positioned for future growth: 3D printing, metal and wood fabrication, and food manufacturing.

For this report, we asked dozens of industry experts—including company owners, leaders of industry associations and local development corporations, investors, economists, and academics—where they are seeing the most manufacturing growth in the city and which sectors are best positioned for future growth.

The broad consensus is that the city's recent industrial growth is being driven by a new kind of manufacturing: small, entrepreneurial companies that are making specialty products mainly for individual consumers and businesses in the region. These makers and manufacturers are producing in small batches with quick turnaround times, investing in new technologies, capitalizing on connections to the city's thriving creative industries—including design, fashion, and film—and taking advantage of powerful demographic, economic, and consumer trends. For instance, some are tapping into New York's status as a leading center in the back-to-local movement, where a large

and growing mass of consumers are demanding locally made, artisanal products. Others are benefiting from the city’s rapid growth in affluent residents, many of whom are willing to pay a premium for custom-made products.

Even the most optimistic manufacturing experts that we interviewed caution that many traditional manufacturers will continue to struggle. Indeed, even as employment in the sector has ticked up in recent years, the number of manufacturing firms citywide has declined from 5,976 in 2011 to 5,752 in 2015.

What we heard, again and again, is that New York’s competitive advantage in manufacturing today—and its best hope for growth in the future—is undoubtedly with small firms that operate in niche markets and take advantage of modern production processes. Labor market data supports this. In 2015, the average manufacturing company in the city had just 13.4 employees (down from 17.3 in 2000) and the average manufacturer in Brooklyn had 12 workers (down from 16.8 in 2000). In comparison, manufacturing companies in New York State employ 26.3 workers on average.

Small specialty producers are thriving in a variety of sectors, including fields where the overall employment trends have been negative, such as apparel manufacturing. With the right policies in place, opportunities exist to scale up companies in many of these sectors.

However, the experts we interviewed suggest that three of New York City’s manufacturing fields are particularly well positioned for growth in the years ahead: 3D printing, metal and wood fabrication, and food manufacturing.

### 3D Printing

There are no longer many manufacturing sectors where New York can boast a competitive advantage, but 3D printing is one of them. One of the industry’s leading online platforms, 3D Hubs, reported in July 2016 that New York “continues its reign as the 3D printing capital of the world.” According to its data, accessed in mid-July, New York is home to 3,739 makers and 516 3D printers, far ahead of second place Los Angeles (which has 2,557 makers and 410 printers), third place London (3,326 makers and 358 printers), and fourth place Paris (2,069 makers and 313 printers).

New York is widely known as the home base for 3D printing pioneers MakerBot and Shapeways. However, New York today is home to dozens of companies and thousands of makers in the 3D printing space. This includes companies that moved here from elsewhere—including Matter, a firm founded at MIT that relocated to Brooklyn in 2014—

### Manufacturing Employment in NYC (Thousands), 2001–2016

2001	158.6
2002	140.7
2003	128.2
2004	120.8
2005	114.9
2006	106.9
2007	101.8
2008	96.8
2009	82.3
2010	76.5
2011	74.9
2012	75.9
2013	76.2
2014	75.8
2015	77.7
2016	78.8

Source: New York State Labor Department, Current Employment Statistics. Data is for April of every year.

as well as a growing number of start-ups that were established by former staffers of MakerBot and Shapeways.

Although New York’s 3D printing industry has undoubtedly suffered setbacks in the past year—MakerBot recently announced that it would be outsourcing production and eliminating 200 Brooklyn jobs—the industry experts we interviewed are optimistic that the city is poised for additional growth. Indeed, many of those experts say that the industry is entering a new phase of growth, going beyond the production of individual products to develop applications for a wide range of businesses, from aerospace to healthcare. Overall, the 3D printing industry is expected to grow from \$4.98 billion in 2015 to \$30.19 billion by 2022, according to private research firm MarketsandMarkets. As we detail in this report, New York is well positioned to capture some of this growth.

### Fabrication

Metal and wood product fabrication is hardly the best known industrial sector, but it is the city’s third-largest manufacturing industry, and one of a handful that has experienced employment growth in recent years. From 2011 to 2015, employment in the sector increased by 6 percent, from 6,570 to 6,980 jobs.

The city’s metal and wood fabrication companies have benefited from growing demand for high-end interiors, finishes, and furniture. Much of this has been fueled by the city’s sharp rise in affluent residents, whose luxury condos and second homes in the Hamptons often include custom furniture, metal railings, contemporary chandeliers, spiral staircases, and other handcrafted wood and metal furnishings. The explosion in high-end retail stores and restaurants has created additional market opportunities for New York’s skilled fabricators, as has the booming office market, the thriving film and television production sector, and a healthy museum and gallery sector.

As the city’s massive luxury consumer market continues to grow, there are ample opportunities for New York’s metal and wood fabricators to expand further.

Average Number of Employees in Manufacturing Companies		
	2000	2015
NYC	17.3	13.4
Brooklyn	16.8	12.0

Source: New York State Labor Department, Quarterly Census of Employment and Wages

## Food

Of the twenty largest American cities, only two experienced a greater percentage increase in food manufacturing employment between 2005 and 2015 than New York. In the five boroughs, employment in the sector increased by 27 percent during this period, from 13,929 jobs in 2005 to 17,682 in 2015. That’s a faster rate of growth than Houston (where food manufacturing jobs increased by 15 percent), Seattle (+10 percent), San Francisco (-3 percent), Los Angeles (-11 percent), Chicago (-11 percent) and every other large U.S. city other than Phoenix (+45 percent) and San Jose (+28 percent).

Also benefiting from a growing luxury market, food became the city’s largest manufacturing sector, as measured by jobs, surpassing the apparel manufacturing industry in 2014. Food now comprises 28 percent of all manufacturing jobs in Brooklyn, 27 percent in the Bronx, 26 percent in Staten Island, 21 percent in Queens, and 16 percent in Manhattan.

A growing number of the city’s food and beverage manufacturers have succeeded in distributing their niche products beyond the five boroughs. However, there are clear op-

portunities to scale up more of the city’s food production companies.

Each of the three manufacturing sectors profiled in this report—3D printing, metal and wood fabrication, and food—have the potential to add hundreds if not thousands of additional jobs in the years ahead. There are also opportunities for growth in other manufacturing sectors, especially among small-batch manufacturers that cater to the local market and invest in technology.

But as we heard in our interviews, none of this growth is certain. Given that so many of the most successful manufacturers in the city are making products for consumers and businesses in the region, a slowing local economy could easily erase many of the recent employment gains. At the same time, manufacturing firms in the city face enormous hurdles. Some of the barriers—such as the diminishing availability of affordable industrial space—have plagued local companies for years. But other obstacles are fairly new. For instance, many of the manufacturing company executives interviewed for this report—particularly in 3D printing and fabrication, but also in apparel manufacturing and other sectors—cited challenges finding employees who have the advanced skills required for the kinds of jobs that are currently growing.

To its credit, the de Blasio administration has taken several important steps to address some of these barriers and support manufacturing. But more could be done. This report lays out ten recommendations to strengthen and support the kinds of manufacturing that have the strongest growth potential in the years ahead.

With the right support, New York can benefit from ongoing job growth in manufacturing—a sector that continues to provide New Yorkers from a range of backgrounds with a crucial pathway to the middle class.

# BARRIERS TO MANUFACTURING GROWTH

**Manufacturing is growing again after decades of decline, but New York City companies face major obstacles in the struggle to scale up.**

The new wave of manufacturing poses one overarching dilemma: Can New York companies scale up to employ dozens or even hundreds of workers? Both small-scale manufacturers and some legacy firms that employ dozens of workers have their doubts. But the city's culture of innovation offers cause for hope.

The dilemma turns on two questions. First, can New York tamp down the costs of manufacturing sites? Second, can New York offer other advantages—such as efficiencies from close proximity of talent, markets, and ports, and the creativity born of diversity—that cancel out higher costs for real estate and labor? If New York cannot offer an environment for scaling up, the alternative is to serve as a discovery zone that fosters innovation and incubates start-ups, while accepting that firms will leave the city in order to expand production capacity.

The biggest challenge, manufacturers say, is that scaling requires a “great leap forward,” incurring a host of new costs simultaneously. This leap might bring high reward, but it's also risky. Mike Schwartz of the Organic Food Incubator has been considering making new investments to automate production and packaging. But he hesitates due to doubts about finding enough workers with the right experience. Other manufacturers echo the concern.

Because of difficulties finding adequate industrial facilities and workers for scaled-up production, company owners say they are reluctant to invest in expensive new equipment. Even when they can access the capital required to get new machines, they hesitate because they do not know whether they will have a reliable workforce to run the machines.

Different companies hit the wall at different stages of growth. For some companies, expanding beyond a dozen workers poses major challenges; for others, the number is more like 50 or 100. Most company execu-

tives say the biggest problem arrives when the staff approaches 50 workers. That number triggers greater expenses for health care, insurance, and workers' compensation. John Utley, the owner of prototyping shop Utley's, currently employs 45 workers at his Queens facility but does not expect to hire more than a few more. “The government doesn't encourage you to hire more than 50 workers,” he says. “As soon as you have 50, you have to deal with all kinds of regulations for health care, family and medical leave. That makes it hard to go any bigger. [You] have to grow way beyond that to make it worthwhile.”

Bigger workforces also require more attention to training, logistics, and management. Manufacturers of big products—in wood and metal fabrication, for example—also require round-the-clock production and delivery truck traffic that often causes a backlash in neighborhoods, a problem that only increases as manufacturers scale up.

Jeff Smith, COO of Sols, says the company is looking for production space in Brooklyn for its next stage of growth. But if the company succeeds—and requires a bigger facility—it will look outside the city. “What happens after that?” Smith asks. “I can't say we're going to stay here forever. But if we ever leave, we'll leave behind all kinds of tech people, entrepreneurs who will take on the next generation of manufacturing.”

Complicating the whole process is uncertainty about the economy's boom-bust cycles. Over the past four decades, these cycles have tended to repeat every few years. The current boom, which began in the wake of the Great Recession, is now seven years old, and many economists anticipate another downturn before the end of the decade.

Because of the inherent risks of operating in a high-cost area, even successful start-ups struggle to get the resources they need to scale their operations. Even

when government agencies offer subsidies, tax breaks, and other targeted benefits, many small companies do not have the time or resources to pursue them. Company owners who have focused on production processes, branding, and distribution, says Kinda Younes of ITAC, often lack savvy at dealing with government agencies, financial institutions, and consulting companies. “You have to apply,” Younes says. “You have to figure out a way to get the resources. You need the technology. Otherwise these companies are not going to make it because the costs are just too high in New York.”

New York’s years as a global center of mass production are over. Companies can find cheaper production centers elsewhere, with easier access to transportation networks. Even low-wage factories, such as the Cumberland Packing Company—the manufacturer of Sweet’N Low sugar substitute—cannot afford New York’s high costs. The company recently announced plans to leave the city by the end of 2016.

“Our version of manufacturing is different from our fathers’ and grandfathers’ versions,” says Brian Coleman of GMDC. “People think of the Brooklyn Navy Yard when 2,000 people were leaving a big plant at the end of the day. Our producers are small, they do custom work, they focus on value-added, create a high-end product, and serve the local market.”

## **Real estate**

Manufacturing space in the five boroughs comes in short supply, at high costs, and with little security of tenure. The cost of industrial space in the boroughs outside of Manhattan, per square foot, has increased from \$11.50 in 2011 to \$14.25, according to CoStar, a New York real-estate data company. In 2016, according to Jeffrey Marshall, a broker at Kaplon Belo Affiliates, manufacturing space rents for \$17 to \$18 per square foot. “I have buildings asking \$25 a foot and they’ll probably get \$20 or \$21,” he says.

Owners of industrial space can get as much as three times the rent from offices, residences, and retail as they can get from manufacturers. Manufacturers in all sectors have experienced escalating rents and, even more unnerving, uncertain leases.

The city has lost millions of square feet of manufacturing space to competing demands. The loosening of zoning controls over industrial zones during the past

two decades has led to a shortage of industrial space today.

In 2005, Mayor Michael Bloomberg attempted to address the problem when he created 16 Industrial Business Zones (IBZs) and one-time-only tax credits for businesses to relocate into them. Still, pressures against industrial activities remain strong. Even in IBZs, development pressures drive up real-estate prices. Many manufacturers struggle to operate in these zones because of inadequate trucking capacity. When non-manufacturing activities move into industrial zones, round-the-clock production and trucking raises the ire of residents. With few areas focused solely on manufacturing, the city’s potential to produce products at large scales diminishes.

An additional pressure comes from the growing movement to simplify and declutter. All along the Brooklyn-Queens Expressway, self-storage units consume millions of square feet of space in old industrial buildings. Some 2 to 3 million square feet of storage units are now in the development pipeline, according to Marc Nakleh, a senior director of real estate services at Cushman & Wakefield. Rents for these units have climbed 18.2 percent since 2012, according to Reis Inc., a commercial real estate data company. The monthly rent for a 10-by-10 unit was \$301.20 in the first quarter of 2016.

Bob Mason, who runs a Brooklyn furniture company, says he would like to expand operations—and that the market would support more production in New York—but space and costs hold him back. “People do it, but they don’t do it in New York City, they do it in Cleveland or Omaha, places where space is cheap,” he says. “You can start in a garage and expand [to] 10,000 square feet. Here, everything feels like you’re on an automatic payment to everybody. We’re going to do \$600,000 or \$700,000 worth of business this year. We did \$540,000 last year. That sounds like a lot, but it’s not.” Even with rising revenues, Mason says, he struggles to break even. Low margins make it difficult to get the resources to expand operations. Mason estimates he would need \$2 million to purchase new equipment and move to a bigger facility.

One trend works in favor of today’s manufacturing companies: A need for less space, at least for many niche, artisanal producers. “That brings lofts and other multi-story buildings back into play,” says Marshall of

Kaplon Belo Affiliates. “They’re not shoving big products down the elevators and they don’t need massive trucks. Let’s face it, 53-foot trucks don’t work well in this city.” Still, manufacturers of all sizes face intense competition for space within the sector, as well as creeping pressure from residential, office, and commercial demand.

### **Training and work preparedness**

Employers continue to face difficulties finding the workers they need to operate their production facilities—especially as they scale operations and implement sophisticated computerized equipment that requires workers with critical thinking skills.

The labor problem has two dimensions. First, many workers lack the soft skills—punctuality, following directions, working with other employees, and solving problems—needed to succeed, according to many employers.

New technology has widened the divide. To achieve greater efficiencies and produce for high-end markets, companies need skilled workers to run cutting-edge equipment. “Everything will be tied to people that can run the machines,” says Amanda Parkes of Manufacture New York. “I’ve been to too many organizations where they have all these machines but don’t have people who know how to run them.”

Today’s manufacturing jobs, says Brian Coleman of the GMDC, require more educated workers. “That’s good but it’s bad, too,” he says. “In the old days the guy who finished high school could get a job at a factory, like Eagle or Bulova Watch. Having a good strong back, you could get a job that paid middle-class wages. Now having a good strong back can get you a job in just 20 percent of businesses.” Although job quality and retention may improve as a result, major investments in training will be required to cultivate the workforce that current manufacturing jobs require.

If New York manufacturers can train their workers well, leverage the city’s workforce development system, and invest in the right capital equipment, says Jack Plunkett, these business will create a unique opportunity for stable jobs accessible to thousands of workers. “If George in the Bronx can get a full-time job in a start-up candy factory instead of trying to hold down three part-time jobs, that’s real advancement,” he says.

