

the  
**Henry  
Ford**

**MAGAZINE**  
JANUARY-MAY 2019

Gain perspective.  
Get inspired.  
**Make history.**

# How do we unlock the next generation?

**THE INNOVATION, INVENTION & ENTREPRENEURSHIP ISSUE**

Student Molly Grace Deptula wears  
her invention, The Bully Band,  
prototyped from a modified Fitbit.  
See Page 36

DISSECTING  
DISRUPTERS' DNA  
INSPIRING STORIES OF A  
TEACHER, A DESIGNER  
AND A STUDENT  
THE HENRY FORD  
ACQUIRES THE STEMIE  
COALITION

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tomorrow's  
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# THE INNOVATION, INVENTION & ENTREPRENEURSHIP ISSUE





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### ON THE COVER

The Bully Band is a wearable device that transmits video and audio to an app made exclusively for school administrators. Developed by seventh-grader Molly Grace Deptula, it is one of hundreds of inventive ideas that were presented by young innovators at the 2018 National Invention Convention and Entrepreneurship Expo held at Henry Ford Museum of American Innovation.

PHOTO BY NICK HAGEN



ALBERT EINSTEIN BY ORREN JACK TURNER,  
COURTESY OF WIKIMEDIA COMMONS; GRACE MORIARTY  
AND SEEING FOR THE BLIND BY NICK HAGEN;  
ACTION OFFICE | COURTESY OF HERMAN MILLER

# Gain perspective. Get inspired. Make history.

## THE HENRY FORD: A NATIONAL TREASURE AND CULTURAL RESOURCE

**The Henry Ford** in Dearborn, Michigan, is an internationally recognized cultural destination that brings the past forward by immersing more than 1.8 million visitors a year in the stories of ingenuity, resourcefulness and innovation that helped shape America.

A force for sparking curiosity and inspiring tomorrow's innovators, inventors and entrepreneurs, The Henry Ford fosters learning from hands-on encounters with authentic artifacts. Through its 26 million artifacts, unique venues and resources — Henry Ford Museum of American Innovation, Greenfield Village, Ford Rouge Factory Tour, Benson Ford Research Center and Henry Ford Academy, as well as online at [thf.org](http://thf.org) and through the TV programs *The Henry Ford's Innovation Nation* and *Did I Mention Invention?* — The Henry Ford helps individuals of all kinds to unlock their potential and help shape a better future.

In 2018, The Henry Ford advanced its role as a catalyst for change in education with the acquisition of The STEMIE Coalition, a growing affiliation of organizations dedicated to fostering innovation, invention and entrepreneurship at the K-12 level. Through The STEMIE Coalition, The Henry Ford hosts the National Invention Convention and Entrepreneurship Expo and makes innovation learning curriculum accessible to educators and students worldwide.

For more information, please visit [thf.org](http://thf.org).

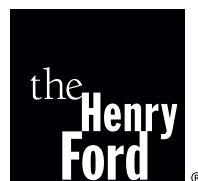
## Inside every person is the potential to change the world.

The Henry Ford is building a platform using its Archive of American Innovation to unlock the most powerful resource on earth: the next generation. Help us grow the talent pipeline of tomorrow's innovators, inventors and entrepreneurs at [thf.org/support](http://thf.org/support).

The Henry Ford is an independent nonprofit organization. We depend on ticket purchases, income from our stores and restaurants, and tax-deductible contributions and memberships for support. To learn how your generosity can help take it forward, visit [thf.org/support](http://thf.org/support).

### MISSION STATEMENT

The Henry Ford provides unique educational experiences based on authentic objects, stories and lives from America's traditions of ingenuity, resourcefulness and innovation. Our purpose is to inspire people to learn from these traditions to help shape a better future.



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# WHO HELPED IGNITE YOUR SPARK?

Our contributors tell us.



## MARILYN PRICE-MITCHELL, PH.D.

My high school teacher Judy Czarnecki Stark. She sparked my interest in writing and journalism. Her friendship and support spanned her entire lifetime, always offering words of encouragement that helped me believe in myself.

Marilyn Price-Mitchell, Ph.D., is a developmental psychologist, researcher and fellow at the Institute for Social Innovation, Fielding Graduate University. She founded Roots of Action, a website focused on youth development, and is a contributor to *Psychology Today* and *Edutopia*. The focus of her research is positive youth development, innovation and youth civic engagement. She is author of *Tomorrow's Change Makers: Reclaiming the Power of Citizenship for a New Generation*.

**The Right Stuff,**  
Page 18



## ALANA SEMUELS

David Shribman, the editor of the *Pittsburgh Post-Gazette*. He introduced me to journalism and convinced me to try it out — even though it meant suffering through two long Pittsburgh winters.

Alana Semuels is a staff writer for *The Atlantic* based in San Francisco. She's originally from Boston and received her undergraduate degree from Harvard College and a master's degree from the London School of Economics. She has also written for *The Boston Globe*, *The New York Times*, *Los Angeles Times* and *Pittsburgh Post-Gazette*. More about Alana can be found at [alanasemuels.com](http://alanasemuels.com).

**Mind Over Matter,**  
Page 36



## MATT NAGER

I was lucky to have a supportive family as well as some great mentors. My grandfather gave me my first camera when I was in high school and pushed me to be creative. While studying journalism in college, I had a professor who pushed me technically and creatively — more importantly, though, he taught me the ethics of journalism and how to be a professional.

Matt Nager is an editorial and advertising photographer working on commissioned and personal projects in his native state of Colorado. His work centers around the relationship between people and the land where they live. His work has appeared in national and international publications, including *The New York Times Magazine*, *Fast Company*, *Men's Journal*, *Mother Jones*, *Smithsonian* and *Time*.

**The Right Stuff,**  
Page 18



## NICK HAGEN

After starting a college photography program, my black-and-white darkroom professor, John Ganis, noticed aspects of my work that helped me understand myself better as a photographer and a person. As a freshman, he looked at a print I had tacked on the wall and said, "Hmm ... maybe you'd like street photography." That changed everything. Shooting on the street sparked my obsession with documentary photography, which eventually led to my career as an editorial portrait and documentary photographer.

Nick Hagen is a freelance portrait and documentary photographer based in Detroit. His work has been commissioned by a wide variety of magazines and newspapers nationally and internationally, such as *The New York Times*, *The Telegraph* and *The Washington Post*.

**Be the Spark,**  
Page 26

**Mind Over Matter,**  
Page 36



## NATE KITCH

Artist, and my tutor, Sebastiane Hegarty. He took everything I thought art was and turned it on its head. He challenged me and encouraged me to be curious, experiment and simply make. I wouldn't be doing what I do now without his spark. He started the fire, and I will forever be grateful.

Nate Kitch is an award-winning illustrator from Winchester, England. His work focuses on texture, collage and vibrant colors and has been featured in books, magazines and, recently, theater posters. He has clients from around the world, such as *The International New York Times*, *Harper's* and *Libération*. He also regularly contributes to *The Guardian* and *The Economist*. If he's not making art, he's probably making pasta.

**Be the Spark,**  
Page 26

# Late last year, The Henry Ford introduced a \$150 million comprehensive fundraising campaign to help launch the workforce of tomorrow.

Why? Because at The Henry Ford we believe that access to the ideas and innovations that have shaped our country should be available to everyone, regardless of backgrounds and barriers. We want to aggressively and intentionally leverage our unique assets, both physically and digitally, to educate, influence and inspire tomorrow's leaders.

Our campaign, called The Innovation Project, will help us do just that by providing the resources necessary to build The Henry Ford's digital and experiential learning tools, reimagine existing exhibitions and programs, and create new opportunities to advance innovation, invention and entrepreneurship. All of this with the ultimate goal of unlocking the most powerful resource on earth: the next generation.

At the end of last year, we had already raised more than \$91 million toward our goal.