“Maybe he could learn enough to climb the ladder and even start a business of his own.”

### **Management and logistics**

To make big investments and scale up operations, companies need to develop new management and production processes. But expertise on large-scale manufacturing—including optimization of everything from purchasing to shop floor operations to distribution—is often hard to find at affordable prices.

The big challenge for growing companies, says Kinda Younes of ITAC, is “you’ve got to ‘rightsize’ the organization.” The layout of facilities, the process of making and assembling materials, loading merchandise onto trucks, and managing suppliers and customers all pose different challenges in operations both large and small. Benefits that come from buying materials at scale can be canceled out by higher costs of storage and the burden of unsold inventory. To manage these challenges, most growing companies need help.

Companies in all sectors lose as much as 30 percent of their inventory to inefficient company operations, according to research by Zeynep Ton of the Massachusetts Institute of Technology and other scholars. For low-margin companies that go into debt to expand operations, even minor inefficiencies can spell the difference between success and failure.

Businesses need to embrace technology like never before, says Younes. But to do so, they need company strategists and managers need to learn more about computerized equipment, 3D printing, robotics, and materials breakthroughs. “A lot of companies that are small and family-owned have been doing things for generations the same way,” Younes says. “They’re now finding it more difficult to compete with companies that are leaner, that can be more efficient because of new technologies. We need to be making them aware of the new opportunities.”

# RECOMMENDATIONS

## Ten ways to support New York City's new wave of manufacturing

The new wave of manufacturing in New York City looks very different than its predecessors. Old-style manufacturing produced goods in mass quantities for sale at low prices. But technology and globalization have pushed mass production out of the city. In its place, a smaller and more inventive manufacturing scene is growing, creating a dizzying variety of products in smaller batches for more discerning consumers.

The initial successes of manufacturing's new wave hold promise not just for creating thousands of new jobs, but also for incubating companies that take advantage of New York's growing diversity, exceptional creative industries, boutique financiers, and strategic location. To support and expand the new manufacturing, policymakers should focus on the demands of the twenty-first century rather than attempt to recover a lost age.

### **Refocus New York City's industrial strategy on the kinds of manufacturers poised to grow here.**

If the future of manufacturing in New York City lies in small-scale companies making niche products, then city and state economic development officials should refocus its industrial toolkit to target these kinds of businesses. For example, the average manufacturing company in the city today has 13.1 employees, down from 17.4 employees in 2000. In Brooklyn, the average manufacturer has twelve workers. Unfortunately, city and state industrial programs are not always aimed at businesses of these sizes. Although city and state economic development agencies both have important programs to support local manufacturers, more could be done to reorient their industrial strategies to support small makers and manufacturers.

### **Revise the state's Excelsior Jobs Program to support small manufacturers.**

In 2010, New York State replaced the much-maligned Empire Zone tax incentive program with the Excelsior Jobs Program, which is more focused on supporting high-growth companies in

manufacturing, tech, biotech, and clean-tech. Although the switch made sense in most respects, the Excelsior program has one huge downside: its requirements put city manufacturers at a big disadvantage.

Unlike the Empire Zones program, Excelsior requires participating manufacturing companies to create ten new jobs to qualify for tax credits. But most new manufacturing companies in the city cannot project that many new jobs at once. Even established manufacturers would struggle to qualify for the program. Excelsior's quarterly report for September 2015, for example, shows 753 companies that qualify for Excelsior benefits; only 133 are from the city, and of those only 30 are manufacturing companies.

### **Develop a scale-up strategy for city manufacturers.**

In recent years, scores of new makers and manufacturers set up shop in the five boroughs. Today, there is a tremendous opportunity to help some of these entrepreneurial businesses, many of which have fewer than ten employees, to expand to a level where they have 15, 25, or even 50 employees. Growing beyond the start-up stage will not only increase the overall number of jobs, it will widen the opportunities for middle-income positions that are accessible to workers from low-income backgrounds.

A scale-up strategy should include new and expanded programs to help small manufacturers export their products to new markets, including cities in the United States with similar population dynamics to New York, as well as markets overseas. A support program could also target makers who primarily sell their products at food markets and street fairs by providing technical assistance and financing support to help them open permanent facilities or simply scale up their operations.

### **Pair local manufacturers with New York-based industrial designers and engineers.**

The nation's largest manufacturers typically have in-house industrial design and operations teams that

help streamline and improve their production and distribution processes. But few of New York City's small manufacturers take advantage of industrial designers and engineers in this way. Given that so many manufacturers in the city operate on razor-thin profit margins and face increasingly intense competition, overlooking the opportunity to tap existing resources is a missed opportunity. These companies could greatly benefit from design-focused efforts to improve efficiency and productivity.

City economic development officials should consider launching a new program that pairs local manufacturers with New York-based industrial designers and engineers. Such a program would take advantage of the city's large and growing population of designers, and could be developed in partnership with the local chapter of the Industrial Design Society of America and design universities such as Pratt, School of Vision Arts, Parsons School of Design, Fashion Institute of Technology, and New York Institute of Technology, as well as the industrial engineering departments at Columbia University and New York University.

### **Invest in intermediaries that help strengthen local manufacturers.**

In addition to design and engineering services, low-margin manufacturers could greatly benefit from technical assistance in areas such as technology, management, and logistics. The city already has an organization with this mission: the Industrial and Technology Assistance Corporation (ITAC). ITAC provides below-market consulting assistance to help companies create a growth plan, invest in innovative technologies, find reliable workers, improve the work culture, manage the supply chain for costs and agility, and use financing wisely.

The services ITAC offers are arguably more important than ever, given that the city's manufacturing sector is showing more promise than at any time in decades, but its funding has been cut in recent months. In January 2016, the state announced a 54 percent cut in its contribution to ITAC. After the cuts, the state now provides \$166 per manufacturer in the city, compared with \$800 per company statewide, according to Crain's New York. This disinvestment is a blow to New York's resurgent manufacturers.

Zeynep Ton of the Massachusetts Institute of

Technology argues that most companies are rife with inefficiencies that erode their competitive edge. By op-timizing operations manufacturers can significantly in-crease their margins with little additional investment. To boost manufacturing in the city, the state and city should restore ITAC's funding or create new providers of subsidized consulting to meet the needs of compa-nies with growth potential

### **Expand and improve job training programs that help New Yorkers develop the advanced skills needed by today's manufacturing firms.**

Manufacturing has long provided opportunities for low-income New Yorkers with limited educational credentials or language skills to access decent paying jobs with career ladders. But many of the jobs being added in the sector today, in fields such as 3D printing and metal fabrication, require an advanced level of skills that many New Yorkers from low-income backgrounds are missing.

To ensure that a diverse mix of New Yorkers can access jobs in the sector—and that the city's manufacturing companies can find the skilled workers they need to grow—city and state economic development should invest in new and expanded workforce development programs. Policymakers should support workforce training programs whose curricula are informed by strong connections to employers in the field and programs that teach both soft skills and technical skills for jobs in specific sectors. In particular, these programs should expand on the intensive training centers established in recent years at industrial campuses such as the Brooklyn Navy Yard, Industry City, Brooklyn Army Terminal, and Liberty View Plaza.

To its credit, the de Blasio administration has already taken some important steps, including the creation of a new Workforce1 Industrial and Transportation Career (ITC) Center at the Brooklyn Army Terminal in Sunset Park. But policymakers should seize opportunities to expand these training initiatives and create similar workforce development programs at manufacturing hubs in other boroughs.

### **Build new career and technical programs that teach advanced manufacturing skills.**

New York City should create and support hands-on training programs that prepare young people for careers in advanced manufacturing. Many school districts in upstate New York offer technical educa-



tion programs that train students for these jobs. For instance, a precision machining training program in Sullivan County trains students “to design, create, and machine creations using computers and high tech tools.” Class topics include shop math, precision measurement, blue-print reading, shop safety, bench tool skills, and layout skills. Then students learn how to use factory-level machines, often under the guidance of employees from local manufacturers. They also work in internships or apprenticeships with local companies.

New York City could benefit from programs like these that have strong buy-in from local manufacturers and teach young people in-demand skills that are portable in today’s technology-driven economy. One such program is on the way. The city’s Department of Education (DOE) is working with the Brooklyn Navy Yard to develop a promising model for job training called the STEAM Center. STEAM—Science, Technology, Engineering, Arts, and Math—will offer students from eight city schools hands-on learning and work-based opportunities at the Navy Yard. STEAM is developing advisory groups for six industry sectors: culinary arts, systems technology, computer science, structural engineering, engineering, and media design. The program will also provide after-school programs and professional development for teachers.

Pooling students from several schools into different programs, according to Navy Yard CEO David Ehrenberg, allows “better and more intensive resources” than school-based programs. “A lot of kids will graduate high school with a credential which will allow them to enter the workforce at a totally different level than a standard high school degree or one of the current CTE credential, which is improperly conceived for today’s industry,” says Ehrenberg.

Local educators and economic development officials should continue to support the development of the program at the Navy Yard, measure its outcomes, and consider the potential to replicate the model at other manufacturing campuses in the five boroughs. DOE and the Navy Yard should also commit to keeping open the STEAM center in the evenings, so that adults looking to upgrade their skills can take advantage of the facility’s equipment and teaching opportunities after work.

### **Expose students to new technologies.**

City schools should introduce new technologies to students as early as middle school. Jack Plunkett of Plunkett Research argues: “Policymakers should show people that additive manufacturing can make a real difference. That means boosting education and training—skills like CAD-CAM and hands-on work. If you visit college libraries like Purdue University, they have two, three 3D printers in the library. College kids on well-funded campuses are getting their hands on it, so it’s not intimidating to them. I would make the experience possible all the way down to junior high school.”

To encourage skills development for all ages, the city might consider giving all learners a skills dossier—an electronic record that documents the skills students have demonstrated in classroom and on-the-job work. This dossier, which can be maintained by smartphone and via web-based apps, could help people share their abilities with employers throughout their careers. It could also indicate what new skills people need to learn to advance to new positions. With appropriate privacy filters, the dossier could be connected to the city’s municipal ID card.

City officials should offer platforms for employers to connect existing training programs and dossiers to companies searching for labor. By working with online jobs databases such as Indeed or Monster, the city can ensure that companies and workers find each other.

### **Clear unnecessary barriers to manufacturing.**

New York’s multigenerational web of rules and codes makes navigating the city’s regulatory hurdles a difficult process. The de Blasio administration should establish a citywide commission, with members from all manufacturing sectors, to identify ways to eliminate and streamline unnecessary and duplicative regulations, particularly those that undermine start-ups and the scaling of enterprises both old and new. The commission should identify regulations that impose unnecessary costs and delays and propose specific ways to streamline and simplify processes for building facilities; installing power, water, heat, and other systems; investing in capital equipment; getting products to market; protecting the environment; and safeguarding workers’ health and rights.

The commission should undertake detailed analyses of the value chains for manufacturing businesses to

identify the bottlenecks that undermine competitiveness. The successful effort to modernize New Jersey's housing rehabilitation subcode offers a good model for this difficult work. Over several years, the state's code officials conferred with a wide range of stakeholders to develop simplified guidelines that did not undermine health or safety. The changes opened long-dormant buildings to a wide range of new uses, boosting local businesses and tax rolls.

**Use cutting-edge manufacturing processes to upgrade New York's aging infrastructure.**

New York City and regional authorities spend billions every year on infrastructure. To strengthen New York manufacturers, public agencies should identify companies that can play roles in updating buildings and infrastructure to meet new standards for resiliency, safety, security, environmental impact, and Internet connectivity.

"Look at the transportation infrastructure," says Michael Simas, executive vice president of the Partnership for New York City. "You can 3D print a piece of

pipe, and that's an opportunity we can do locally. It's an endless task to take care of our city. If we can 3D print a part for an airplane, we can 3D print a part for a transit system. If we can do that in the Navy Yard, we can create lots of jobs. Think of all the infrastructure that can be in play—the MTA, the Port Authority. If we can use drones to paint the George Washington Bridge, that makes maintenance better and safer and could create new kinds of jobs."

New York and regional authorities should maintain a comprehensive database of production and maintenance projects, with detailed specifications and scopes of work. State, city, and regional officials should reach out to New York manufacturers—from 3D printing to engineering and design to metalworking—to determine what roles they can play in this ongoing work. These public entities should also sponsor regular "Rebuilding New York" events to detail the long-term process of updating and retrofitting the city, and identify ways that private property owners and facility managers can use New York manufacturers to maintain and improve their properties.

## MIDDLE CLASS JOBS PROJECT

A research initiative  
generously funded by  
Fisher Brothers.

The report is a publication of the Center for an Urban Future's Middle Class Jobs Project, an ongoing research initiative funded by Fisher Brothers and Winston C. Fisher.

Previous publications in this series include "Manufacturing in NYC: A Snapshot" (November 2015) and "The Rise (and Fall) of Middle Wage Industries in NYC" (May 2016).

For the latest insight and analysis from CUF and the Middle Class Jobs Project, visit [www.nycfuture.com](http://www.nycfuture.com) and follow us on Twitter @nycfuture.

## Herman Miller

### Preserving and Leveraging Culture in a Strategic Shift

Charles Euchner<sup>1</sup>

*“Inspiring designs to help people do great things”*  
**Herman Miller mission statement**

Approaching his tenth anniversary as CEO of Herman Miller (NASDAQ: MLHR), Brian Walker found himself in a pensive frame of mind, reflecting on what had been accomplished during his tenure and on the future challenges ahead. It was the end of 2014, two and a half years since Walker had announced a major strategic initiative that he called “Shift.” The strategy would take the furniture company far from its roots in rural West Michigan, expand its product line, and develop more direct connections to consumers.

Walker knew he was steward to a storied company with a distinctive place in corporate history. Through its emphasis on design, Herman Miller had been in the vanguard of the modernist movement in furniture and had become a leader in providing cutting-edge office fixtures. The company also set audacious goals to protect the environment and established a major institute on facility management. Through it all, the company culture honored the evangelical Christian values of West Michigan – in particular, the Reformed Protestant tradition embraced by its first CEOs from the De Pree family – to create a human resource system that celebrated the whole worker.

Still, the furniture industry was subject to the ups and downs of economic cycles. Herman Miller had been hit hard by the recession that began in 2008, requiring layoffs and cutbacks in training that challenged the firm’s values-based, covenantal culture. To fuel growth and expand the firm’s global footprint, Walker and his executives had framed the Shift strategy and embarked on an ambitious series of acquisitions.

The Shift strategy had introduced massive change into a tight-knit, conservative enterprise. A twenty-five year veteran of the firm and its former CFO, Walker believed Shift would require a number of significant adjustments to Herman Miller. Looking ahead, he pondered the challenge of continuing to implement the strategy without tearing the fabric of what had made the company special.

## Company Background and History

In 2014, Herman Miller was the third largest furniture maker (by revenue) in the U.S., with annual revenues approaching \$2 billion. The company had long been considered a leader in modern design, with innovations from the Eames® chair to the Action Office®. Headquartered in Zeeland, Michigan, the company had manufacturing plants in the United States, the United Kingdom, Italy, and China, as well as sales offices, dealers, licensees, and customers in over 100 countries. The firm was known for its “human centric” values and a “higher ambition” of creating both economic and social value. These values are reflected in a number of policies and practices – including zero environmental footprint, commitment to community service, care of the employee as a “whole person,” same-sex benefits, and time off for volunteer work – that set the standard for a values-based company.