Over the course of the next five years, the work of The Innovation Project campaign will positively impact all of our venues. You will see future exhibitions connected to six different areas of innovation (design and making, mobility, social transformation, power and energy, information and communication, and agriculture and the environment), along with more connected learning platforms across The Henry Ford campus. This project even equates to creating additional physical workspaces and centers on campus focused on entrepreneurial learning and the inclusion of internships, residence programs and large-scale youth invention conventions on-site, plus related town halls, guest speaker series and more content on *The Henry Ford's Innovation Nation* as well as our new television show, *Did I Mention Invention?*

Already, we have realized enhancements made to *Heroes of the Sky* in Henry Ford Museum of American Innovation, courtesy of Delta Air Lines, and the openings of the new Davidson-Gerson Gallery of Glass in Greenfield Village and the Davidson-Gerson Modern Glass Gallery in the museum. Most recently, we introduced Model I, our learning framework that will serve as the cornerstone for a new innovation curriculum and other invention education initiatives we hope educators across the world will adopt and participate in.

Another early success of the campaign was the recent acquisition of The STEMIE Coalition, a nonprofit global consortium of invention education stakeholders and education change agents best known for its National Invention Convention and Entrepreneurship Expo, which we hosted in June 2018, connecting more than 400 students from 21 states to our collection. The museum is now the permanent home of the convention going forward.

In 2019, we will also kick off the William Davidson Initiative for Entrepreneurship, which includes comprehensive entrepreneurial programming that will allow The Henry Ford to test and explore multiple learning platforms designed to help launch our next generation of entrepreneurs. This initiative is a game changer aimed at engaging current and future innovators and will include the launch of an Entrepreneur-in-Residence Program, related workshops, expanded youth programming, compelling speaker series and much more.

The Henry Ford has the unique assets, the legacy and the proven track record to make The Innovation Project campaign impactful long into the future. We are pleased to have already made so much progress, but there is more to do! We need your help.

Please enjoy this issue of *The Henry Ford Magazine*. We hope it will help you gain a better understanding of the core habits and actions often associated with people who innovate, as well as provide a clearer picture of some of the economic and educational equity challenges we face as a nation if we want to build a healthy, creative workforce for the future. Then visit our new comprehensive campaign website, [theinnovationproject.org](http://theinnovationproject.org), to learn more about The Innovation Project. We want YOU to be a part of our future and join this movement — this “learning revolution” — to provide equal and unfettered access to the collection, programs, exhibitions, activities and STEM-based learning curriculum that will help us grow the workforce of tomorrow.

Your belief in The Henry Ford and its mission means so much. Thank you for your continued support.

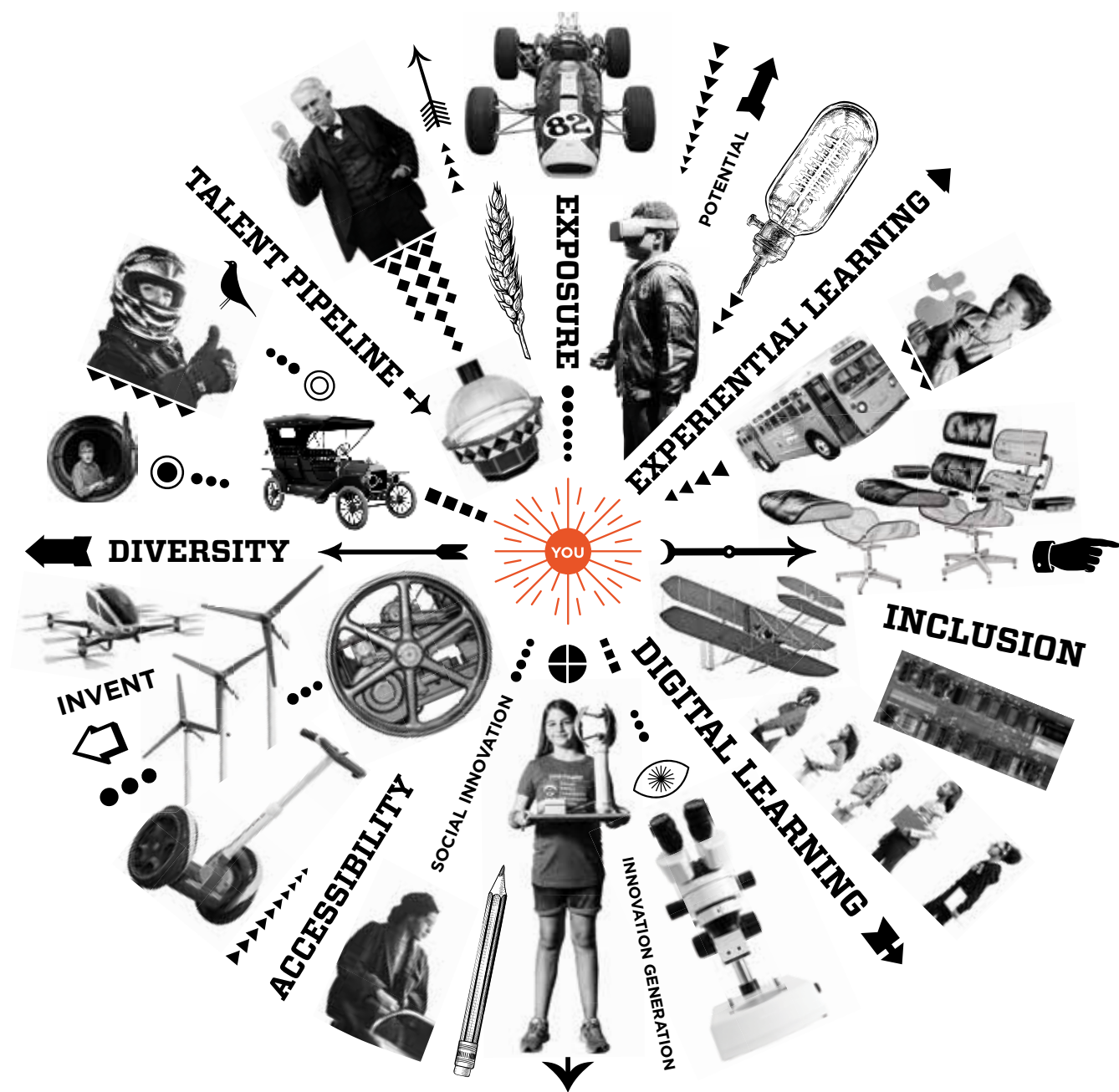


PHOTO BY ROY RITCHIE

*Patricia*

**PATRICIA E. MOORADIAN,  
PRESIDENT AND CEO**





# The Innovation Project Priorities

Three pathways to impact

The Henry Ford has the opportunity to become a force for change. Through the lens of accessible, inclusive learning, it will accelerate its digitization efforts and develop digital learning tools; foster experiential learning in

six connected areas of innovation; and advance innovation, invention and entrepreneurial learning.

Campaign efforts within the scope of The Innovation Project will pursue three key funding priorities, where The Henry Ford aims to:

- 1** Create a pipeline for a diverse new economy workforce
- 2** Extend inspiration to include all audiences
- 3** Increase personal potential and lifelong learning opportunities

For details on specific programs and initiatives comprising The Innovation Project, visit [theinnovationproject.org](http://theinnovationproject.org).



PHOTO BY EE BERGER

## ASK: The Innovation Project — Why Now?

**ANSWER:** As a nation, our innovation potential is vital — and at risk. Today, business leaders and workplaces across the nation are struggling to fill key positions, not able to find people who are using their creativity, imagination and problem-solving skills to their greatest potential.

At The Henry Ford, we believe every child should have the opportunity to realize their potential. The Innovation Project campaign is

a call to action, a direct response to the growing need to equip the next generation with the tools needed to be successful.

The campaign's core learning initiatives have the capacity to help The Henry Ford provide educators and students, regardless of backgrounds and barriers, access to unique content, ideas and programs, as well as arm them with the real-world skills they need to narrow the talent gap and nurture the future talent pipeline.