### Becoming a Leader in Modern Design

Herman Miller’s history extends back to 1905 with the founding of the Michigan Star Furniture Company in the timber-rich region of West Michigan; an area that had spawned dozens of furniture companies. The company sold middle-class furniture – living room and bedroom sets, ornately decorated, with traditional forms and materials. The company also followed a traditional approach to manufacturing, labor relations, and sales. A former clerk named D.J. De Pree became president in 1919, and then in 1923 convinced his father-in-law, Herman Miller, to buy majority control of the company. After the acquisition, De Pree renamed the company in his honor.

Herman Miller’s transition from one of many traditional firms to a leader in modern design began during the Great Depression. As the company struggled through the difficult times, an east-coast designer named Gilbert Rohde proposed a radical new line of furniture. A new urban age, Rohde argued, required furniture to be spare, simple, unobtrusive, and honest, designed not for show but to serve the needs of particular rooms and the people who occupy them. When Rohde presented his first designs, De Pree balked. “They looked like they had been done in a manual training school,” he told Rohde.

De Pree finally agreed to produce Rohde’s designs. Sales were sluggish at first but picked up as the modernist movement gained popularity. Over the years, Rohde’s design philosophy was wired into Herman Miller’s DNA. Hugh De Pree, D.J.’s son and the company’s longtime president, summarized Rohde’s impact: “Gilbert Rohde elevated our way of thinking from merely selling furniture to selling a way of life.” By cutting unnecessary ornamentation, Rohde aimed to give priority to the furniture’s users and places.

Gilbert Rohde died unexpectedly in 1944. This was a great blow to De Pree and the company; as the design director, Rohde had primary control of product design and marketing. After an extensive search, De Pree appointed George Nelson as the company’s second design director. While Nelson was a prolific designer in his own right, he became even better known for his ability to articulate the design ethic of Herman Miller, develop innovative marketing strategies, and recruit the best design talent of the day. He and De Pree reached out to leaders in the field, including Ray and Charles Eames, Isamu Noguchi and Alexander Girard. Nelson’s efforts soon bore fruit. A lounge chair designed by the Eameses in 1956 captured the national imagination and epitomized Herman Miller’s approach to furniture design – inventive, modern, functional, simple, comfortable, and democratic.

In 1948, George Nelson laid out the ethic that would guide Herman Miller for decades:

1. What you make is important.
2. Design is an integral part of the business.
3. The product must be honest.
4. You decide what you will make.
5. There is a market for good design.

Believing in good design and giving designers free rein to propose new products, Herman Miller continued to work with the industry's best and the brightest. The company did not hire the designers as employees; most worked far from the corporate headquarters, which placed a premium on trust and commitment. The designers' independence, said Don Goeman, the company's vice president of design and development, allowed them to create "at a distance from the kinds of day-to-day internal processes that might inhibit their thinking and [would otherwise] prevent a greater level of creativity from emerging." The company believed that the autonomy of designers was crucial for fostering innovation.

During the 1960s, Robert Propst extended Herman Miller's design approach to the workplace. He created unobtrusive storage units that allowed the configuration of flexible, semi-enclosed workspaces, which the company called the Action Office. (In time, knock-offs of the Action Office became the ubiquitous cubicle collections that characterize "Dilbert" offices of the late twentieth century.) With the spread of the Action Office, Herman Miller furniture became a standard with high-end professional workspaces.

Herman Miller spent lavishly on research – on the needs of professionals in different industries, the ergonomics of body movements, and on supporting technologies like electricity and lighting. This information was then communicated to designers who created new furniture solutions.

The Herman Miller design ethos, over the years, could be seen not just in the furniture itself, but also in the production process and relationships with clients and workers. Simplicity and clarity was the goal. Just as furniture needed to be designed for specific purposes – the Eames chair and footrest for relaxation, the Embody® for long stretches of desk work, and so on – the production process needed to eliminate unnecessary materials and movements. And the company's relations with workers and clients needed to embody simple ethics of focus, commitment, openness to learning, constant improvement, and team work.

## Customers

Herman Miller's path-breaking design work with the Action Office led to an increasing emphasis on selling complete design solutions to large corporations. The sales force worked directly with procurement officers, architects, or designers responsible for configuring workspaces in global companies. In addition to corporations, the firm did significant amounts of business with government, educational institutions, and, increasingly, in the health care sector.

Among retail consumers, Herman Miller was best known for its iconic designs. (See **Exhibit 1**.) The firm's primary retail channels included top-line dealers and independent distributorships. Herman Miller conducted some direct sales through an online site and a few retail outlets in New York and Japan. Customers were largely located in North America. In FY14, international sales accounted for just 20.8 percent of Herman Miller's revenues.

## Culture

Herman Miller's products excited the forward-thinking elites in places like New York and San Francisco, but the company's corporate culture was rooted in the deeply Christian traditions of West Michigan.

Soon after becoming CEO, Brian Walker sought out a coach to tutor him on faith, traveling regularly to New Haven, Connecticut, to meet with Professor David Miller of the Yale Divinity School. Walker knew he had to speak the language of the people who made the company distinctive – not just the designers and executives, but also the people from the area who ran the factories and everyday operations. He noted:

This area has such a steeped background in its Christian roots, and that wasn't part of my upbringing and vocabulary. So I decided one of the things I was going to do is go learn more about religion and particularly Christianity so that as we were doing things, I could navigate it from an informed position rather than uninformed.

To articulate those values in more secular terms, the company composed a document entitled “Things That Matter,” a précis of the company’s tenets that was featured prominently in internal communications and on its website. (See **Exhibit 2.**)

Herman Miller preserved its culture through stories and symbols. People at the company – from the CEO’s perch in his open office to the newest factory worker – told stories to connect to the past and reinforce values and practices of the present. “We’re a big storytelling culture,” said Michael Ramirez, the senior vice president for people, places, and administration. “We live on stories ... You know, 34 percent of our [workforce] has been here 20 years or longer, so you get these great stories.”

Herman Miller gave a privileged place to storytelling through its “water carriers,” employees with 20 or more years of service who take on responsibility for connecting the company with its past through words and deeds. The term comes from Native American tribes. “Water carriers,” according to Max De Pree, the son of the founder and the then-CEO who introduced the concept in 1987, “transfer the essence of the institution to new people.” A reflecting pool and large Native American sculpture at company headquarters listed names of Herman Miller employees who have become water carriers. Over the years, a total of 3,085 Herman Miller have earned the title.

On the factory floors, stories could be found in four-foot-high boards filled with information about the goals, progress, players, and strategies of different work units. In Herman Miller’s headquarters, a 6,388-square-foot open space – which included museum-like displays of the company’s iconic pieces – expressed the company’s history and ideals. One display showed the evolution of the chair with the things that inspired new designs – molded plywood for the Eames chair, a catcher’s mitt for the pillow-like Ergon®, and a model of a human spine and a tennis racket for the ergonomic Aeron®.

One company tale explained how CEO Walker came to embrace Herman Miller’s new mission statement:

*For months, the leaders of Herman Miller debated a mission statement. Finally, an ad-hoc working group came up with a simple phrase: “Inspiring designs to help people do great things.” But Walker was unsure. The statement seemed overreaching. Can a furniture company really play such a vital role in people’s lives?*

*As the debate about the mission continued, Walker happened to be visiting the Wynn Institute for Vision Research at the University of Iowa. Walker’s son suffers from retinitis pigmentosa, an inherited disease that could rob him of his vision. Walker has become an activist, organizing fundraisers and consulting experts to find a cure.*

*During his visit, Walker met Budd Tucker, a stem cell specialist who directs research on the rare disease. He found Tucker sitting in a Herman Miller Embody® chair. Tucker told Walker that years before, while interning at Harvard Medical School, he had struggled with regular back and neck pain from a skiing accident. Then he contracted meningitis, further hurting his back. Tucker could not sit for more than 20 minutes without feeling pain. Long an aficionado of design, he requested that Harvard purchase him a black Embody chair for work. The pain disappeared. “Now I could sit for hours on end, working on curing*

*blindness.” When the Iowa Institute recruited him away from Harvard, his only request was an Embody chair.*

*After hearing the story, Walker immediately called his colleagues in Michigan and told them to adopt the mission statement that he had previously doubted.*

## Human Resources

Another story that employees told was of how Herman Miller came to adopt its employee practices:

*In 1927, a millworker named Herman Rummelt died of a heart attack. D.J. De Pree, the company’s founder, visited his widow, who read some sheets of poetry her husband had written. At the funeral, a couple of days later, the minister read more of the poetry. By time he returned home from the burial, De Pree decided that “the Lord is dealing with me about my attitude toward labor.” He wondered: “Was [Rummelt] a poet who did millwright’s work, or was he a millwright who wrote poetry?” The lesson, De Pree decided, is that “we are all extraordinary.”*

*After reflecting on the millwright’s life, De Pree overhauled the company’s approach to workers. A worker’s identity went far beyond the work they did. Honoring the “whole worker,” De Pree decided, would foster a more cohesive company culture and spur workers’ efficiency and creativity.*

**The Scanlon Plan:** The most significant policy resulting from the “whole worker” mindset was the so-called Scanlon Plan, which engages workers in joint decision-making and offers “gainsharing” based on company performance improvements. Working with Professor Carl Frost of Michigan State University beginning in 1950, Herman Miller set out to make workers full partners in the company. Herman Miller set up two committees – one for sharing ideas on company operations, the other for sharing the profits with all workers. D.J.’s son Hugh De Pree, who served as CEO for a quarter century in the 1960s through 1980s, described the plan: “It was a change from ‘piece work’ and every man for himself to each person being not only responsible for himself but for every other person in the organization.” In 1983, Herman Miller established a plan making all workers shareholders and eligible to share in company profits. By the end of the century, workers owned 16 percent of all Herman Miller shares.

**Community Service:** To foster the whole worker, Herman Miller granted all employees 16 paid hours off a year for community service and sponsors service activities, with initiatives ranging from river cleanups to youth-mentoring to home-building, with We Care, Habitat for Humanity, Women to Women, and other organizations. The company regularly exceeded its goal of 15,000 volunteer hours a year. Employees at all levels mentioned the enhanced sense of pride and purpose derived from these activities, which were chronicled in an annual publication, *Spirit: Stories of Community at Herman Miller*, with text and photographs contributed by company volunteers.

**Hiring.** Workers at Herman Miller, according to a constant refrain at the company, were “self-selecting.” Workers often chose to work at Herman Miller because of its evangelical Christian origins and its ongoing concern for workers. One worker recalled asking to take time off before starting his job in order to do community work in Kenya. “I wouldn’t want you to work here if you didn’t want to take that internship,” Herman Miller’s recruiter told him. “Go learn something, bring us something back and be a better employee when you get here.”

The Herman Miller culture was not for everyone. Located in a small town, dedicated to teamwork, committed to strategies that take the long view, the company did not work well for big egos or galloping ambitions. When people interview for jobs, they did not always know what they’re getting into. Most hires fit in right away; but some do not. Stories of bad hiring decisions circulate throughout the company. Kathy Spinelli, the vice president of talent, remembered firing a manager with an extensive track record as

an entrepreneur. “He was an absolute jerk and they finally said, ‘OK, this is not who we are and he’s got to go.’”

**Upward Mobility:** Workers who started on the factory floor have the opportunity to rise to team leaders and facilitators—and higher. Nancy Houghtaling, a general manager for the consumer experience, recounted her rise up the ranks:

I started in production years ago on second shift. I went into a lower-level customer-service-type role. Then I moved into a material planning role, supporting the plant and making sure that they have their parts on time. We used to have a plant down in Sanford, North Carolina, and so I went down there. I also spent some time in the U.K. years ago when we put [our Toyota-like production system] into place. And that was still in materials. Then I came back to a plant in Spring Lake, Michigan. That’s when I crossed over from materials into actually manufacturing leadership.

Still, not all employees understood or sought those opportunities. Many workers placed a higher value on their lives outside of work. One employee said he appreciated the company respecting his priorities—“Faith, family, friends, and then maybe furniture, in that order.” But the company provided opportunity for workers that wanted it.

**Long-term employment:** For decades, Herman Miller offered an implicit promise that, in the words of Board Chairman Michael Volkema, “if you came to work and you did a good job, you got lifetime employment.” When certain jobs got phased out, workers could take on other positions. But the realities of market competition could not sustain that deal. The company laid off 6,000 workers in the 2000s. When layoffs became necessary, Volkema said, “we will try, to the best of our ability, to make you more marketable and help you bridge to a new opportunity.”

**Diversity:** Notwithstanding its semi-rural location and heritage of conservative religious values, Herman Miller made diversity a top priority. The company had won numerous media and trade group awards for its policies aimed at women (including working mothers), people of color, the LGBT population, and other underrepresented groups, both among its labor force and its suppliers. In 2013, women represented 39 percent of the workforce (32 percent of managers and executives). Minorities represented approximately 21 percent of the labor force.

One HR policy proved contentious: Herman Miller’s decision to offer health benefits to same-sex partners of workers. To Andy Lock, president of Herman Miller International, the decision represented a high point in the company’s history. The policy, Lock said, sent a powerful signal that Herman Miller is a good place to work for anyone with energy and creativity. In a design-oriented company, such a decision was not only morally important but also critical for business. “And we did it in west Michigan!” he said. “It wasn’t necessarily popular. . . . But we wanted to make this place feel good to everybody.” Some traditionalists responded with slurs on an in-house website, calling the health care policy immoral. But Walker stood firm. He told detractors:

My job on this earth is not to decide who the sinners are. There's only one being who gets to make that call. My job is to love everybody equally and take care of them in the way He would respect. So offering people access to health care is not a decision about who the sinners are. Rather, it is about equal access. In fact, we expanded the policy to include any person that both lives with an employee and the employee is the primary economic provider.

**Turnover and satisfaction:** Herman Miller was regularly honored as one of the best places to work. Anonymous comments and ratings on GlassDoor.com reflected widespread satisfaction. In November 2014, for example, the online employment site found that 98 percent of respondents would recommend the company to a friend and 99 percent approve of the CEO. Respondents praised the work-life balance,



benefits, commitment to innovation, and opportunities to rise in the company. The company reported a turnover rate ranging from two to four percent. According to Spinelli:

People seem to want to be here and want to stay. As we become less West Michigan-focused, we aren't sure that will hold true. I once had a recruiter tell me that Michigan was one of the hardest states to get people to move to, and then one of the hardest to get people to leave.

The company did get some criticism on GlassDoor.com. Some respondents complained about the company's tradition-bounded, isolated operations. "Too few women in senior management roles," said one. "The commission plans are convoluted," said another. "Processes and people's roles seem to change often," said a third. "How promotions or eliminations are decided seems to be a mystery," said another.

**Staffing:** As of May 31, 2014, the company employed 6,630 full-time and 162 part-time employees. In addition, the company used temporary labor to meet uneven demand in its manufacturing operations. About 8 percent of Herman Miller employees were covered by collective bargaining agreements, mainly employees of its Nemschoff and Herman Miller Ningbo subsidiaries.