**PATRICIA E. MOORADIAN,** president and CEO of The Henry Ford, shares why it's the right time to launch The Innovation Project campaign.

**ONLINE** For details on specific programs and initiatives comprising The Innovation Project, go to [theinnovationproject.org](http://theinnovationproject.org) ►



## Confidence

(KON-FI-DUHNS) N.

When kids are encouraged to channel their own inner certitude when tackling conundrums, a belief in oneself as an agent of change starts to take shape.

**PAGE 42**

## Hub

(HUHB) N.

When that certain someone who captured light to illuminate communities creates a center that concentrates on sentiments of innovation, invention and entrepreneurship, it quickly leads to forward movement in our country's creativity, commerce and commodities.

**PAGE 52**

## Disrupt

(DIS-RUHPT) V.

When go-getters feeling stifled by the status quo opt to cause a bit of organized chaos, creativity in the marketplace often comes next.

**PAGE 19**



## Genius

(JEEN-YUH-S) N.

When H.J. Heinz, a young forward-thinker bottling condiments in his mom's kitchen, unleashes his bottled-up business acumen, a smart portfolio of products, packaging, placement and PR propels his food brand to become one of our best loved.

**PAGE 80**

## Accidents

(AK-SI-DUHNT-S) N.

When savvy scientists make a big blunder, unforeseen positives often float up from underneath the failure.

**PAGE 62**

## Serial

(SEER-EE-UH-L) ADJ.

When young minds are taught to think, risk, repeat, think, risk, repeat, they are setting themselves up to be lifelong changemakers instead of one-hit wonders.

**PAGE 50**



### 10 FOR 10

The Henry Ford's collections include hundreds of artifacts and stories behind some of America's most well-known and under-the-radar serial innovators and inventors. Here are people and 10 assets, one attached to each — all waiting to be explored at The Henry Ford or through its digital collections at thf.org.

**1 Henry Ford:** "Kitchen Sink" Engine, 1893, Driving America, Henry Ford Museum of American Innovation

**2 Thomas Edison:** Phonograph, Menlo Park Complex, Greenfield Village

**3 Dan Gurney:** 1967 Ford Mark IV Race Car, Driving America, Henry Ford Museum of American Innovation

**4 George Washington Carver:** Microscope, Agriculture, Henry Ford Museum of American Innovation

**5 Charles & Ray Eames:** Eames Chair Prototype, Fully Furnished, Henry Ford Museum of American Innovation

**6 Luther Burbank:** Luther Burbank Garden Office, Porches & Parlors, Greenfield Village

**7 The Wright Brothers:** Wright Cycle Shop, Main Street, Greenfield Village

**8 Steve Wozniak:** Apple 1 Computer, 1976, Digital Collections, thf.org

**9 Buckminster Fuller:** Dymaxion House, Henry Ford Museum of American Innovation

**10 H.J. Heinz:** Heinz House, Main Street, Greenfield Village

HENRY J. HEINZ AND 1967 FORD MARK IV RACE CAR FROM THE HENRY FORD ARCHIVE OF AMERICAN INNOVATION

# What are we reading + watching?

## *Death in Paradise*

**LUCIE HOWELL, CHIEF LEARNING OFFICER AT THE HENRY FORD, SHARES HOW A QUIRKY CRIME SHOW ON NETFLIX CAN HELP US ALL PRACTICE AND IMPROVE OUR PROBLEM-SOLVING SKILLS.**

What makes for a good murder mystery? Well, for someone who grew up with Agatha Christie's Miss Marple and Poirot, it needs to have:

- (1) An intriguing whodunit or howdunit mystery that keeps you curious
- (2) A smart yet slightly quirky lead investigator who challenges rules
- (3) A group of mediocre misfits who somehow excel as a collaborative team, with
- (4) Just enough potential suspects to keep you failing in your guessing.

*Death in Paradise*, a British-French crime drama that has just released season seven on Netflix, has all these key components, plus a few more. Based in the

fictional Caribbean island of Saint Marie, the show has a gecko as one of its core characters — and as such does not take itself too seriously. And it's this light-heartedness that helps the formulaic approach of the program and makes for perfect Sunday afternoon binge-watching.

The eclectic mix of British, French, American and Caribbean accents, the sunshine, the aqua blue water and the brightly colored flora and fauna transport you to a carefree world where the only problem you must solve is that of a murdered body.

Time to put your ingenious hat on, engage those problem-solving habits and play detective.

**"I hope you have as much fun putting your problem-solving skills to work as I did watching *Death in Paradise*."**

— **Lucie Howell**

### **Carol Kendra**

**VICE PRESIDENT, BUSINESS DEVELOPMENT, STRATEGIC GROWTH & ENGAGEMENT**  
The Henry Ford

***This Idea Is Brilliant: Lost, Overlooked, and Underappreciated Scientific Concepts Everyone Should Know***  
edited by John Brockman

As a curious learner, I have found *This Idea Is Brilliant* not only to be enlightening but fun. Based on lost, overlooked and underappreciated scientific concepts everyone should know, each chapter presents a different scientific concept authored by a subject matter expert who provides background, case studies and other intriguing contexts to ponder.

Whether it's learning about fallibilism (the idea that we can never be 100-percent certain and must therefore always be open to the possibility that we're wrong) or understanding the origins and modern incarnation of naive realism (the obscure scientific term about why we see most other people as unintelligent or crazy), it just might challenge you to collaborate more, see things in new ways or encourage you to stop looking at your phone for all the answers.

Worth the read no matter what the order of chapters, *This Idea Is Brilliant* proves science cannot only unblind you, but can clarify your direction and even inspire you.

### **Ellice Engdahl**

**MANAGER, DIGITAL COLLECTIONS & CONTENT**  
The Henry Ford

***Wade in the Water***  
by Tracy K. Smith

This new collection of poems from the U.S. poet laureate, Tracy K. Smith, doesn't flinch in its examination of difficult topics of discourse in today's America: race, gender, immigration and environmental contamination, among them.

"Erasure" poems take primary documents (including the Declaration of Independence and letters from slaveholders) and remove certain words, introducing an uncomfortable new perspective to the reader. Other poems use the words of historical African-Americans and Smith herself to examine events in the news in thoughtful, revealing ways — and in the context of history.



Lost, Overlooked, and Underappreciated  
Scientific Concepts Everyone  
Should Know

# This Idea Is Brilliant

Edited by  
**JOHN  
BROCKMAN**

Editor of *Know This*

"An epicenter of  
bleeding-edge insight."  
—*The Atlantic*

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Lawrence Krauss, Helen Fisher, Frank Wilczek, and many others

—*Washington Post*

WADE IN THE WATER  
TRACY K. SMITH

POEMS

BY THE P

## Philip Grumm

MANAGER OF INNOVATION &  
INTERDISCIPLINARY LEARNING  
The Henry Ford

### How I Built This

NPR podcast with host Guy Raz

As host Guy Raz sits down to talk with innovators and entrepreneurs from some of the world's best-known companies, it becomes clear that this isn't your typical interview. What unfolds are embarrassing and laugh-out-loud stories about overcoming humble origins, low points and countless obstacles along their own innovation journeys.

It's the perfect podcast for my commute, but, more importantly, it provides a realistic and meaningful perspective for anyone who might be looking to build their own "This."



#### DID YOU KNOW? /

In 2016, *How I Built This* was named one of the top 10 podcasts of the year by iTunes, and *Inc. Magazine* called it "the best podcast to take on the new year."

## INNOVATION, INVENTION, ENTREPRENEURSHIP

The Benson Ford Research Center is a notable hub for artifacts, articles and everything in between that touches on ideas, people and places related to innovation, invention and entrepreneurship. For help with access, write to [research.center@thehenryford.org](mailto:research.center@thehenryford.org).