### Operations

Like many American companies, Herman Miller had long been fascinated with the logic and practices of the Toyota production process. In the spring of 1996, Hajima Ohba, the head of Toyota's consultancy for its "lean" manufacturing system, visited the company and began a long-term consulting relationship. Over the years, Ohba and his team took Herman Miller under their wings, teaching them Toyota's unique approach to manufacturing. Always evolving, never complete, the Herman Miller Production System (HMPS) became the center of every operation at the company.

Herman Miller defined HMPS as "a system that focuses on understanding and meeting our customer's needs exactly through the engagement and development of our employees." Workers played an active role on the factory floor. Operations were recorded and tracked on wall-sized boards throughout the factory. Those boards set goals, track progress and problems, and offered places for feedback and suggestions. Team leaders regularly engaged their workers on the speed of operations, safety issues, and the design of machines. Workers may stop floor operations when they discover problems. Facilitators roamed around the floor, looking for ways to make the process more efficient, safe, creative, and less taxing physically and mentally.

The factory's team leaders referred to their workers as athletes. At the beginning of every shift, factory teams gathered for stretching exercises and sharing objectives and ideas. Facilitators and team leaders looked for ways to reduce unnecessary movements—and lower-level workers were the source of many of these ideas. At Herman Miller, speed was just one consideration. Other considerations included reducing physical strain on workers, improving shop safety, offering greater variety of jobs, and connecting designers and engineers with other workers.

One story captured the payoff from this approach. As the Mirra 2® chair moved from design to production, an employee on the factory floor named (Jean) Pierre Fowler identified flaws that could have disrupted assembly. "He started to [ask] designers, 'Well listen, do we have to bolt this joint together? Can we actually have this one snap and have one screw underneath...?'" recalled Beau Seaver, vice president of seating operations. "We prevented 86 corrective actions before it ever hit the floor." Herman Miller people call the process of getting workers to suggest design improvements the "Pierre Cycle."

With consistent application of these manufacturing principles, Herman Miller had found that the company could actually reduce the automation of the manufacturing process. Workers exercising their judgment either individually or in the context of manufacturing teams boosted productivity. The work

floor became more flexible and capable. When machinery was required, workers actually helped design key elements of the process and helped to standardize processes.

### **Sustainability**

In 1956, D.J. De Pree vowed that “Herman Miller will be a good steward of the environment.” Since then, the company had regularly ratcheted up its environmental agenda. But what did that mean? Producing less waste? Using biodegradable materials? Using less water and energy? Recycling wastes? Limiting the footprint of buildings? Designing facilities that did not destroy landscape and habitat? Using up-to-date insulation? Overhauling distribution networks? Creating products – including seating – that use less energy? Or that use simpler construction and thus allow easy disassembly for reuse?

Over the years, in fact, Herman Miller embraced all of these strategies. When Herman Miller realized that the rosewood in its signature Eames lounge chair was an endangered species, it began using other materials. When the toxic fumes of shellacs harmed workers – and users too – the company abandoned them.

In 1994, Herman Miller committed to building a new manufacturing facility embodying green design. Despite exceeding cost targets, the building became an instant success when it opened in 1995. It cut natural gas costs 7 percent, electricity 18 percent, and water and sewer costs 65 percent. The building also inspired workers – whose productivity rose slightly – and offered a destination for visitors who wanted to see the future.

As the new building took form, then-CEO Kermit Campbell considered how to raise the stakes for the company’s environmental mission. At a gathering at the Henry Ford Museum, he announced an audacious goal – Herman Miller would deliver no waste at all to landfills. Somehow, the company would figure out how to cut waste and reuse the scraps from the production process. The company reengineered many products to be disassembled quickly – and then reused in new pieces.

In 2014, Herman Miller continued its sustainability efforts. “Zero is still part of our vocabulary,” said Gabe Wing, director of safety and sustainability. Six Herman Miller factories had achieved the zero goal. The company also designed factories with net zero energy and water usage, taking what they need on-site and recycling the rest. Overall the company reduced energy usage by 50 percent.

Herman Miller also pressed its suppliers to develop green plans. Since “they have been down with us on this road before,” Wing said, they saw it not as an imposition but an opportunity to save money. Sharing ideas yields significant cost savings. One supplier, for example, rigged an aeration system on a cleaning system, reducing heating temperatures from 120 to 90 degrees. “We stole that idea,” said Wing. “We saved from \$300,000 to \$400,000.” The company’s sustainability efforts were also a source of pride among employees – and part of the firm’s market appeal.

### **Organization and Leadership**

From the early part of the 20th century, when the De Pree family purchased the company, leadership and ownership of the company gradually devolved from the family’s exclusive control. Besides the shares granted the workers, the company listed its stock on the NASDAQ in 1970.

A member of the De Pree family served as CEO until Max De Pree handed over the reins of the company to Richard H. Ruch in 1987. De Pree served as board chairman until 1995; since then no De Prees have been employed by the company. Ruch was a 33-year veteran of the company with a long apprenticeship in the company’s executive ranks. In 1992, J. Kermit Campbell, a vice president at Dow Corning, became the first CEO from outside Herman Miller. After Campbell was forced out three years later, Mike Volkema took over. (See **Exhibit 3**.)

Volkema oversaw one of the first of two great financial jolts in the 2000s. After September 11 and the dot-com bubble burst, U.S. sales fell 34 percent, from \$2.24 billion to \$1.47 billion from 2001 to 2002. Profits of \$144.1 million turned into a loss of \$56 million one year later. “One night I went to bed a genius and woke up the town idiot,” Volkema quipped. Volkema laid off 38 percent of the company’s workers to respond to plunging demand. When Herman Miller closed a plant in Georgia, Volkema and COO Brian Walker went to meet with workers personally.

Walker became CEO in 2004 after serving as head of North America operations, CFO, and COO. Volkema continued as chairman of the board. Even though the company was public, Herman Miller’s leadership remained careful to maintain a board that reflected the values of the founders. According to Volkema, board candidates were screened extensively for their fit with the company’s core values and its distinctive, socially oriented mission. Board members also underwent regular performance reviews with the chairman, with anonymous input provided by fellow board members.

By his own admission, Walker struggled in the early days of his two top leadership roles. As Volkema’s COO – his “consigliere,” he said – he saw how the company was run at the top. But the CEO and COO “could not hear each other” during one tense period. When Walker shifted his approach, offering Volkema options on key issues, he found his footing.

As the leader of Herman Miller’s North America operations, Walker faced a major crisis with the 2001 economic crash. After learning how to run the company as operations chief, he had to become a leader. “I was scared,” Walker said of the 2001 meltdown. “I [didn’t] know what I’m supposed to do here. There’s 12,000 people. Everybody’s looking at me.” Walker noted:

I became CEO as the industry and economy began to recover in 2004. We had significantly streamlined the business during the three years from 2001 to 2004. The challenge was how were we going to grow in the future. While we expected the industry to rebound, we believed we needed to find a way to grow beyond the industry. ... We began to develop a strategy based on focused customer segments. To go make this work, we believed some acquisitions would be necessary to complement what we could create via internal development. This appeared to be working as the business went from the low point of \$1.3 billion in 2004 to nearly \$2.0 billion in 2008. And then, the financial crisis hit and we again faced an industry that was falling rapidly. As we had already “leaned the organization” we had to pull different levers to navigate this second significant downturn. In addition, we did not think it would be wise to cut our investment in new products and innovation during this period. So, we maintained our investment in R&D and managed our cost structure via short workweeks, voluntary layoffs, eliminating variable compensation and reducing discretionary spending.

By 2011 the company had begun moving toward the “Shift” strategy – perhaps the biggest transformation in the company’s history.

In terms of its workers, Herman Miller practiced “servant leadership.” In this style of leadership, workers were provided a wide range of opportunities to develop themselves fully – not “votes” in the company’s governance. As one executive noted, “Max De Pree [in *Leadership as an Art*] reminds us that because you have a voice doesn’t mean you have a vote. But everyone does have a voice and that’s clear in every interaction in the culture.”

One of management’s most notable efforts at transparency was a space in the corporate headquarters known as “The Room.” (See **Exhibit 4**.) The four walls of The Room display pictures and slogans, spreadsheets and tables and charts – and self-assigned grades of 1 to 5 for every team in Herman Miller’s North American operations. Open to all employees, The Room offered a comprehensive portrait of the company’s strategy, operations, and future. Visitors were also welcomed into the room, which contained cards for products under development and a timeline for launches.

To integrate operations, Herman Miller used a matrix structure, with employees generally reporting to multiple managers along functional, product, segment (industry) and/or geographic lines. The matrix was designed to foster co-ordination; in practice, managers said, the structure has proved difficult to navigate, blurring accountability and slowing things down. In a conflict-averse culture - known as “West Michigan Nice” - midlevel employees noted that too many decisions were passed back up the organizational ladder. “We are really good at taking ‘big swing’ risks [such as major acquisitions or launching revolutionary product lines],” said one member of the executive leadership team. “But we’re quite hesitant to take smaller, everyday risks deeper in the organization....This might be due to people deeper in the organization not feeling empowered and therefore afraid to fail.”

## The Big Shift

After a healthy period of growth, Herman Miller struggled with two major downturns in the 2000s, in the aftermaths of the September 11 terrorist attacks and the 2008 financial meltdown. Net sales more than doubled from 1995 to 2001, from \$1.1 billion to \$2.24 billion. Net earnings advanced from \$4.3 million to \$140 million in the same period. But sales fell 35 percent from 2001 to 2002 and recovered only gradually, passing the \$2 billion mark again in 2008. Just as Herman Miller was poised to match its previous high in sales, the 2008 meltdown occurred. (See **Exhibits 5 and 6.**)

At the time of the Shift Strategy, Herman Miller’s products could be broken down into six major categories:

- Workstations, including systems and desking products, represent 40 percent of the business, with 25 product lines.
- Filing and Storage, a category that includes pedestals, laterals, towers and storage cases, represents 17 percent of the business, with 20 product lines.
- Seating accounts for 30 percent of sales, with 17 product lines.
- Other furniture, including accessories and clinical products, represents about 3 percent, with seven product lines.

The company’s top five products were the Aeron® chairs, the Canvas® office system, the Action Office®, Ethospace® office system, and Everywhere™ conference tables.

## Industry Context

Herman Miller operated in a fragmented, low-margin industry, sensitive to the boom-bust cycle of the economy and especially subject to trends in globalization and technology. Industry sales peaked at about \$13.6 billion in 2000 and have fallen about 25 percent since then.

During the “Great Recession,” the prolonged economic downturn that followed the financial meltdown of 2008, the manufacturing sector suffered a decline more than four times than that of the national economy; the furniture sector suffered even higher losses. From December 2007 to June 2013, manufacturing declined 20 percent, compared to an overall decline of 4 percent for the entire U.S. economy. Office furniture suffered close to a 25 percent loss; home furniture suffered even more, with close to a 35 percent decline. (See **Exhibit 7.**)

The company’s competitive posture depended not just on design, product quality and service, and speed of delivery, as it has for decades, but also on its global and internet capabilities. Transportation and communications technologies, as well as global financial markets and open-trade agreements, made it possible for a large number of producers to meet the needs of customers around the world. Consumers could compare prices and styles online. Firms that produce similar products, then, competed increasingly on the basis of price – which creates a “race to the bottom” Such a race would be disastrous to high-end

manufacturers like Herman Miller. “We have a healthy consumer business on the internet, but it is not price driven,” Walker noted. But there were concerns in the company that price considerations would increasingly play a role in the contract business, as well.

Herman Miller aimed to get 50 percent of its revenue from outside the core North American office furniture business – not just from outside North America, but also in health care, education, and consumer products. Globally, the growing demand in China, in particular, offered new opportunities. Other growth regions included India, the Middle East, and Latin America. Herman Miller was limited in Europe by previous agreements on sales territories.

Steelcase led all sales of office furniture in the U.S. market in 2014, with \$3.07 billion in sales, compared to Herman Miller’s (\$1.92 billion), HNI International (\$2.1 billion), Haworth (\$1.41 billion), Kimball (\$1.3 billion), Knoll (\$863 million), and KI Furniture (\$700 million), according to company documents and news reports. These numbers reflected the total sales of these companies; all include non-U.S. sales. The non-U.S. numbers for Haworth, Steelcase and Herman Miller were significant. Kimball and HNI included significant non-furniture business sales.

The whole office furniture industry faced four key challenges - boom-bust cycles that closely followed economic trends, stiff competition both foreign and domestic, slow long-term growth of the underlying market, and unavoidable risk in foreign expansion. While the costs of raw materials had been stable for the past five years, these supplier costs had spiked in the past.

### The Third Wave

In 2012, CEO Brian Walker announced an audacious strategy in response to industry trends and dedicated to maintaining Herman Miller as a design and manufacturing leader. The “Shift Strategy,” he said, would be as transformational as two other milestone events in the company’s history – D.J. De Pree’s embrace of modern design in the early 1930s and the move to “systems design” that began with the Action Office in the 1960s.

Shift evolved after a series of meetings, in which the ten members of the executive team distilled their plans into one-page documents. The exercise focused attention on fundamental challenges – and gave everyone on the team a concise overview for everything going on in the company. Soon, the company’s sprawling set of 179 initiatives took form as a set of four new directions for the company.

**North America to Global: Geographic Expansion.** Herman Miller sought to globalize its manufacturing and sales. The company planned to expand first in Asia, then Europe and the Middle East, and finally in Latin America. Each region posed daunting challenges of understanding new cultures and aligning manufacturing and marketing capacities. As Volkema explained:

The markets here domestically just aren't growing that fast. There's pieces of this business that are shrinking. [Brian] not only has to offset that but then he has to figure out how to create growth opportunity on top of that. So I think he's got a really heightened sensitivity that there's a risk here.

Meeting global demand, said Andy Lock, the president of Herman Miller International, required being close to those markets. Lock noted:

Becoming a lifestyle brand in a place like China or India is not going to look like being a lifestyle brand in North America. Lifestyles are so dramatically different. If you're in China or Hong Kong, an Eames chair pretty much fills the entire apartment. So, it requires a different approach.

**From Products to Solutions: Avoiding Commoditization.** To maintain its viability as a high-end provider, Herman Miller sought to tailor specific solutions to the needs of businesses and consumers. To avoid lowering prices – and margins – the company needed to offer distinctive products, customized for the customer. “We’ll always have great products,” said Curt Pullen, president of Herman Miller North America, “but it’s leading the customer to our solution, not leading with the product” that will make Herman Miller thrive.

The solutions approach forced the company to understand its consumers better. Selling solutions meant less about pushing products than developing long-term working relationships with customers and clients. John Amrhein, vice president of sales excellence, noted:

The way that our industry is currently selling doesn’t really serve our customers. Customers think that they want things increasingly at a good price and standard specifications. But we actually believe that we’ve got more to offer. At the end of the day, we’re aspiring to create an overall, better experience and solutions. The only way we can help them understand is if we help ourselves better understand what they need from us.

As a high-end producer, Herman Miller depended more than other furniture makers on new business construction in high-growth industries. A relationship with a large firm could lead to a big sale. For example in 2013, the media reported that Herman Miller had signed a deal with ExxonMobil worth millions to furnish a new 385-acre campus outside Houston.<sup>2</sup>

**Office to Everywhere: Expanding Product Lines.** In the next generation, Herman Miller aimed to expand beyond its current reliance on the traditional office market. Shifts in the nature of work – from centralized to dispersed, from hierarchical to team-based, from standardized to flexible, from office-based to on-the-road – required new products. The company also planned to offer products for the home and healthcare industry.

Herman Miller already had a strong base for consumer sales, both from its classic chairs and other furniture and its business market. Pullen said:

We do 300,000 work stations and hundreds of thousands of chairs a year. Every one of those is an opportunity to build another relationship ... for the rest of that person’s life at home or whatever else. I want to get to know who is actually sitting there using it, not stopping at the corporate procurement guys. We’re trying to remind them that we can take care of you at other places too.

**Industry Brand to Industry plus Consumer: Moving from Organizations to Individuals.** Herman Miller was also seeking to expand its connection to consumers for the first time in decades. Company officials noted that the consumer strategy was important not just for additional revenue potential, but also to enhance the company’s brand and design reputation. With major contract deals, users “don’t know it’s Herman Miller,” said Curt Pullen. “They don’t know the thought that’s gone into the design of the space, based on our understanding of the character and culture of the organization, the purpose of that place, the work they do, how they do it.”

Company officials also noted that customers were demanding a wide range of buying opportunities. While some customers preferred online buying, customers seeking to buy complete systems – and to consider new products – preferred coming into stores to inspect the merchandise for themselves.

## Making Shift Work

To make the Shift Strategy work, Herman Miller needed to expand its capacity in all operations. Without acquisitions, the company believed, expansion could take a decade or more. So in 2012 and 2013, Herman Miller announced the acquisition of POSH, a Hong Kong-based furniture manufacturer; Maharam, a century-old, family-owned, high-end fabric designer and maker; and Design Within Reach (DWR), a high-end U.S. furniture retailer.

In these and previous acquisitions, Herman Miller added firms that shared its values toward workers, a commitment to the environment, and a culture of creativity and innovation. These acquisitions came after a period of partnerships, in which Herman Miller either purchased products from these companies or developed marketing alliances to its dealers and retailers. (See **Exhibit 8**.)

Even with careful targeting, integrating new units into the Zeeland company sometimes proved difficult. Herman Miller struggled to find the “sweet spot” between its strong culture and the acquisition’s longtime ways of doing business. Typically, the company offered the acquisition a period of autonomy before making changes in leadership, HR processes and benefits, data systems, reporting requirements, and interactions with the rest of the company.

While Herman Miller had endeavored to keep acquired companies autonomous, that goal had sometimes proved difficult. Given Herman Miller’s strong culture and belief in participative management, employees often took individual initiative to reach out to the acquired company to help them adapt to Herman Miller’s way of doing things. Herman Miller people referred to this as “loving them to death.” Walker appointed executives to live at Posh, Maharam and DWR and manage the flow of influence and input from Herman Miller. “While still not perfect, we have seen marked improvement in our ability to get the most out of acquisitions,” Walker said.

### POSH Office Systems (2012)

In early 2012, Herman Miller bought POSH Office Systems, a Hong Kong-based designer, manufacturer and distributor of office furniture systems, for \$50 million. In 2011, POSH had \$50 million in sales and employed 1,200 people. The acquisition dramatically expanded Herman Miller’s presence in Asia. POSH had 20 franchise dealers as well as a manufacturing operation in Dongguan.

In dollars, the POSH was not large. But the POSH acquisition represented a new way of doing things. “Before, everything was developed here in the U.S. and then migrated overseas,” said Ray Muscat, SVP for manufacturing research and new product operations.

With the purchase, Herman Miller owned two major manufacturing facilities in China. (The first plant, in Ningbo, was established in 2006.) When other major manufacturers offshored their operations, they aimed to cut manufacturing costs. But Herman Miller said their main goal was to locate closer to growing markets.

Differences in manufacturing culture represented a challenge. Herman Miller’s approach to manufacturing differed dramatically from companies in China and other developing countries. Chinese manufacturing, Andy Lock said, followed a hierarchical, deferential approach that dates back centuries. Even when given the opportunity to provide input, many Chinese workers defer to their superiors. Lock noted:

You're [working with] a very traditional Chinese company. If you look for an engineering drawing, you won't find one. It was all based on tribal knowledge. So the masters, as they call them in the factory, know how to build a product. That doesn't mean you can find that written down anywhere. So, you have to slowly but surely, in fact, form an infrastructure that wasn't

there before and then worry about cost ... which damages your margins. Do I think it's worth it? Yes, I do. Because China, you can't not be there. It's just that simple.

Chinese manufacturers also had earned a reputation for not providing the same health and safety protections as Western manufacturers. Scandals involving Nike, Apple, and Samsung manufacturers had drawn attention to long hours, unsanitary working conditions, and mistreatment of workers typical in Chinese factories.

### **Maharam (2013)**

In the spring of 2013 after five years of on-and-off discussions, Herman Miller paid \$156 million in cash for Maharam, the world's leading industrial textile designer. Maharam made textiles for commercial, healthcare, and residential interiors. The company had revenues of \$105 million in 2012.

Louis Maharam founded the company that bears his name in 1902. In 2014 under the control of its fourth generation, the company employed 250 people. Maharam was a traditional industrial fabric firm until the current generation turned it into a cutting-edge fashion company. Maharam designers included such notables as Hella Jongerius, Tord Boontje, and Paul Smith. The company also owned the classic designs of Verner Panton, Gio Ponti, and Alexander Girard. The company's textiles belonged to the permanent collections of the Museum of Modern Art in New York, the Art Institute of Chicago, and the Stedelijk Museum in Amsterdam.

Having a fabrics unit had forced Herman Miller to modernize operations in the production process. Herman Miller's process for acquiring material had not been overhauled in a generation, said Nancy Houghtaling, Herman Miller's general manager for the customer experience. She noted:

Our antiquated process for customer's own material was probably put in place in the 1980s. And nobody's really reviewed that. Nobody really wanted to own that animal. Now with the acquisition of Maharam it's kind of like, 'Oh, we got to do something different there if we want to promote this as an offering.'

Maharam officials said they focus on design in their work. To stay fresh and creative, they continually explored the arts and the patterns found in modern society. Sometimes their design inspirations lead directly to fabrics that can be used commercially; sometimes they don't. It was hoped that as Maharam blended into Herman Miller's product development, designers would do more of their creative brainstorming with those products in mind.

### **Design Within Reach (2013)**

When Herman Miller acquired DWR, in a deal worth \$154 million in cash, CEO Walker noted:

[The DWR acquisition] probably has the most likelihood to change the culture of Herman Miller longer term... It affects every other aspect of the operation. I mean you go backwards from the sale on the consumer level, and it affects product development. It affects variety of choice. It affects interface. It affects your environmental, ... So it really ripples back.

Founded in 1998 by Rob Forbes as an online store, newsletter, and design catalogue, DWR began opening showrooms in 2002. DWR broke the industry's mold by offering high-end design within days rather than weeks or months. "We played on the desire for immediate gratification," Forbes said. DWR's virtual and real displays offered a "nationwide introductory course in modernist design," *Fast Company* said, making the company "educators and taste makers."<sup>3</sup>



Over the years, DWR had experienced extreme highs and lows. The company went public in 2004, valued at \$211 million on opening day—70 times total earnings the year before. Management increased the number of physical stores to 63 by 2006, but the expansion was too much, too fast. “We got cocky, silly, fat,” one top official later admitted. DWR also came under legal attack for stealing other companies’ designs. Near bankruptcy, the firm delisted in 2009 and the company was sold to hedge fund Glenhill Capital Management for \$15 million. Despite poor management, DWR still employed a strong team committed to high-end design, strong customer service, and cutting-edge technology.

John Edelman and John McPhee took over in 2010. “John and John,” as they are known, worked together in retail for two decades—first with Sam and Libby Shoes, then with Edelman Leather. Immediately, they overhauled DWR’s operations and moved headquarters from San Francisco to Stamford, Connecticut. Quickly, they closed 30 stores. They developed a new retail strategy and increased sales from \$113 million in 2010 to \$218 million in 2013.

Before and after DWR’s tumble, DWR developed a strong relationship with Herman Miller. DWR, in fact, sold more of Herman Miller furniture than any other company’s. Herman Miller brought in John and John not just as managers but as equity partners. DWR was not an “add on” but the central piece of a new consumer business unit. With the deal, Herman Miller got a valuable foothold in the retail home furnishings market. DWR, for its part, got a direct line to Herman Miller and an enhanced capacity to respond to consumer demands and issues right away. Herman Miller hoped to emulate DWR’s speed within the fast-paced retail sector. “That business,” CEO Walker said of DWR, “moves [in] minutes, hours, and days. We move in weeks, months, and years.”

## Challenges of the Shift Strategy

Herman Miller’s expansion into China, with the turnover of the POSH manufacturing plant in Hong Kong, illustrated the promise and sensitivity of the new union.

To mark the beginning of its new relationship, Herman Miller officials laid down a red carpet in front of the POSH plant in Dongguan. Huge posters flanked the carpet at the front of the building. Herman Miller announced that it would give each worker severance pay, covering their years of service with the company. Then they invited the workers to rejoin the company by signing the posters. As workers walked up the red carpet, they were greeted by Andy Lock, president of Herman Miller International, who asked each of them individually to join the company. Every single worker did so. Lock said:

They were symbolically signing up to be with us. We paid off any historic debt due to their length of service, they got their termination pay, and then we said, ‘Now, come join us.’ And every single one of them did.

Soon after taking over, Herman Miller instituted safety rules that exceed industry standards in China. “Everybody else [other companies] isn’t bothering with health and safety,” Lock said. The company also began installing the HMPS into the factory operations. The system, said Ray Muscat, simplified the process of integrating foreign factories into Herman Miller’s production process.

Even if Herman Miller could afford to offer POSH workers better compensation and working conditions than they are accustomed to getting, Lock said, the company’s gestures and policies could get lost in translation. “I have no idea what they thought we were doing,” he said. “We cannot speak to one another but we can smile, we can shake hands, [and] send signals that you intend this to be different.”

## Areas of Concern

No matter how well the company plans its Shift strategy, CEO Walker said, “acquisitions are not for the faint at heart.” The challenge exists at two levels—operations and culture. “It’s tricky,” Walker noted. “We’ve still got a lot of integration work to do around acquisitions.” All three acquisitions posed important challenges to Herman Miller. Specifically:

**Customer Focus:** All of Herman Miller’s acquisitions, said top officials, would thrive by placing customers at the center of all policies and decisions. Every aspect of Herman Miller’s operations—product development, sales, distribution—needed to work backwards from the customer’s experience. The greatest challenge might be at POSH, but, said Ray Muscat, “all of those principles travel very easily.”

Integration of the acquisitions could open new possibilities in serving customers, as Ben Watson, executive creative director, explained:

Maharam is in the middle of a launch of a brand new category in floor covering, area rugs – a lot of great designs, a lot of interesting energy. DWR raises its hand and says, "Actually area rugs is an interesting category to us." How do we get together to say, "Wow, actually those products make a lot of sense to our customers; we don't need to go find them somewhere else." ... So what should that process be? It's a win for everyone because the Maharam team says, "Hey, we're going to structure this in a way that it doesn't fight with our other distribution channels but reinforces and supports it." DWR looks at it and says, "We want to invest our floor space in this range of product because we're not just buying it as a standard retailer like everybody else on the street, but we're going to be exclusive. We're going to be able to generate a complete stacked margin, and thus it's margin rich, and I'm going to want to invest in it and get my teams going after it." ... As they start to do that, they're already uncovering other places where there could be smart places to bring value to each other.

The trick, Watson noted, was to avoid falling into old patterns. DWR, for example, needed to offer consumer insights that help the design process rather than acting strictly as a retailer. Herman Miller and its new entities needed to think and act deliberately on culture. “Leadership influences every interaction. ... We talk about human-centered design, and our culture as being very much human-centered. You put the person first. That attitude becomes clear to new members of the family immediately.”

Herman Miller faced other concerns with traditional customers. The purchase of DWR offered greater customer insights, but it could also create channel conflict. Long-standing dealers and distributors had raised concerns about competing with Herman Miller while also selling their products. To offer a full line of products, DWR had to stock authentic modern designs from other manufacturers. DWR, then, needed to strike a careful balance, both capitalizing on special role within Herman Miller but also providing customers the best and broadest product line.

**Worker Culture:** Herman Miller was considering whether its signature worker policies—like stock ownership, same-sex benefits, and paid time off for community service—should be extended to new affiliates like DWR and Maharam. Workers in China likely would be managed and compensated differently than workers in the U.S., England, or even India. Walker warned against extending the company’s labor and diversity commitments too far too soon. “We only have so many resources and we haven't really completely dealt with diversity in the U.S.,” he said. Herman Miller, he noted, needed to “be careful with diverting efforts to trying to figure out Chinese diversity.”

Meanwhile, the company was working to recover human capital and build stable workforce demographics lost during the recession. Walker said the company has “recruited more new talent in the last five years than [any other time] in my 25 years.” VP for Talent Spinelli was overseeing a broad effort to transform the human resources—everything from recruitment to talent development to career paths. She noted:

It's very hard to sustain a good company. Part of what's critical to sustaining a good company is building good leaders. About ten or fifteen years ago, they cut the company essentially in half. They'd also had taken out [almost] all of leadership and development. We have better than normal retention, but when you look at our 30 year olds, that's where we're vulnerable and that's [where] the bench strength needs to be, so building our next generation of significant leaders keeps me up [at night] and the other thing that keeps me up is eventually Brian won't want to do this anymore and so where's that next CEO coming from?

Using a 3-by-3 grid, which cross-classifies workers' current performance and longer-term potential (outstanding, satisfactory, less than satisfactory), Spinelli was working to recruit and develop the next generation of company leadership. Her ultimate goal, she said, was to develop leaders who some day rise to the position of CEO.

**Company Brand and Image:** When Ben Watson was appointed executive creative director, he began to develop an across-the-board strategy for the design not just of products, but also the company's presence online, in publications, in stores, and in the workplace. How soon should the Herman Miller brand be brought into new entities? Watson offered an example:

We're going to want to change the chairs in the Maharam showroom so that they're Herman Miller chairs, with a Maharam fabric on them, of course. Every desk in every Maharam facility is the exact same Italian desk. Some day they will transition to a super-handsome Herman Miller desk, but to make that change on Day One would be the wrong cadence step.

The greater challenge might be increasing brand awareness beyond particular classic pieces like the Eames chair. DWR offered a new avenue to promote the brand, but expanding the company's activities globally, with a bigger catalogue of products, remained a challenge.

**Decision-making Authority:** In the early years in the Herman Miller organization, the new entities were being treated like new "verticals," markets like education, health care, consumer, small business, North America contract, and international, where the critical processes of the company were carried out.

On the one hand, Walker said, the new units needed to "be successful at what they've actually set out to go do." Herman Miller, then, needed to trust Maharam to design textiles, POSH to manufacture and sell to customers in China and Asia, and DWR to serve the needs of consumers. On the other hand, the company needed to coordinate overall strategy from early design work to point of sale and customer support. Working out the relationships, Walker and others said, would take time.

**Understanding Talent and Signals:** In an industry dominated by family-owned businesses, "assessing the depth of the bench of the talent" in newly acquired companies was critical. In those firms, the family leader established relationships and routines that might not carry over to the new parent company. The challenge was greater at Herman Miller, which gives its units and workers high levels of autonomy, as Walker noted:

Our culture has never been command-and-control. A lot of smaller companies, when ... you pull out the founders, often what you find is the people below were fantastic operating in an environment where there was somebody who set the agenda and kind of put the parameters around it. So knowing the level of talent below the family, is a big deal. And, it is important to be realistic about your ability to either retain (including family), supplement or replace the talent. This is a difficult area to get right. We are getting better each time, making more accurate assessments upfront and, changes sooner when needed.