### BOOKS

*Pioneers and Plodders: The American Entrepreneurial Spirit* by Robert Baron

*Inventors at Work: Interviews with 16 Notable American Inventors* by Kenneth Brown

*The Whiz Kids: Ten Founding Fathers of American Business and the Legacy They Left Us* by John Byrne

*They Made America: From the Steam Engine to the Search Engine, Two Centuries of Innovators* by Harold Evans

*Feminine Ingenuity: Women and Invention in America* by Anne MacDonald

*At Work with Thomas Edison: 10 Business Lessons from America's Greatest Innovator* by Blaine McCormick

### COLLECTIONS

• Accession 655 – George Washington Carver Laboratory Reports, 1943-1946

• Accession 89.177 – Herman Miller Collection

• Accession 2001.74 – Raymond Loewy Collection, 1956-1974

• Accession 1751 – Suzanne Vanderbilt Papers, 1958-1986

• Accession 53.41 – Heinz Company Records

# THERE'S A DIFFERENCE BETWEEN BEING IN A COMMUNITY AND BEING PART OF IT.

Citizens Bank is pleased to present Holiday Nights in Greenfield Village. We love supporting The Henry Ford and its mission to inspire people to learn from America's traditions of ingenuity, resourcefulness and innovation to help shape a better future.



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# INNOVATION NATION

An Emmy® Award-winning TV show that airs Saturday mornings on CBS presents inspiring stories that showcase present-day changemakers and the possibilities for future progress. Each episode of *The Henry Ford's Innovation Nation* shares dramatic accounts of the world's greatest inventions — and the perseverance, passion and price required to bring them to life.

DIY Girls **14**  
Ideas in Action **16**



SEASON 5 EPISODE 109

# A HOME WITH HEART

High school students' thoughtful invention helps shelter the homeless

When high school girls in San Fernando, California, were asked to identify and solve a problem as part of a project with a nonprofit called DIY Girls, they decided to make lots of careful observations before going gangbusters creating something. The group quickly honed in on the area's growing homeless community and its inherent need for comfort and safety. As the young would-be engineers talked to people at shelters to better understand immediate needs, their idea of a home for the homeless began to take shape. The group learned how

to code. The girls experimented with soldering. Some took up sewing, along with other skills they never thought they would ever explore. The DIY Girls Inventeam's end invention: a solar-powered tent for the homeless that folds up into a nifty backpack.

*The Henry Ford Magazine* shares a bit more of the story behind the tent that appeared on *The Henry Ford's Innovation Nation* this season and what motivated two of its teenage innovators, America Hernandez and Cassandra Salazar, former seniors at San Fernando High School and members of the DIY Girls Inventeam.

**DID YOU KNOW?** / Since starting in 2012, more than 2,000 girls (5th-12th graders) in the Los Angeles area have joined the nonprofit DIY Girls, which is changing the way girls perceive careers in technology and engineering. Of the students involved in DIY Girls, 97 percent want to continue participating in STEM activities. [diygirls.org](http://diygirls.org)



PHOTO COURTESY OF LITTON ENTERTAINMENT

**THF Magazine** ▶ How did this idea come about?

**Hernandez** ▶ On our way to school every day, there was a small bridge where we would see homeless people, and we noticed that the number of people was increasing. When we were asked to create a project that helped solve a community problem, we decided that homelessness was something we saw growing in our community and it was something not many people were focusing on. We wanted to change the homeless condition. People take having a roof over their head for granted.

**THF Magazine** ▶ What makes your tent different than a common camping tent?

**Salazar** ▶ Along with being portable and water resistant, it has a solar-powered box that lights the tent and powers a USB charging port while sanitizing the tent with UVC light. It is made out of a special fabric that fends off extreme weather conditions. At night, the solar-powered box can charge a phone. It also has dual-layered, breathable mesh doors on both sides of the tent with zippers. It is easily assembled and disassembled for carrying.

**THF Magazine** ▶ Do you have a patent for your tent?

**Hernandez** ▶ We are working on pursuing one. We want to mass-produce our tent and distribute it to the homeless for free. That was our original target with this project, and it continues to be our goal.

**THF Magazine** ▶ You built your tent as part of DIY Girls. What is it?

**Hernandez** ▶ DIY Girls is a nonprofit that encourages girls to take more math and science courses and pursue careers in STEM.

**THF Magazine** ▶ Did that happen for you as part of DIY Girls and designing your tent? Are you pursuing careers in STEM fields?

**Hernandez** ▶ After creating the tent, I am much more confident in my ideas and outspoken about them. I'm also going into civil engineering and want to have my own construction company one day. Even start a project where I can take part in building affordable housing for low-income families.

**Salazar** ▶ Building our tent, we bumped into a lot of obstacles and always found a way to either go around it or work through it. That helped me not only with this project but with other things in my life. Now I want to go into mechanical engineering. My biggest goal is to become an astronaut.

**WATCH** The segment [thf.org/explore/innovation-nation/episodes/sunray-art](http://thf.org/explore/innovation-nation/episodes/sunray-art) ▶



▼ High schoolers Kassandra Salazar (left) and America Hernandez are two of the architects and engineers behind a solar-powered tent for the homeless. The girls helped create the portable shelter as part of a problem-solving project with nonprofit DIY Girls.



DIY GIRLS COURTESY OF LITTON ENTERTAINMENT; ALIE WARD BY KMS PHOTOGRAPHY

## INNOVATION NATION EXPANDS

The 2018-19 season of *The Henry Ford's Innovation Nation* marked the debut of a live stage version of the Emmy Award-winning TV show. In addition, a youth-specific spinoff, called *Did I Mention Invention?*

with host Alie Ward (above at left), also premiered in fall 2018 on The CW Network. It shares fascinating stories of invention while shining a light on everyday innovators young and old.

Created and produced by the Chicago-based Griffin Theatre Company, *Innovation Nation Live!*, the stage adaptation of The Henry Ford's popular TV show, is on a national tour. Like the TV series, it is designed to inspire young people with entertaining and educational stories about yesterday and today's visionaries and innovators. Said Griffin's artistic director, William Massolia, "The Griffin is thrilled

to work with The Henry Ford to produce such an important play for young audiences. I hope *Innovation Nation Live!* will inspire young people to be the innovators and visionaries of tomorrow."

Patricia E. Mooradian, president and CEO of The Henry Ford, couldn't agree more, adding that *The Henry Ford's Innovation Nation* TV show is one of several educational experiences that can help students identify habits and actions of innovators and understand The Henry Ford's new Model I framework (see story on Page 24). "Our television series inspires viewers on a weekly basis with the stories of innovation, creative problem-solving and a can-do spirit that fuels the determination to make a difference in our lives and in the world," said Mooradian. "We're thrilled we can take that inspiration and re-create it for the stage for audiences across the country."

For more information about *Innovation Nation Live!* visit [griffintheatre.com/the-henry-fords-innovation-nation-live](http://griffintheatre.com/the-henry-fords-innovation-nation-live). Check out programming and schedule information for *Did I Mention Invention?* with Alie Ward at [facebook.com/CWInventionTV](https://www.facebook.com/CWInventionTV) or [onemagnificentmorning.com](http://onemagnificentmorning.com).

# IDEAS IN ACTION

A sampling of cool inventions and crazy notions

## PROBLEM:

Toxic spills tainting our waters

## SOLUTION:

Squeeze a super sponge and save the day

## SOAK IT UP

Oil spills and the havoc they wreak make most people cringe. Meet the sea's newest superhero, the Oleo Sponge. The brainchild of Argonne National Laboratory's Seth Darling, Jeffrey Elam and their team, this super-soaker-upper sponge is extra-absorbent, embedded with environmentally friendly tech set up to sop up spills on and below the water's surface. Resembling a textured wool blanket, the Oleo is reusable after a wringing, and the oil squeezed out can be salvaged, saved and used for something else.