A trickier problem concerned what kinds of signals and systems people at Herman Miller and its new entities used to manage operations. In the past, the company had attempted to develop common accounting and other systems. Walker noted:

Most people say go in and make all your changes right away. Our learning of these small businesses [is] try to change as few things as you can in the first 24 months, including accounting things that force them to look at their numbers in a completely different way than they're used to.

Standardizing operations only works, Walker said, when both partners understand each other's routines, signals, operations, and strategies. That took time.

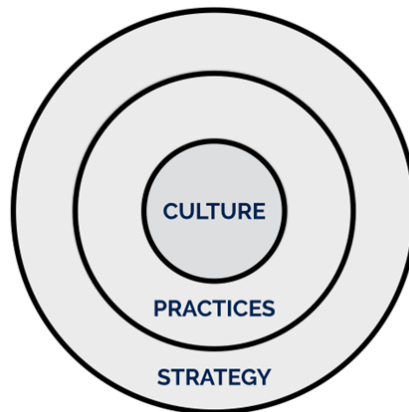
**Incentive Structures:** In most acquisitions, the company's owners worked for Herman Miller for a transitional period or two or three years. Walker noted:

We have learned to be careful with how we create these interim structures. Conventional structures like earn-outs that meet short-term goals can result in sub-optimal long-term investments. Or can confuse lines of authority when the seller is not involved in day-to-day operations, but retains an incentive based on performance. A variety of arrangements can work, but they need to be congruent in terms of duration, risk and authority. In the case of DWR, the leaders agreed to roll their previous investment into a minority stake in the newly created Herman Miller consumer business. There is no set time-line by which they have to sell and they have responsibility for both DWR and Herman Miller's consumer operations.

## Shifting Forward

Herman Miller held no illusions that the Shift strategy will come easily. Senior leaders acknowledged that the strategy puts a premium on capabilities that have not historically prevailed at the company. It also required knitting together an increasingly diverse, complex, and far-flung network of subunits, many of which are located far from the Zeeland Mother Ship. "We're in a wonderful position of moving forward," said Andy Lock. "It also has some risks. We will undoubtedly make all sorts of mistakes. But as long as you don't do it too often, Herman Miller has this great ability of letting you fail a little and then try to figure out how to help you to win next time."

Before Brian Walker became CEO of Herman Miller, he asked the outgoing CEO, Mike Volkema, for advice. Volkema drew three concentric circles on a sheet of paper.



The company's "true values," Volkema told him, were represented by the center circle "This culture is so strong and it's so supported at a grassroots level," Volkema said, "that if you try to manipulate or change a true value, there will be an uprising." The two outer circles represented the terms of change in the company. The middle circle represented policies and practices based on enduring values. Such practices, while strong, sometimes required change.

To preserve the company's core, Volkema told Walker, he needed to make sure that Herman Miller held fast to core values, made cultural change carefully, then devised a strategy to guide the company for about 10 years. "Brian, you can take on a few of those cultural values, but if you start to take on too many, you'll tear the fabric rather than stretch it," Volkema remembered telling Walker. "It'll be your obligation to stretch it a bit, but you can't tear it."

As Herman Miller moved to carry out the Shift Strategy, Brian Walker's most important job might be to understand what belongs in each of the three circles and how to preserve alignment and congruence among them.

**This Yale School of Management case has been made possible by the generous support of The C.E. Thomas Cleveland '68 B.S. and Barbara S. Cleveland Managing by Values Fund.**

This case has been developed for pedagogical purposes. The case is not intended to furnish primary data, serve as an endorsement of the organization in question, or illustrate either effective or ineffective management techniques or strategies.

Copyright 2014 © Yale University. All rights reserved. Reprinted with permission of Yale University School of Management. To order copies of this material or to receive permission to reprint any or all of this document, please contact the Yale SOM Case Study Research Team, 165 Whitney Street, PO Box 208200, New Haven, CT 06520 or at [case.comments@yale.edu](mailto:case.comments@yale.edu).

## Endnotes

<sup>1</sup> Case writer and editor, Yale School of Management. Case supervision by James Baron, William S. Beinecke Professor of Management, Yale School of Management; interviews conducted jointly by Baron and Euchner. Michael Beer and Russell Eisenstat of the Center for Higher Ambition Leadership, a partner in this work, provided helpful comments. Clark Malcolm of Herman Miller offered extraordinary help in coordinating our site visit and interviews. Jaan Elias, Director of Case Research at the Yale School of Management, also provided important editorial guidance.

<sup>2</sup> "Herman Miller signs contract with ExxonMobil" WZZM13 News, October 15, 2012, accessed in December 2014 at: <http://hollandzeeland.wzzm13.com/news/news/74251-herman-miller-signs-contract-exxonmobil>.

<sup>3</sup> Jeff Chu, "The Rise and Fall of Design Within Reach," *Fast Company*, December 1, 2009, Accessed in December 2014 at <http://www.fastcompany.com/1460614/rise-and-fall-design-within-reach>.

## San Miguel (B)

After Dr. Benito

*Charles Euchner*<sup>1</sup>

***Our mission [is] to turn amaranth into a worldwide commodity and to have a leadership role in the food industry. – Dr. Benito Manrique de Lara***

In May of 2014 two months after the Global Network for Advanced Management published its case study about San Miguel, Dr. Benito Manrique de Lara, the charismatic founder of the company, died. The death shocked the small community of Huixcazhdha. The 53-year old Dr. Benito had not shown any signs of ill health. He passed away in his sleep and was discovered in the stone cottage he had built by hand near the amaranth processing factory.

The death left a tremendous void that Dr. Benito's two long-term partners quickly agreed to fill. His brother Diego Manrique de Lara rushed backed to Mexico from Denmark, where he had been in the tourism business for two decades. The other partner, Bruno Pagliai, who served as the company's chief financial officer, now agreed to play a more active role in strategy and management.

After nearly a year at the helm, San Miguel's two new leaders managed to keep the small company afloat. While revenues declined, profits actually increased during 2014. San Miguel continued to produce a variety of products – nutritional supplements, snacks, and baking goods – for sale to public agencies, small retail outlets, and food manufacturers. Nonetheless, making sales continued to be a struggle. Government contracts accounted for almost 70 percent of the company's revenues and the slump in oil prices meant that government contracts, always subject to political maneuvering, could become even more difficult to secure.

Pagliai and Diego Manrique were considering two new investment:

- 1) A nutraceutical product called Hepato Plus, manufactured from San Miguel amaranth, had entered medical testing for treatment of cirrhosis.
- 2) Bimbo, Mexico's baked goods giant, had inquired about a possible distribution deal for amaranth-based snacks.

The two options were not mutually exclusive, but with limited investment resources (both in terms of management time and capital) the partners had to weigh their options carefully. They both agreed that they needed something to shore up revenues. Diego Manrique argued, "It's not sustainable in the long run. We need to ramp up sales one way or the other."

## The Community and the Company

After Dr. Benito Manrique died, his brother Diego and longtime friend and partner Bruno Pagliai divided up responsibilities to carry on his work. Pagliai agreed to continue as chief financial officer and added responsibilities as general director. Diego embraced the mantle of “chief equilibrium officer.” In that role, he would coordinate all aspects of San Miguel’s activities – product development, strategy, marketing, and, of course, issues in Huixcazhdha.

The two partners turned to San Miguel’s managers – workers born in Huixcazhdha and trained by Dr. Benito – to continue running the factory. Because San Miguel had always rotated workers in and out of different roles, these managers understood every aspect of the company’s day-to-day activities. The workers stepped up and kept the plant running smoothly.

Diego Manrique then set to clarify the relationship between San Miguel and Huixcazhdha. Historically, where the company left off and the community began was not always clear – especially financially. Year after year, the company supported the community – by building roads, a school, a community center, a park, as well as training programs – with whatever surplus it could spare. But Diego wanted to establish a clearer relationship. “Let’s get a number on it, actually figure out how much of our gross profit are we actually spending on the community,” he said.

In 2014 San Miguel contributed MXN\$220,000 to Huixcazhdha. Diego Manrique noted, “This is direct expenditure. If we add manpower that is allocated off and on to the community for different things, we’re talking about different numbers. We are trying to be more conscious about how we’re spending the money.”

As the company defined its financial role, it also encouraged people in the community to develop their own capacity to solve problems. “We’re trying to establish areas of responsibility,” Diego Manrique said. “We’re trying to allocate their tasks to different people that were all previously covered by my brother.”

Dr. Benito had set up a community organization, Utopia Huixcazhdha AC, in 2011 to help support the community, but the organization had been dormant. With Diego’s help, community members revived the NGO to support the community center, local nutritional programs and educational programs for Huixcazhdha’s young people. In 2014, Utopia Huixcazhdha was seeking official status so that it could collect tax-deductible donations.

The formalization of the community organization did not mean that partners were any less committed to Dr. Benito’s social vision. Dr. Benito sought to create a company that would offer healthful products, treat workers well, and create a vibrant community -- a vision Diego Manrique endorsed. For example if San Miguel lost big government contracts, Diego Manrique said he would continue to pay workers:

Well, I can tell you what happened one year when we ran into a similar situation. We didn’t fire anybody. Those who were married worked two weeks, and those who were not married worked one week. But everybody was kept on the payroll until sales picked up again. ... If we’re not producing but I’m still paying you, then we have lots of people that can do community work.

## Continuing Operations

After peaking at MXN\$48,317,598 in 2012, San Miguel’s revenues continued falling in 2014 to MXN\$27,065,108 (US\$1,859,346). Profits actually increased over the previous year, coming in at

MXN\$1,739,793 (US\$118,016) (see Exhibits 1, 2, 3 for 2014 income statement, balance sheet, and historical data).

Grain prices continued to be a problem though the variation was not as extreme in 2014 as it had been in some previous years. In 2014, the price of amaranth grain varied from 12 pesos to over 30 pesos per kilogram.

### **Government Sales**

Sales to state government nutrition programs in Mexico continued to dominate San Miguel's sales, accounting for nearly 70% of the company's revenues (see Exhibit 4).

Over the years, San Miguel had maintained ongoing relationships with three states – Hidalgo (the company's home state), San Luis Potosi, and Durango – but had lost contracts with other states. Competing for these contracts was a job in itself, for which Dr. Benito had a lifetime of contacts. Contracts with government agencies depended not only on convincing officials about the technical merits of amaranth-based products, but cultivating relationships with local officials and tailoring San Miguel's offerings to fit state agendas. In 2015, the job had only gotten harder as local governments were adversely effected by the falling price of oil.

Diego Manrique remained hopeful that the company could continue to sell its products to the states. The company had signed up the state of Hidalgo and was courting the State of Mexico and two smaller states. The State of Mexico deal could yield as much as MXN\$9 million in extra sales for 2015, and combined with the already secured contract with Hidalgo would exceed the previous year's revenues from state governments.

### **Sales of Processed Amaranth**

San Miguel established state-of-the-art standards for food quality when it sold processed amaranth to the Kellogg Company. While the relationship with Kellogg had flagged, San Miguel had courted Pepsico, Minsa, and Lala as potential clients during 2014. For Minsa, a maize processing company, San Miguel had agreed to manufacture 1.2 tons of processed amaranth for a pilot project. If the pilot proved successful, San Miguel hoped to complete a deal to sell 10 to 15 tons a month. San Miguel was also involved in a pilot to produce popped amaranth for Pepsico. Piasa, a new client, was buying San Miguel's products for its line of flours. In 2015, Diego Manrique was holding out hope that Kellogg would return as a customer. There were some talk that Kellogg would develop new products using amaranth, with a focus on the American market.

Nonetheless selling processed amaranth remained a low-margin endeavor.

### **San Miguel Branded Products**

While working with other major food producers, San Miguel continued to do in-house R&D for its own branded products, working on a gluten-free hotcake mix and new snacks.

In 2015, distribution to private retail outlets remained difficult. San Miguel products continued to be stocked at a small selection of stores in central Mexico. The company continued to work with BioJuvé, a Weight Watchers-like organization, about including San Miguel products in their basket of diet offerings.

A potential huge boost to sales could come if San Miguel managed to distribute its product in Diconsa, the state-owned chain of stores dedicated to fight food poverty. San Miguel continued to work to be included as one of the food products that could be procured by Diconsa's "electronic wallet." Diego Manrique noted the slow pace of negotiations:



They have asked us six times for price quotations. So the possibility's still open. But I really think you also have to take into account the Mexican political situation, and the current financial situation. Although the government has stated a number of times there will not be any cutbacks in social welfare expenditures, the fact is that there is no alternative.... So, Diconsa has not moved, but they have not disappeared from the horizon, either. But I have little hope for that possibility.

### **Franchise Sales**

Before Dr. Benito's death, San Miguel began experimenting with small storefronts and trucks to bring amaranth products to towns and villages. The stores and trucks would contain San Miguel's patented "mini-popper," which could make products on the spot. Diego Manrique found, however, that the cost of those operations was too high to sustain. By the spring of 2015, San Miguel had dropped the idea, at least temporarily.

### **Branding**

According to Diego Manrique, San Miguel's corporate identity and brand remained confused. The company had two major brands. The San Miguel brand offered the company's face to the world, with its emphasis on community. The second brand, Nutrisol, presented "a more technical image" to health care providers. Even that split brand, Diego says, was the result not of a clear strategy, but of the company's tendency to "go with the flow."

Diego also noted that the company's brand or the product packaging did not communicate the company's values or benefits. "It doesn't say very much about the company, how we do things, or how we think," Diego Manrique said, "It doesn't say anything about the community work [or] the small farmers we help." However, marketing experts told San Miguel that branding the company with a Mexican theme would backfire because the public has "no confidence, no trust in that."

The company also recognized the need to overhaul its Internet presence. In Diego Manrique's words, the current website was "a dinosaur." But the company lacked the resources to fix it soon.

### **New Opportunities**

While finding their footing as leaders of San Miguel, Diego Manrique de Lara and Bruno Pagliai were considering new directions for the company. One opportunity was to invest in testing and marketing an amaranth-based nutraceutical product, Hepato Plus, for people suffering cirrhosis. Another opportunity came from partnering with Bimbo to mass market an amaranth snack to a mass audience. Finally, the partners were considering the lease or purchase of an extrusion machine that could help in increasing the production of finished amaranth goods.

### **Hepato Plus**

Given its unique nutritional profile, amaranth-based products had promise not only as healthy food, but as an adjunct to medical treatment. Using amaranth-based protein, San Miguel could produce a product, dubbed Hepato Plus, which might help with the needs of cirrhosis patients.<sup>1</sup>

---

<sup>1</sup> Cirrhosis meant damage to a person's liver. While individuals suffering from cirrhosis required protein as much anybody, their bodies could not process animal-based proteins since these protein sources also contained high levels of ammonia and other toxins that are normally filtered by the liver. Indeed when these substances get to the brain they can cause confusion and temporary loss of memory (a condition called "hepatic encephalopathy"). Plant-based proteins seem not to lead to this problem.

The development of the Hepato project started years ago with a graduate student named Laura Perez a Mosca of the Universidad Iberoamericana. As part of her master's degree program, she developed the formula while working at San Miguel. When Dr. Benito Manrique died, she attended a memorial service and reminded Diego Manrique of her work.

Diego Manrique got in touch with Dr. Segundo Moran of the Mexico Institute of Social Security (IMSS), with whom the company had worked before. With funding from the National Council for Science and Technology, Dr. Moran agreed to test the formula to assess its efficacy in treating cirrhosis. The testing began in March of 2015 and would compare 40 patients using the product with 40 placebo patients. The testing was scheduled to run for 30 days, with a possible expansion of the testing to a total of 90 days.

To lower the overall costs of the study, San Miguel contributed a complete supply of Hepato Plus for the 40 test patients. With current production techniques, each treatment costs about \$10; with 40 patients using one treatment a day for 30 days, San Miguel's one-month outlay would be valued at \$12,000. If the experiment extended to three months, the San Miguel contribution would reach \$36,000. A longer trial process was advisable but not likely. Diego Manrique said:

Ideally we'd have to carry this out for a whole year. But I don't think we're going to get that ambitious. ... The competition might say, 'Oh, but you didn't run it for long enough. You should have done this, and this, and this.' Ideally, like I say, it should be a one-year project with the same patients, and perhaps an even larger population of patients.

Even if tests validate the product, getting to market could take years. The product would require a comprehensive amino acid profile that would cost \$15,000. Then San Miguel would need to get government endorsement on the *El Cuadro Básico*, the list of approved medications, supplements and devices that can be prescribed by Mexican doctors. Getting that kind of validation, Diego Manrique said, was "not so easy."

San Miguel could consider two approaches to sales – selling the product themselves or licensing with a major health-care producer. If they went alone, San Miguel would need to work with marketing experts to come up with the right brand name and packaging. Then the company would need to hire *Visitadores Medicos*, sales reps who meet with doctors to explain the product's efficacy. As an alternative to this full-on marketing strategy would be to use San Miguel's Nutrisor company and "break into the Mexican market little by little." Even minor sales would yield unprecedented profits. If just 500 people used the product twice a day, Diego Manrique said, "The numbers look really nice."

Advisors had suggested that San Miguel would be better served by licensing the product to an existing healthcare company. "That seems to be common practice in this field," Diego Manrique said. "You develop the product, and then you hand it over to the big guys, and they pay you a royalty or something."

At scale, San Miguel estimated the product could cost \$3 a dose to produce, But the retail price could be as high as \$15 a dose (the current market price of an existing protein supplement for cirrhosis patients). Depending on production volume, Hepato would not require new production equipment and left-overs from its production could be used in other products.

In time, other medical uses of amaranth could present themselves. The company was looking into a formulation of a similar product for sufferers of diabetes. Other research had found that amaranth might ameliorate depression (amaranth contained the amino-acid tryptophan, which is metabolized into serotonin). San Miguel had already established the nutritional value of amaranth products with national health officials, so enticing government officials to do further research seemed a strong possibility.

## Bimbo

At the same time San Miguel considered moving into the health product niche, it was considering a whole different option – mass production of snacks for distribution by Bimbo.

Bimbo, a Mexico-based company, was one of the largest baked goods companies in the world. The company sold over 10,000 products with 100 major brands including the popular US brands Arnold, Entenmann's, Hostess, and Sara Lee. In Mexico, the Bimbo bear was a nearly ubiquitous presence in grocery stores, corner shops and small eateries.

San Miguel had started talks with the company to act as a distributor to supply its Amarantojito-like product. But any kind of agreement would require dramatic increases in the company's production capacity and possible reformulation of its signature snack.

San Miguel's Amarantojito production process remained as much art as science, as Diego Manrique noted:

We press [the Amarantojito dough] by hand into the mold, and then something that looks like an actual waffle grill pushes the little bits out of the mold. These are then put into the oven where they dry. That's the current amarantojitos technology – 13 people on the production line, and a very, very slow process of production... The Amarantojitos are not even homogeneous, because depending on who's doing the pressing into the mold, the density of the product will vary. So we cannot package by volume, we have to package by weight, which means that we have people at the end of the line putting in and taking out little clumps of amaranth to make sure it makes the weight. And then it goes to a manual sealing machine.

With Kellogg, San Miguel had proven its capacity to create high-quality ingredients for a major food producer. But the company had never produced finished food products at such a vast scale. The need to rationalize the production process might require a whole different mindset among the managers and workers at Huixcazhdha.

Producing healthy snacks for Bimbo – or any major corporation with vast distribution capacities – would doubtless require a cheaper product. A new formulation for amarantojitos would possibly mix amaranth with less expensive ingredients. Diego Manrique observed:

By mixing our amaranth with a cheaper commodity, such as oat flour or rice flour or corn flower, you could come up with a puffed product that would have a much better nutritional value than cheese puffs alone, while you lowered the cost of raw materials significantly... That is probably the only way we would be able to meet the ideal price point for Bimbo.

In the past, a major sticking point with large companies had been guarantees for minimum distribution. Dr. Benito had wanted iron-clad assurances from any distributor before San Miguel invested in new capital equipment to increase capacity. While initially interested in working with San Miguel, all the previous distributors with which San Miguel had held discussions demurred on this point.

## Capital Investments

Even without guarantees from Bimbo, San Miguel was considering investing in extrusion equipment that would increase the amount and homogeneity of its product. Such technology would cost US\$120,000 outright, but the company could lease to own with an initial US\$30,000 outlay.

The extrusion machine could increase San Miguel's capacity by as much as ten times – and even more if the company increased its shifts. For example in 2015, San Miguel could produce 1,000 bags of

amarantojitos in a two-shift day. With the new equipment and processes, San Miguel could produce that amount in one hour.

Furthermore the new extruding equipment could eliminate emulsifiers from San Miguel's formulations. Emulsifiers are chemical agents used to improve shelf life, enhance texture, and aid in the combination of ingredients. However, many see these emulsifiers as unhealthy ingredients that have been implicated in major health issues.

This investment could prove a major role in any sector—nutraceuticals, protein powders and mixes, or healthy snacks. It would allow San Miguel the capacity needed to deliver products at much larger scale and at lower per-unit costs. But absent specific demand, did making such an investment make sense?

## Choices and Dilemmas

Partners Bruno Pagliai and Diego Manrique believed that the key to a sustainable future was a more diverse customer base. In 2014, almost 70 percent of San Miguel's revenues were generated by government contracts. Diego Manrique argued:

Ideally, private sector sales should be in the neighborhood of 70-80 percent, with NGO and government sales representing the remainder. More realistically, we should be shooting for 50-50 within the next three to five years, with at least a 10 percent increase in the share of private sector sales already by 2016.

But any initiatives the company took to diversify their operations faced two constraints, capital and personnel. The partners were fairly resistant to bringing in more investors. "If necessary, we'll dig into our own pockets, both Bruno and myself," Diego Manrique said. Rising revenues could also be plowed back into the capital investment.

As for personnel, the partners were waiting before reaching out to bring in new management talent. For now, San Miguel's search for outside talent had focused on community organizers to assist local amaranth farmers. These organizers would work with the state-funded Strategic Program for Food Security to promote local gardens and nutrition. Diego Manrique noted "I see this as part of our social contribution, but also as a way of getting sources of amaranth closer to where we are."

In all things, the partners also faced a great deal of uncertainty. San Miguel had always operated in a seat of the pants manner, opportunistically exploiting whatever possibility presented itself. Sometimes this meant pursuing options without full information, learning about costs and revenues as the company went along. But with such divergent options, the question was what direction to pursue?

This case is meant to be used with **San Miguel: Expanding the Amaranth Market**, a Global Network for Advanced Management Online case study (101-14). The first case is available at <http://nexus.som.yale.edu/amaranth/>.

This case has been developed for pedagogical purposes. The case is not intended to furnish primary data, serve as an endorsement of the organization in question, or illustrate either effective or ineffective management techniques or strategies.

Copyright 2015 © Yale University. All rights reserved. Reprinted with permission of Yale University School of Management. To order copies of this material or to receive permission to reprint any or all of this document, please contact the Yale SOM Case Study Research Team at [case.comments@yale.edu](mailto:case.comments@yale.edu).

## Endnotes

<sup>1</sup> Project Editor and Case Writer, Case Research and Development, Yale School of Management

**Exhibit 1: San Miguel Balance Sheet - October 31, 2014** (in MXN\$ pesos)

<b>ASSETS</b>		<b>LIABILITIES</b>	
<b>Current Assets</b>		<b>Current Liabilities</b>	
Cash, bank accounts and temporary investments	2,402,726	Long-term Bank Loans	5,058,155
Prepaid Expenditures	1,123,221	Local Accounts Payable	1,003,207
Accounts Receivable	5,669,681	Other Accounts Payable	227,140
Miscellaneous Other Receivables	4,479,554	Taxes Payable	114,345
Finished Goods Inventory	358,021	<i>Total Current Liabilities</i>	<i>6,402,847</i>
Raw Materials Inventory	742,439		
Work In Progress Inventory	0	<b>Capital and Retained Earnings</b>	
VAT credit	539,577	Shares	1,764,000
<i>Total Current Assets</i>	<i>15,315,219</i>	Other Capital	1,769,239
		Retained Earnings	8,981,960
<b>Fixed Assets</b>		Profit or Loss from Current Year	698,732
Property	1,927,190	<i>Total Capital</i>	<i>13,213,931</i>
Fixtures	5,225,441		
Accumulated depreciation	(5,271,379)	<b>Total Liabilities and Retained Earnings</b>	<b>19,616,779</b>
<i>Total Fixed Assets</i>	<i>1,881,252</i>		
<b>Deferred Assets</b>			
Anticipated Taxes	1,921,912		
Anticipated Income Taxes	498,396		
<i>Total Deferred Assets</i>	<i>2,420,308</i>		
<b>Total Assets</b>	<b>19,616,779</b>		

**Exhibit 2: San Miguel Income Statement- January 1 -October 31 ,2014** (in MXN\$ pesos)

	Year to date	% of Total Income
<b>Income</b>		
Sales	24,591,047	100
<b>Expenses</b>		
Cost of Sales	18,578,848	76
Marketing Expense	1,192,386	5
Administrative Expense	3,675,937	15
Financing Expenses (Gains)	20,677	
Provisions	465,821	2
<b>Total expenditures</b>	<b>23,426,494</b>	<b>95</b>
<b>Income (or loss)</b>	<b>1,164,553</b>	<b>5</b>

**Exhibit 3: San Miguel Historical Income and Profit** (in MXN\$ pesos)

Year	Income	Net profit
2011	36,161,721	1,170,029
2012	48,317,598	3,586,009
2013	30,520,462	88,169
2014	27,065,108	1,739,793

**Exhibit 4: San Miguel 2014 Sales by Sector** (in MXN\$ pesos)

Sector	2014 Sales	Percent
Government	18,273,038.00	67.52
NGO	5,946,600.00	21.97
Private sector	2,845,470.00	10.51
<b>Total sales</b>	<b>27,065,108.00</b>	<b>100</b>



# Squeaky wheels

*Cape Wind* chronicles consternation among the swells on Nantucket Sound

BY CHARLES EUCHNER

**THE SPECTER OF** little toothpicks twirling on the horizon of Nantucket Sound is causing fits among the political elites who make summer a verb on Cape Cod, Martha's Vineyard, and Nantucket. On overcast days, they wouldn't see anything but the soft line separating water from sky. But on sunny days . . .

Those toothpicks are what you may one day see of a wind farm located five miles off the southern coast of Cape Cod. Some 130 turbines—dispersed over 25 square miles in the 550 square miles of Nantucket Sound—would stand as high as 440 feet above the surface of the water. The turbines would produce 1.5 megawatt hours of energy, enough to cover three-fourths of the electricity needed on the Cape and Islands, home to 250,000 year-round residents and three times as many people during the summer.

Cape Wind is the dream of an entrepreneur named Jim Gordon. A kid from Newton who discovered nature at the West End Club's summer camp in New Hampshire, Gordon earned millions selling energy-saving devices and building natural-gas plants in New England.

In 2001, Gordon and other entrepreneurs started talking about bringing wind power to Massachusetts. He now promises that Cape Wind will lead to the reduction of 734,000 tons of greenhouse gas emissions a year—good news for an area long dirtied by power plants and auto congestion.

Even more important, a wind farm could help make Massachusetts a leader in alternative energy. And who could be against windmills?

In their chatty book *Cape Wind*, published by New York-based Public Affairs, journalists Wendy Williams and Robert Whitcomb tell us exactly who. By their reckoning, the long and often nasty debate about Gordon's project is all about the privilege and hypocrisy of the upper class.

At the beginning of the approval process, Gordon visited Spiro Mitrokostas, the executive director of the Cape Cod Technology Council, who agreed that the project had lots of potential for creating new jobs as well as energy. But Mitrokos-

tas warned Gordon: "Only two or three hundred people run the Cape. If you don't have them on your side, forget it. If Ted doesn't like this, you're going to have a problem."

Indeed, liberal heroes like U.S. Sen. Ted Kennedy, journalist Walter Cronkite, and historian David McCullough opposed Cape Wind because it threatened to alter their posh vacation spots. (Cronkite has since switched sides.)



The Alliance to Protect Nantucket Sound quickly raised \$15 million—a coming-together of old and new money—from such people as Listerine heiress Bunny Mellon, Paul Fireman of Reebok, and Richard Egan of EMC. The group produced a powerful infomercial with Cronkite's authoritative voiceover, dominated town meetings, and exploited the arcane parliamentary maneuvers of Washington.

The rhetoric against the wind farm went far beyond the initial outcry about the toothpick horizon. Opponents said the project would:

- produce a "killing field," with turbine blades slicing birds that flew in the area;
- cause awful noise pollution;
- devastate the animal life of Nantucket Sound, including sea lions and diverse schools of fish;
- interfere with air travel, especially at Nantucket and other local airports;
- ruin navigation in the area, threatening vital shipping industries;
- destroy the appearance of the whole area and cripple the tourism industry, just as surely as putting a Motel 6 in the middle of the California redwoods or in Florida's Everglades.

Williams and Whitcomb do a good job tracking and refuting charges. Many of the claims lacked any data (even though Gordon showed a willingness to sponsor independent research). Other claims were clearly wrong.

When the policy arguments failed, activists attacked Gordon personally. In a radio debate, Robert F. Kennedy Jr. told him, “You’re a developer here who is trying to make a buck, and you’re trying to do it by imposing your costs on the public.” The Alliance placed a full-page ad in *Roll Call*, a Washington paper devoted to covering Capitol Hill. WHY IS THIS MAN SMILING?, a headline asked. Nearby, a cartoon showed Gordon clutching money while stepping onto a boat in the sound.

Williams and Whitcomb ask why Ted Kennedy—whom they consider a legislative genius working behind the scenes to subvert the project—is so adamant against Cape Wind.

The authors find their Rosebud in an encounter between Kennedy and Jim Liedell, a retired utility executive. According to Liedell, a supporter of the project, he approached Kennedy at a summer concert in Hyannis. The scene is reminiscent of Cindy Lou Who asking the Grinch why he’s taking the Christmas tree.

Liedell asked him why he opposed the project. “The developer’s not paying anything,” Kennedy reportedly answered. But Jim Gordon said he would be willing to pay, said Liedell. “That’s peanuts,” responded Kennedy. Any other reasons for opposing the project? “The sight of them bothers me,” Kennedy said. But even on crystal clear days, the turbines would be mere wisps on the horizon. Is that so bad?

Then, says Liedell, came the ultimate answer from the senator. “But don’t you realize,” Kennedy said, “that’s where I sail.”