[anl.gov/tcp/oleo-sponge](http://anl.gov/tcp/oleo-sponge)



**WATCH** [thf.org/innovation-nation/solar-grill](http://thf.org/innovation-nation/solar-grill) ►

PHOTO COURTESY OF MARK LOPEZ, ARGONNE NATIONAL LABORATORY

## PROBLEM:

Stinky bacteria bumming in your bag

## SOLUTION:

Tote a tote that outs the odors

## WIPE OUT

### UNWANTED WHIFFS

Sweaty clothes in your gym bag leaking unpleasant odors into your workspace? A group of gadget-loving science guys, including Ray Edwards and Tim Offutt, pondered this problem and have produced the Paqsule self-cleaning gym tote to stymie the stink. Using activated oxygen and UV LED lights, the bag is good for 17,000 compartment cleanings. Just zip it up, press a button and it zaps offending odor-causing compounds right out of your workout wear, leaving them smelling a lot less offensive. Each cleaning is controlled with an app on your smartphone, with each cycle removing 99 percent of microorganisms from the bag's contents.

[getpaqtech.com](http://getpaqtech.com)

**WATCH** [thf.org/innovation-nation/food-huggers](http://thf.org/innovation-nation/food-huggers) ►

► **Easton LaChappelle and his low-cost 3D-printed robotic replacement arm**

PHOTO COURTESY OF MICROSOFT



## PROBLEM:

Prosthetics cost a pretty penny

## SOLUTION:

3D-print a robotic replacement

## ARMED AND READY

Easton LaChappelle has been building artificial arms since the ripe old age of 14. Now in his early 20s, he is sharing his passion for producing problem-solving prosthetic prototypes with powerhouses like Microsoft. LaChappelle and Microsoft's advanced prototyping manager recently fitted a preteen amputee with a robotic yet very realistic right arm, complete with fingernails to polish, that only weighs a pound. Using low-cost 3D scanners, software and a network of 3D printers, the prosthetic that should cost a pretty penny (upwards of \$100,000) has a price tag far less than half that (approximately \$4,000).

[unlimitedtomorrow.com](http://unlimitedtomorrow.com)

**WATCH** [thf.org/innovation-nation/artificial-arm-inventor](http://thf.org/innovation-nation/artificial-arm-inventor) ►

Learn about these great ideas in action and much more on *The Henry Ford's Innovation Nation* with Mo Rocca on Saturday mornings during CBS' block of educational programming called *CBS Dream Team*... *It's Epic*. Check your local listings.



**NOW ON DVD**  
**Innovation**  
**Nation**  
**SEASON TWO**

Seasons One and Two are available only at [thf.org/shop](http://thf.org/shop) and The Henry Ford gift stores.





# *Moving ahead*

At Lear, we strive to create technology that pushes boundaries, and we have the right people to make it happen. Steered toward progressive change and fueled by the passion for creating intelligent technology and products, we challenge the traditional and embrace the new—looking at the world through a different lens that reflects growth beyond what we can currently imagine.

**Where *Passion* Drives *Possibilities***



[WWW.LEAR.COM](http://WWW.LEAR.COM)







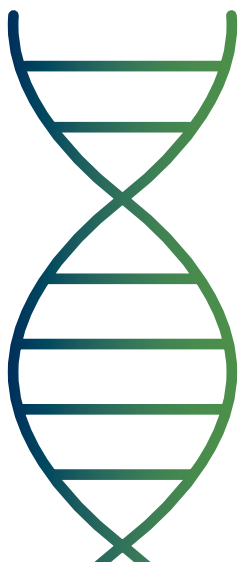
THOMAS EDISON AND TEST TUBE OF EDISON'S LAST BREATH (OPPOSITE PAGE) FROM THE HENRY FORD ARCHIVE OF AMERICAN INNOVATION



# The Right Stuff

Do innovators share similar DNA?

By Marilyn Price-Mitchell, Ph.D.



As inventor Thomas Edison lay dying in 1931, his son Charles noticed several test tubes near his father's bedside and had a peculiar idea. Immediately after his dad's passing, Charles asked the doctor on hand to meticulously seal the tubes.

Was Charles actually trying to capture Edison's last breath? Did he believe scientists would someday discover what made his father so uniquely talented? Would researchers be able to isolate the genetic DNA of innovative people?

We have long wondered if innovation and entrepreneurship emerged from biological traits or through core abilities nurtured in homes and schools. The role of parents, educators and mentors in developing young people who are curious enough to uncover connections, clarify problems, take risks and design new solutions is a topic that intrigues me as a social researcher. Thomas Edison was a mentor to Henry Ford. To honor their friendship, Charles presented a tube of his father's "last breath" to Ford.

Today, that tube resides in Henry Ford Museum of American Innovation as a poignant reminder that the men and women who disrupt the world with innovative change are mere mortals. ▶

#### DID YOU KNOW? /

Charles Edison wrote that during his father's last illness, "... there was a rack of eight empty test tubes close to his bedside. They were from his workbench in the Chemical Room at the Laboratory in West Orange. Though he is mainly remembered for his work in electrical fields, his real love was chemistry. It is not strange, but symbolic, that those test tubes were close to him at the end."





Most 21st-century scholars agree that innovators and entrepreneurs are shaped through a combination of nature and nurture. Studies of identical twins suggest that about one-third of creative thinking abilities come from genetics and two-thirds from learning. The exact science is not as important as the knowledge that the environments in which young people learn, and the mentors who support them in the learning process, have a profound impact on the future of social and technological change.

### AN INNOVATOR'S JOURNEY

Pascal Wagner, 27, is CEO of Walkthrough, an entrepreneurial startup that is revolutionizing the U.S. real estate market with a groundbreaking platform that enables you to create high-end still photography and marketing materials with a smartphone. In the four short years between college and becoming CEO of a growing company, Wagner started and failed at developing his first software business, traveled the globe with his second e-commerce business, authored a best-selling book and became a real estate investor.

To most, Wagner embraces the idea of what it means to be an innovator. What was it about Wagner's education and upbringing that gave him the mindset and abilities to think outside the box and accomplish big goals?

I first interviewed Wagner in 2009 when he graduated from high school. I was studying the life stories of young people who were making a difference in their communities. Wagner was one of those engaged and committed kids. He liked doing hands-on work, like roadside cleanups and canned food drives — “stuff where you actually see improvement,” he said.

Wagner began doing small projects. Before long, he was leading collective efforts to help

his entire community. Wagner attributed much of his success to his learning experiences and supportive adults. He overcame challenges, like how to lead others older than himself, through the encouragement of his mentor, a Junior ROTC commander.

He stumbled, learned from failure, questioned processes and experimented with new ideas and behavior. Wagner embraced ROTC values that included respect for others, service to community, integrity and courage. I was curious to hear Wagner's insights nine years later in his role as technological entrepreneur. In a recent interview, he reflected on what contributed to his development.

“It was small learning steps that mattered most,” he said. “Positive reinforcement, over time, was a building block that helped build my momentum and motivation to succeed.”

We talked about the five “discovery skills” of entrepreneurs outlined in the book, *The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators*. Wagner agreed that the skills of associating, questioning, observing, networking and experimenting were critical for innovation.

“Those abilities emerge through forming habits of thinking over many years,” Wagner said. “My parents made me pay for what I wanted. I had to figure out the process of setting goals and how to earn money creatively.”

Wagner also reflected on adults outside his family who fostered his learning. He still insisted, “My JROTC mentor had an extraordinary impact on my life. He taught me how to understand people's motivations. That was key for me.”

Today, Wagner is a mentor to other young entrepreneurs. “I ask them how and why they want to be heard,” he said. “Then I help them build on their strengths.” ▶



“Positive reinforcement, over time, was a building block that helped build my momentum and motivation to succeed.”

— Pascal Wagner



### NIGHT OWLS VS. EARLY BIRDS

While it's often said that the early bird gets the worm, when it comes to being inherently innovative, several studies show that night owls might have the advantage. Researchers at the Catholic University of the Sacred Heart in Milan, Italy, have found that evening-oriented people are more creative than their morning and intermediate counterparts. As the study's lead author, professor Marina Giampietro, explained, being in a nocturnal environment “may encourage the development of a nonconventional spirit and of the ability to find alternative and original solutions.”



### SKILLS CRITICAL FOR INNOVATION

ASSOCIATING	<div></div>
QUESTIONING	<div></div>
OBSERVING	<div></div>
NETWORKING	<div></div>
EXPERIMENTING	<div></div>

### READ

*The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators* by Jeff Dyer, Hal Gregersen and Clayton M. Christensen ▶

► Twentysomething Pascal Wagner could easily be categorized as a born-and-bred serial innovator. He has already experienced the startup and failure of a software business, authored a book and created a technology platform that is taking the real estate market by storm. He credits his entrepreneurial mindset to his upbringing, education and mentorship outside the home.

PHOTO BY MATT NAGER



## THE POWER OF MENTORSHIP

Wagner encourages others to follow their dreams in much the same way he was encouraged by his mentor and how Henry Ford was encouraged by Thomas Edison.

In my research, all 22 young people whose life stories I studied acknowledged the transformative power of being mentored and supported by a nonparent adult during a critical time of personal development.

Why is mentoring so powerful? Because mentoring helps children believe in themselves. Stanford professor and psychologist Albert Bandura first described the concept of “self-efficacy” and defined it as a belief in one’s capability to accomplish goals that influence the events in one’s life.

According to Bandura, self-efficacy is a determining factor in how we feel, think, behave and motivate ourselves in the world. He maintained that when people believe in themselves, they take positive actions on their own behalf and approach life as a challenge to be mastered.

Simply put, good mentors develop self-efficacy in the people they mentor. One of my research participants said it well: “I had to believe in myself before I could believe that I could change the world.”

## EDUCATING FOR INNOVATION

Harvard professor and psychologist Howard Gardner sees today’s world of globalization very differently from the world in which most adults were educated. “People have to have minds,” he said, “that are disciplined, capable of synthesis, creative, respectful and ethical.”

Gardner believes we must look at our roles and responsibilities more broadly. For example, not only must young people see themselves through the eyes of an individual career, they must think: “I’m a citizen. I live in a community. I live in a region. I live in the world.”

He says that young adults must think about the rights and responsibilities that go with these roles, particularly when something that is spoken or invented can be sent at lighting speeds around the world. In this global society, learning that fuels social and technological innovation can be anywhere — in classrooms, at home, on the internet and in out-of-school activities. What these environments have in common is an ability to foster attributes in children that go beyond a grade or test score — to help kids see connections, ask different questions and use feedback to test assumptions and solutions.

There is no singular personality type, biological DNA, ethnicity or income level attributed to people who become innovators. The life stories of diverse young changemakers, however, suggest a set of shared cognitive, social and emotional DNA that is nurtured through positive relationships and learning. These shared attributes include curiosity, resilience, resourcefulness, creativity, empathy, self-awareness, integrity and sociability.

Together, these are internal drivers of innovation and life success. The ability to disrupt the world with innovation is not about what is inside our breath; it is about what is inside our being. Each of us has the potential to create and contribute to the world around us. ●

# Why is mentoring so powerful? Because it promotes self-efficacy.

Stanford professor emeritus and psychologist Albert Bandura labels self-efficacy as a belief in one’s capability to accomplish goals that influence the events in one’s life. Bandura identifies four sources of efficacy beliefs.

### MASTERY EXPERIENCES

Doing something with great success is a big boost to our sense of self-efficacy.

### VICARIOUS EXPERIENCES

When we see someone who is just like us work hard and succeed at something, it builds our belief that we’ve also got what it takes to master the task.

### VERBAL PERSUASION

Words of encouragement from people who matter to us can persuade us to believe we’ve got what it takes to get things done. Plus, we are more apt to put in the effort even when the going gets tough.

### EMOTIONAL & PHYSIOLOGICAL STATES

The way we’re feeling about ourselves, our lives and the things around us can affect how we judge our self-efficacy. Depressed? Convinced we can’t do anything right. In love? Ready to conquer the world.

**RESEARCH** Self-efficacy by Stanford professor and psychologist Albert Bandura ►



**READ** *Tomorrow's Change Makers: Reclaiming the Power of Citizenship for a New Generation* by Dr. Marilyn Price-Mitchell ►



# HOW TO BE A GOOD MENTOR

Successful students and innovators are mentored by teachers, family members, colleagues, civic leaders, clergy and others who care enough to help young people believe in themselves. Research shows that mentors help youth grow in confidence, improve goal attainment and increase abilities to overcome work/life challenges. Here are six qualities, gleaned from college students, that make a good mentor.

## BE SUPPORTIVE

Good mentors support and encourage young people as they struggle to overcome obstacles and solve problems. They stand beside youth, reminding them of their innate value.

## BE AN ACTIVE LISTENER

Effective mentors listen first and speak last. They help young people feel heard and understood by listening deeply, even when not obligated to do so.

## SET HIGH EXPECTATIONS

Mentors help youth set high expectations for themselves by gently pushing young people out of their comfort zones and helping them imagine what they can accomplish.

## BE AUTHENTIC AND RESPECTFUL

Authentic interest in a young person's life is key to a positive mentoring relationship. Mentors value and respect young people's ideas and honor their changing feelings.

## FOSTER SELF DECISION-MAKING

Mentors do not judge or impose their own beliefs on young people. Instead, they remind youth who they are and help them believe they have the insights to make good choices.

## LEND YOUR PERSPECTIVE

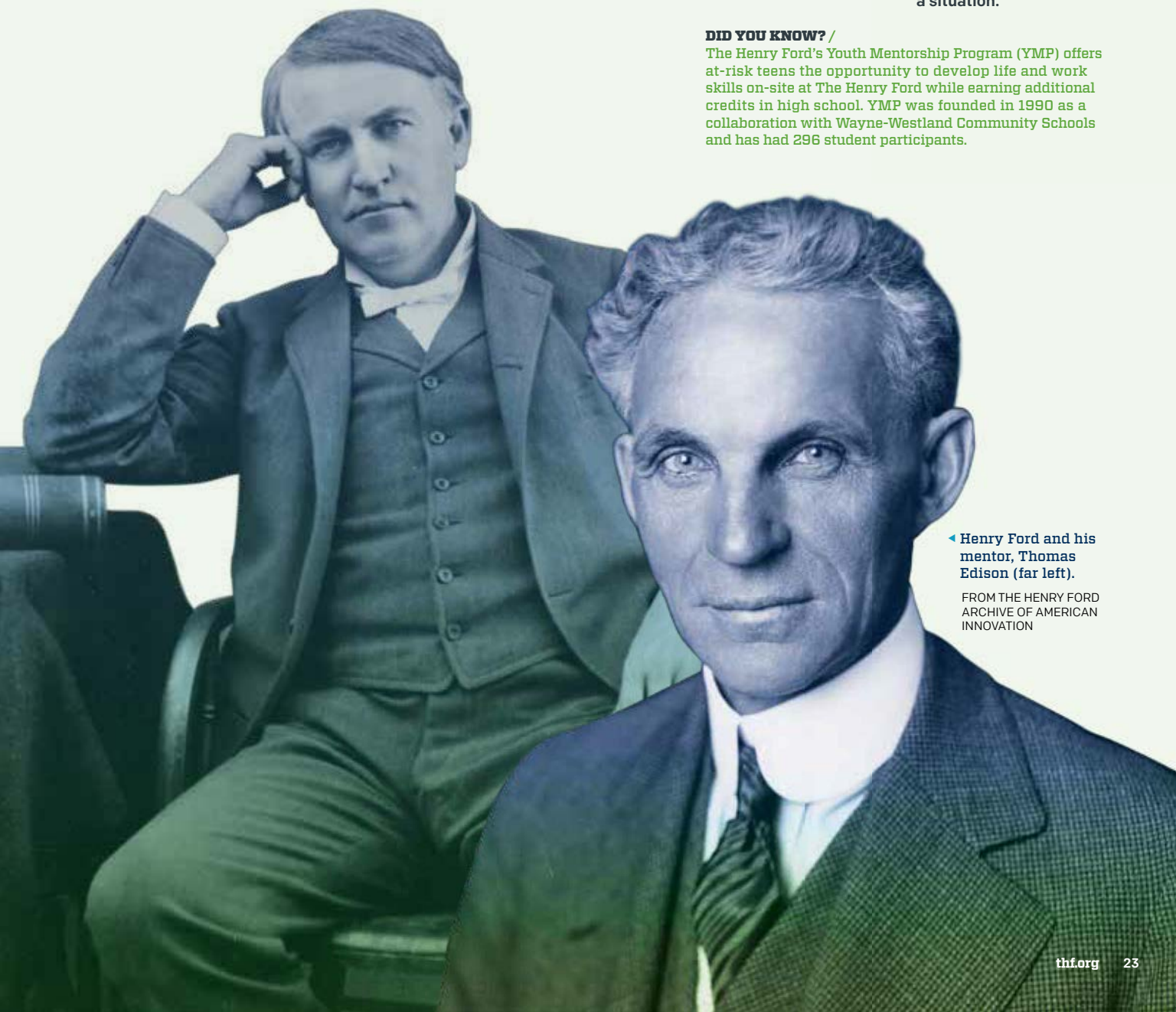
When obstacles seem overwhelming, mentors help young people put challenges in perspective and facilitate their ability to see all sides of a situation.