Is this how politics really works? Does Ted Kennedy really oppose Cape Wind with such ferocity just because he does not want to lose some of the mystique of piloting his 50-foot craft wherever he wants in the waters near his estate?

**INTENTIONALLY OR NOT**, Williams and Whitcomb have written a case study that could fit neatly in the 1956 classic *The Power Elite*, by C. Wright Mills. In that book, Mills argues that political, economic, and military elites occupy a tight network that shares a common worldview and makes common cause on important issues. Elections and other political activity matter, but only within the boundaries of the elites’ system.

Jim Gordon has survived this obstacle course—so far—because he has had ample supplies of both money and tenacity. The Cape Wind story might, then, be seen as the ultimate proof of Mills’s argument. Elites only lose when another elite comes along!

The problem with the elite theory is that it doesn’t consider the absolute messiness of politics. Whatever its reputation as a liberal sandbox, where policy-makers can build all kinds of crazy new programs, our state is a prime example of politics by complexity and confusion, timing

and luck.

Massachusetts state and local government has grown like Topsy over the years, with only occasional and weak efforts to shake out obsolete, redundant, contradictory, and irrelevant regulations and agencies. Since politics gets so tangled in process, no one really knows whether good projects can make it through the system. Whatever you try to do—build housing, rehab an old hospital, open a school, fix a park—you know that someone is going to use some arcane process to block you. If such a process doesn’t exist, they’ll invent a new one.

When Gordon proposed Cape Wind, he was challenged by the mind-bending system of Massachusetts politics as much as by the elites of Nantucket Sound. The review by the state’s Energy Facilities Siting Board alone took almost three years and produced 2,900 pages of documents. RFK Jr. told Jim Gordon, “I’ve seen grocery stores on the Cape that go through more of a permit process than this project,” and he wasn’t completely wrong. But he missed the larger truth that the state poses absurd barriers to all kinds of good projects.

Even when Gordon lined up allies, funded independent research, made his case before every civic body, and jumped through all the legal and political hoops, he still had to worry about the losers changing the rules in the middle of the game.

Consider one effort in Washington to quash the project, through something called the Environmentally Responsible Wind Power Act of 2005. This bill, introduced by Sens. Lamar Alexander of Tennessee and Ted Stevens of Alaska, would deny wind energy permits to any site within 20 miles of a shoreline, national park, or wildlife refuge, and would allow states to veto wind farms within 20 miles of their borders. In other words, wind power would be banned in virtually all of America. The bill didn’t get out of committee.

The good news is that it looks like Cape Wind is going to happen. Though still wary of possible lawsuits and more legislative hanky-panky, project officials expect to complete federal, state, and local permitting by the end of 2008. From the time the company begins driving pilings for the bases of the turbines, they expect to begin delivering energy in another two years.

We say it all the time, but forget too often: The region’s economy will thrive only if we constantly reinvent the economy, using the brainpower and chutzpah of people like Jim Gordon.

When will we know that Cape Wind has succeeded? When tourists are spotted on the Cape and Islands wearing chic T-shirts with images of spinning toothpicks. **CW**

---

*Charles Euchner, a New Haven writer, was the executive director of the Rappaport Institute for Greater Boston at Harvard University from 2000 to 2004.*

# Mind Games

**Chess superstar Garry Kasparov reveals his strategies for business, politics, and life.**

By Charles Euchner

*The American*, Friday, July 20, 2007

**Garry Kasparov, *How Life Imitates Chess: Making the Right Moves—From the Board to the Boardroom* (Bloomsbury, October 2007).**

In 1984, at the age of 21, Garry Kasparov challenged Anatoly Karpov for the international chess championship. Karpov won the first four games with little trouble. As he faced the possibility of total humiliation at the hands of the veteran master, the young challenger adopted a new approach.

Rather than continuing his wild style of play, Kasparov decided to make more cautious opening moves. Once he took full account of Karpov's game strategy, he launched into a series of subtle but incisive moves, striking a balance between offense and defense. The new strategy produced 17 draws over three months. In Game 27, Karpov slipped in another victory to take a 5-0 lead. But Kasparov held his ground thereafter, forcing four more draws and winning the 32nd game. After 14 more draws, he won the next two games. Stalemate ensued—for five more months. Finally, after thousands of hours of play, the president of the International Chess Federation halted play and declared a draw.

From those months of humiliation, exertion, and fleeting triumph, Kasparov emerged a new competitor and a new man. That “long and grueling tutorial” nearly re-wired his brain and launched one of the most storied careers in the history of competition.

In his new rumination on chess, life, and business, *How Life Imitates Chess*, Kasparov

ponders his success on the chessboard and offers lessons for anyone else who thrives in a world of strategy and competition.

Kasparov writes that the key to his success against Karpov—and the key to success in general—was to become “deeply in touch with [one's] own thought processes.” Relying less on instinct, Kasparov for the first time appreciated the far-reaching consequences of every move.

“Karpov knew that I would consistently give up material for attacking chances, and he used this habit against me in the first match,”

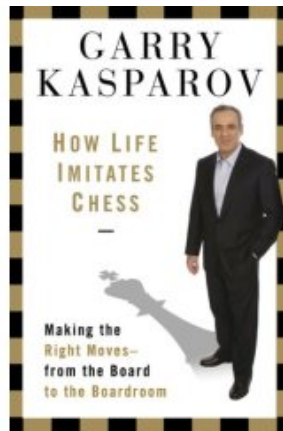
Kasparov writes. “Only when I began to rein in that instinct did I begin to put up effective resistance. That was the moment I first began to think about *why* I made the moves I made.”

Masters of sports, business, and politics often believe that their trials reflect the inner logic of the world. Garry Kasparov makes a good case for chess, which is, of course, a stylized version

of an actual, if ancient, form of conflict.

Though Kasparov easily could have written (or, more likely, dictated to a ghostwriter) a trite volume about chess-as-metaphor, *How Life Imitates Chess* reveals that Kasparov understands life, and politics, at least as well as he does the game that made him famous. In addition to compelling anecdotes about the game itself, Kasparov presents some compelling ideas that bear strongly on both business and politics.

In business, Kasparov preaches the importance of playing your own game. If you're Nokia, Kasparov says, that means nurturing



purposeful chaos—like Kasparov himself. If you're IBM, that means a more conservative game, exploiting the moves and mistakes of others—like Karpov.

Winning, on the chessboard or in the boardroom, requires risking resources now for payoffs later—and having a strategic vision to guide tactical maneuvers. William Boeing, Kasparov notes, was no expert on flying when he envisioned his dream of an aerospace giant. But he had an intuition that air travel would become a major industry, and he backed it up with big investments in research and team-building. He was ready when Charles Lindbergh changed the national vision of air travel.

Politics also requires attention to the basic values of the battle. Bill Clinton's 1992 "war room" won admirers for its ability to respond instantly to attacks. But Kasparov says its more valuable role was giving the campaign a focus. The famous mantra "It's the economy, stupid" insured that everyone in the campaign spoke with one voice that resonated with the mood of the nation.

Kasparov himself has put his intellect, and his notoriety, on the line in the life-and-death world of politics. With much the same approach that he used against Karpov—careful, guerrilla-style maneuvers—Kasparov has since 2005 taken on a power no less daunting than the Kremlin itself. Kasparov sees the administration of Vladimir Putin as an affront to Russia's burgeoning democracy. Putin has won broad support among a Russian public weary of the Yeltsin era's chaos, but Kasparov fears a new dictatorship taking hold. He is hoping to bring his passionate and rational voice to the new Russia.

Kasparov's challenge is that Putin still dominates the chessboard of Russian politics. Putin controls the military, Russian media, and many corporations. Still, Kasparov has access to international media, human rights leaders, and disgruntled forces inside Russia. The conflict is a far cry from the order of the chessboard, but Kasparov insists that there are common ties.

Kasparov argues that chess—quite unlike politics—is the world's only purely intellectual form of competition. The game comprises a board and pieces that are visible to all. No one can hide assets or change the rules.

Neither luck, nor misinformation, nor brute force ever comes into play. Success, then, requires a mix of cold calculation, relentless questioning, and fantasy.

Kasparov's worldview is an exhilarating combination of Sun Tzu's *The Art of War*, Zen mastery of living in the moment, and constant self-analysis. "Every move has a consequence; every move either fits into your strategy or it doesn't," he writes. "If you aren't questioning your moves consistently, you will lose to the player who is playing with a coherent plan."

Kasparov's ability to concentrate on one thing—and to make it everything—requires an intellect so steady that most people probably cannot fathom. Normally, getting through the day requires taking most things for granted. The bus will arrive. The coffee will be hot. Rogue nations will behave themselves. You can't question everything all the time, or you would never get out the door. But Kasparov suggests that even those of us who are not grand masters can learn to stop at key moments and make more deliberate decisions.

Winning requires a powerful combination of intellectual rigor and free spirit. You need to look several moves ahead (or several matches, if you're seeking a world championship). But no matter how smart you are, Kasparov says, you can only calculate five or six moves ahead. Kasparov explains: "For every move, there might be four or five viable responses, then four responses to each of those moves, and so on. The branching of the decision tree grows geometrically. Just five moves into the game, there are millions of possible positions. The total number of positions in a game of chess is greater than the number of atoms in the universe."

Precisely because so many moves are possible, a great chess player needs to find ways of reducing the number of viable moves. "The decision tree must be constantly pruned," Kasparov writes.

Here's where Kasparov turns to fantasy. He writes that he likes to imagine pieces as action figures with minds of their own, fighting in imaginary worlds. To conjure these whimsical images, Kasparov trained himself to take a daring leap away from logic.

"At the board I always tried to let my

mind wander, to occasionally ignore the fog of variations and take a mental stab in the dark," he writes. The subconscious holds more possibilities than any calculator could ever consider. Stepping outside pure rationality brings a new dimension of tactics and strategy. "Moves with an extra charge of fantasy can startle your competition into making mistakes."

As he surveys the board, Kasparov often thinks about material, time, and quality—MTQ, in his shorthand. Each piece has an initial value—pawns 1, knights and bishops 3, rooks 5, and queens 9. But in practical terms, the pieces' values change with every move.

In his competitive days, Kasparov usually played an aggressive game, sacrificing pawns and even a bishop (his favorite piece as a child) to set up an advance on the opponent's king. Those pawns didn't mean much to Kasparov except as wedges into enemy territory; but he got stuck on the other side of the board, with nothing to protect his superior pieces, the pawns would have been worth a lot more.

Kasparov's recent involvement with an computer chess competition underscores the importance of understanding the whole game, not just focusing on moves or pieces that seem tantalizing or even brilliant in the moment. Kasparov and other masters programmed the game to force tough decisions and consequences on the players. The idea was to get the players to be more deliberate and thoughtful with every move—and always ask why a particular move was valuable, and whether it would hold its value as the opponent mounts his defense. But players were too impatient.

"Players would immediately click on whatever caught their eye and, if unhappy with the result, jump back and try again, or they'd go off in a totally different direction. They ignored most of the menu choices we worked so hard to perfect."

Kasparov argues that this sort of reactive play reflects how people in all fields make decisions about their lives. On countless decisions—investments, home purchases, jobs, relationships, kids' schools, and indeed sports and games— "players" tend to click impulsively and then back out if it doesn't work and click something else. This would be

fine if all we were doing was playing chess.

But from the office to fields of battle to Kasparov's own struggle for the heart of Russia, the stakes are much higher, and the proper strategy that much more crucial. Can Kasparov and his allies challenge Putin's thugocracy? When Putin leaves the board, can he anoint a new king more powerful than all the pawns that Kasparov and other reformers assemble? And which side can win the queen, knights, bishops, and rooks?

Even more important, can Kasparov and his allies get the Russian people to open themselves to the fantasy--and, just maybe, plot out the reality--of a free Russia?

## Norman Doidge's *The Brain's Way of Healing*

By Charles Euchner

In 1996 a computer programmer named David Webber suffered an eye condition called uveitis. He tried anti-inflammatory steroids, surgical procedures, and special glasses but lost his sight.

After moving to Greece, Webber tried Buddhist exercises, like meditation, eye exercises, and sun therapies. But they didn't work. He then found a therapist who gave him "awareness through movement" exercises (like rolling on the floor) and body-awareness exercises (like "palming," which decreases movement in the eyes).

•••••  
**BOOK  
REVIEW**  
•••••

Soon he could control the muscles in his eyes, which had gotten tense and jerky. When he felt his eyeballs in their sockets, he knew he was making progress. Finally, he mastered a series of hand exercises. Hand exercises? "The neurological pathways . . . that link hands and eyes are like a superhighway in the brain," Webber explains. By exercising and concentrating, Webber could arouse the vast web of neurons for both hands and eyes in the brain's motor cortex.

This approach eventually led to the restoration of his sight. By connecting his eyes to his whole body and brain, Webber could undo some of the damage to his eyes. The brain's plasticity — its ability to change itself — contributed to the healing.

Norman Doidge tells the story of Webber and several other sufferers of various other ills in "The Brain's Way of Healing," an exciting overview of powerful new neuroscience theories that connect mind, body, and soul. Webber's story, Doidge says, reveals a profound truth: "Simple awareness is an agent of change." The brain, some researchers now believe, is not just the 3 pounds of flesh housed in the skull; it's the whole nervous system and all the body's organs. To deal with physical maladies, rewire the brain by tapping into all of the pathways

from it to the body.

According to these researchers, brain therapies may be able to treat and sometimes heal autism, Parkinson's, MS, ADD, chronic pain, Huntington's, spinal cord and rotator cuff injuries, strokes, cerebral palsy, ear problems, and dyslexia. Treatments take all kinds of wild forms that seem sensible only when you learn how they spark the brain.

Consider the PoNS, a small device that helps MS victims regain control over their body. With the PoNS, users apply a flap with 144 electrodes to send charges into their tongue. Why the tongue? It is, Doidge writes, the "royal road to activating the entire human brain," with 48 different types of receptors. The PoNS transmits charges to the nerve fibers and then to the brain. "[O]ur tongue stimulation . . . activates the whole brain," says Yuri Danilov, a Russian-born neuroscientist, "so even if I can't see where the damage is, I know the device is turning on the whole brain."

Or consider the Electronic Ear, a tool for treating dyslexia, which channels Mozart and Gregorian chants through headphones, switching back and forth from lower to higher frequencies. That treatment not only strengthened connections among neurons but also "cut[s] out parasitic information in order to 'listen to oneself thinking,'" as researcher Paul Madaule explains. Distractions, it turns out, don't just make us lose focus while performing tasks; they also deaden circuits needed for the whole brain to function.

Or consider lasers, which beam low-intensity light to spark production of a molecule, ATP, that helps to repair and grow new cells for cartilage, bone, and connective tissue. Laser therapy also boosts oxygen — improving blood circulation — and the immune system. Brain maladies too? Yes, considering the treatment of a patient named Gabrielle for her troubles with eating and swallowing, nausea, balance, visual tracking, and memory after brain surgery. Doctors beamed light at portions of her head;

she also gave herself daily light treatments at home. The treatments energized but also balanced the activity in Gaby's brain. She now lives free of the problems that could have ruined her life forever.

In this age of distraction and unnatural

environments and actions — like staring at screens all day — brain science offers all kinds of useful techniques to care for our infinitely complex selves. Norman Doidge's work is a Michelin Guide to this hopeful new trove of knowledge and insight.