## DID YOU KNOW? /

The Henry Ford's Youth Mentorship Program (YMP) offers at-risk teens the opportunity to develop life and work skills on-site at The Henry Ford while earning additional credits in high school. YMP was founded in 1990 as a collaboration with Wayne-Westland Community Schools and has had 296 student participants.

◀ Henry Ford and his mentor, Thomas Edison (far left).

FROM THE HENRY FORD ARCHIVE OF AMERICAN INNOVATION



# A Journey in Learning

THE HENRY FORD DEVELOPS MODEL I FRAMEWORK TO UNLEASH EVERYONE'S POTENTIAL TO INNOVATE

Announced in early 2018, Model I is a unique learning framework based on artifacts and stories in The Henry Ford Archive of American Innovation. It's helping The Henry Ford launch a movement to inspire educators to help shape a new generation of innovators, inventors and entrepreneurs.

"With Model I, we are applying a working framework to the idea that the ability to innovate is in all of us," said Lucie Howell, chief learning officer at The Henry Ford. "That there is a common language for understanding innovation that draws on insights from The Henry Ford Archive of American Innovation and our study of how people innovate."

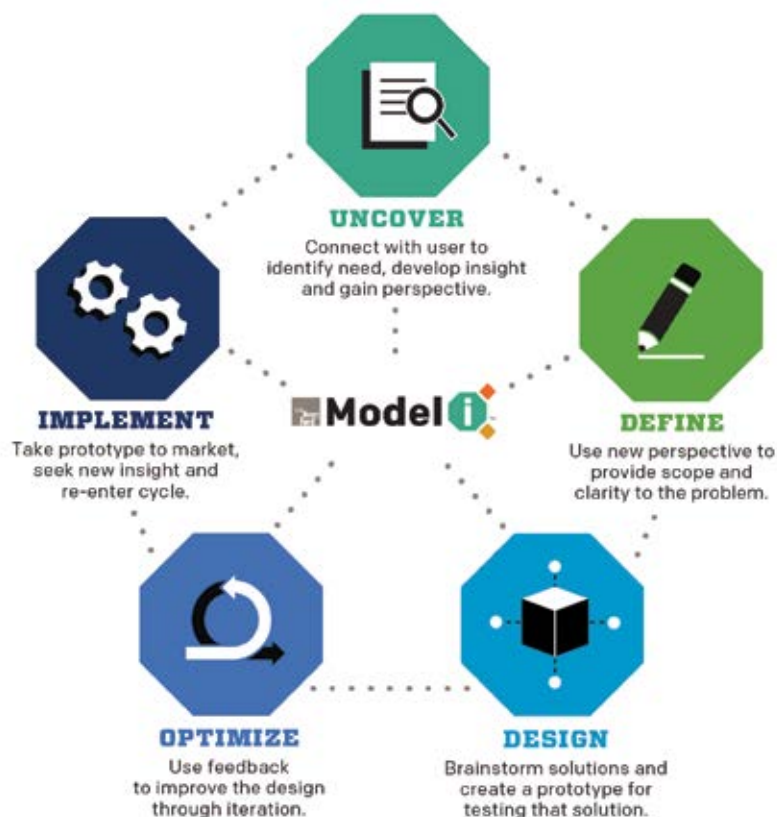
Those studies have empowered The Henry Ford to outline its own set of actions and habits of an innovator and create a universal language for the teaching and learning of innovation that can be applied at every stage of the talent pipeline.

Added Howell, "Learning shouldn't have to come from a specific standpoint or only for a certain discipline. Model I is a tool that speaks to the history or English teacher just as well as it does to the science or math educator. It gives you the framework to connect experiences in our museum with experiences in the classroom. It's all about providing the opportunities to educators and learners to make a conscious choice to practice and activate these habits and actions, and realize that innovation is a journey not a process."

**ONLINE** Guide learners through their own innovation journeys using The Henry Ford's new Innovate curriculum. This series of online courses introduces the Model I framework using stories of innovators past and present through videos, interactive activities, artifact cards and more. Learn more at [thehenryford.org/education](http://thehenryford.org/education) ►

**ONLINE** To learn more about The Henry Ford's Model I learning framework, visit [thf.org/modeli](http://thf.org/modeli) ►

## ACTIONS OF INNOVATION™



## HABITS OF AN INNOVATOR™





### **THE LOWDOWN**

There is no singular personality type, biological DNA, ethnicity or income level attributed to people who become innovators. The life stories of diverse young changemakers, however, suggest a set of shared cognitive, social and emotional DNA that is nurtured through positive relationships and learning. These shared attributes include curiosity, resilience, resourcefulness, creativity, empathy, self-awareness, integrity and sociability.



# **BE** **THE** **SPARK**

A teacher, a student and the designer behind the modern-day office cubicle demonstrate how putting ideas into action has the potential to change the world

Most risk takers, innovators and entrepreneurs probably can recall the moment the big idea that set their future in motion first struck. Now, The Henry Ford is committed through its comprehensive campaign, The Innovation Project, to be a force for fueling that spirit of American innovation, invention and entrepreneurship — a leader dedicated to inspiring the great ideas of the next

generations that the world should not go without (see Letter from the President on Page 6).

The three profiles that follow — one historical, two modern-day — not only showcase the individuals who have the spark but the people who are often behind those sparks — the mentors, the encouragers, the guides. Those passionate about giving others the opportunity to realize their potential.

**Photos by Nick Hagen (unless otherwise noted)**







A portrait of Rachel Lamb, a woman with dark hair pulled back, smiling warmly at the camera. She is wearing a black short-sleeved top and large hoop earrings. The background is a blurred interior with yellow curtains and a red armchair. The entire portrait is framed by a thick orange border.

# RACHEL LAMB

**PROFESSION:**  
ELEMENTARY  
SCHOOL TEACHER

**INNOVATION:**  
GETS STUDENTS  
WHO NEVER  
WANT TO GET  
INVOLVED EAGER  
TO GET INVOLVED

**ATTRIBUTES:**  
RISK TAKER,  
RULE BREAKER,  
FEARLESS  
COLLABORATOR

**TEACHERS ARE TASKED TO BLEND TECHNOLOGY WITH TEACHING EVERY DAY. BUT THERE ARE A SELECT FEW WHO ARE ADDING TRUE INNOVATION INSIDE THE CLASSROOM. RACHEL LAMB IS ONE OF THEM.**

Lamb, 34, started as an elementary teacher in Albuquerque, New Mexico, 11 years ago. She has considerable experience working with children from a variety of backgrounds, some challenging. According to Lamb, her own upbringing is what makes her more open to exploring new learning techniques to help discover what makes her students tick. Her mother, a product of missionary parents, grew up living on reservations and was a teacher who liked to push boundaries. Her father, a member of the Navajo Nation, taught his daughter early on that you can climb out of a disadvantaged background.

"My dad was born on a dirt floor in a hogan [a Navajo structure made of wooden poles covered with tree bark and mud]. He had eight siblings, grew up with no electricity or running water. He went to boarding school and was separated from his family," said Lamb, who added that her father, a skilled welder, prized education and taught her to do the same.

So five years ago, when fellow teacher (and now husband) Steven Lamb suggested they team-teach via video conferencing, she was immediately receptive to the bold idea. The two used existing digital tools, team-teaching their students two to three times a week in their separate classrooms at schools that were miles apart. More recently, the two took their collaborative classroom effort to the next level, using The Henry Ford's Model I learning framework (see story on Page 24), which is

based on the artifacts and stories in The Henry Ford Archive of American Innovation, for digital team-teaching between their second- and fourth-grade classes.

"(Mrs. Lamb) is one of those teachers who loves teaching and helping kids grow ... She got the students involved who were never involved," said Marie Alarid, whose daughter is a former student of Lamb. "She made learning fun and exposed them to a variety of things outside the regular school day."

Lamb said that sharing knowledge digitally between different elementary grades at different schools "has a profound effect on student learning." She further added: "The second-graders actually taught the fourth-graders a few things."

Always focused on the next big idea, Lamb recently exposed not only her students but her entire community to another bit of educational tech. She made a request to Tinybop, the company behind The Human Body educational science app, asking if she could translate the app into Navajo as part of a collaborative language exercise between her students and the local community. Tinybop agreed. Using the app, Lamb's students and community members were able to work together to translate terms of the human body from English to Navajo.

Her innovative idea for the science app helped her win acclaim as one of The Henry Ford's Innovation Nation Teacher Innovator Award winners in 2018, an accolade she now shares with her husband, who won the same award the previous year for the digital team-teaching he conducted with his future wife.

— Marti Benedetti



## Teacher Innovator Awards

The Teacher Innovator Awards, sponsored by The Henry Ford and Litton Entertainment, the producers of *The Henry Ford's Innovation Nation*, recognizes teachers who inspire their students to be bold and think creatively, who are resourceful and who make a positive impact on those around them, from their students to their community. Each year, 10 grand prize winners enjoy an all-expenses-paid trip to The Henry Ford for an immersive experience, including an introduction to innovation curricula, such as The Henry Ford's Model I framework, that they can take back and apply in their classrooms.

"Educators are my heroes," said Lucie Howell, chief learning officer for The Henry Ford. "They are the first adopters, the people who run with what we share and make an impact. They are Model I examples — always curious, ready to take risks and they never back down from a challenge."

To learn more or to nominate a teacher for the 2019 Teacher Innovator Awards, visit [thf.org/teacherinnovator](http://thf.org/teacherinnovator). The deadline for applications is Feb. 1, 2019.



◀ Through a collaborative language exercise with her students and the local community, teacher Rachel Lamb helped translate the Tinybop app (left) into Navajo.

PHOTO COURTESY OF TINYBOP

### WATCH

Teachers Steven Lamb and his future wife, Rachel Thomas, share during a 2016 TEDx Talk how they used readily available technology to help their students work and learn with other students in different grades in altogether different school locations

[youtube.com/TEDxTalks](https://www.youtube.com/TEDxTalks) ▶  
(then search for "Connections Within a Virtual Void")



**PROFESSION:**

DESIGNER  
(ALTHOUGH HE  
PREFERRED  
TO BE CALLED  
"SEARCHER")

**INNOVATION:**

THE ACTION OFFICE II  
SYSTEM (1968)  
AND THE  
MOVABLE  
"COHERENT  
STRUCTURES" OF  
THE CO/STRUC  
SYSTEM DESIGNED  
FOR HOSPITALS (1971)

**ATTRIBUTES:**

EMPATHETIC  
OBSERVER, SERIAL  
PROBLEM SOLVER,  
UNORTHODOX  
THINKER

**DID YOU KNOW? /**

Robert Propst did not like to be referred to as a designer. He also didn't like the term "researcher," because it implied looking backward. His ideal description for his activities was "searcher."

# ROBERT PROPST

**YOU COULD BE FORGIVEN  
IF YOU AREN'T FAMILIAR  
WITH THE WORK OF ROBERT  
PROPST. AFTER ALL, IF HIS  
DESIGNS WERE WORKING AS  
HE INTENDED, THEY SIMPLY  
DISAPPEARED.**

Propst became director of the Herman Miller Research Division (HMRD) in 1960, setting up shop in a small concrete building in Ann Arbor, Michigan. The founder of Herman Miller, D.J. DePree, saw potential in Propst's ambitious thinking and hired him to broaden the company's product range. Very few guidelines were in place at HMRD: Nothing should be connected to military use, no furniture designs — and whatever was designed should simply "be useful."

Deliberately choosing a building more than 150 miles away from Herman Miller's headquarters in Zeeland, Michigan, Propst exercised his freedom to research without the distraction of corporate meetings. For every idea he had that went into production, hundreds more were filed away.

Two of Propst's most impactful projects were holistic environments designed for high-impact workplaces: the improved Action Office II system (1968) and the movable "coherent structures"

of the Co/Struc system designed for hospitals (1971).

In Propst's mind, offices had become chaotic wastelands. Cobbled together furniture, non-ergonomic chairs and an invasion of technology onto ad hoc surfaces. Action Office — a modular system of free-standing panel walls — could be fluidly arranged into nooks for working, conference areas and other purpose-driven needs. An idealistic vision for the birth of the modern office cubicle.

Propst wasn't always a designer of "things" but of situations. He attacked issues from the reverse, finding clues in the algorithms of human behavior working in high-stakes spaces. How did people move while working? Where was time being spent? Wasted? How can we support safety? Privacy? Collaboration? The physical solutions he engineered encouraged ideas of access, mobility and efficiency. His modular approach to office landscapes was intended to have a 1+1=3 effect. Which is to say that by implementing physical change, "knowledge" workers could then springboard off an improved relationship with their workspaces, which were suddenly more hospitable to launching new ideas, productive workflows and transformative projects.

— *Kristen Gallerneau*

**DID YOU KNOW? /**

The proliferation of the office cubicle is almost single-handedly due to the introduction of the Action Office II system in 1968. Unfortunately, the mobile aspect of Action Office became rooted to the floor, quite literally. Large businesses filled their buildings with Action Office (or its various knock-offs) to create Dilbertesque "cubicle farms."

**DID YOU KNOW? /**

The first version of Action Office was conceived by Robert Propst and designed by George Nelson in 1964, but sales were lackluster. Corporate managers worried about the porous borders being offered to their staff, now called "knowledge workers," and the cost was simply too high. Propst returned to the drawing board alone for A02.

## Barrier-Free Access to Artifacts, Experiences

Evidence of the beauty of Robert Propst's creative solutions — some pursued, some not — is found in his archive, some of which is now accessible through The Henry Ford Archive of American Innovation. Perusing this material digitally or in the Benson Ford Research Center's Reading Room, you can experience his deep love for the power of systems, originating and optimizing existing examples across a broad spectrum: timber harvesting, office landscapes, livestock tagging, children's toys, medical products and much more.

This Propst material is among thousands of artifacts now a part of The Henry Ford's massive digitization push. Efforts to open both The Henry Ford's physical and digital doors to everyone, barrier-free, continue to rise in number and scope. Recent examples include a three-year partnership with PNC Bank and PNC Foundation for early childhood programming and complimentary field trips to the museum and Greenfield Village. In addition, the Applebaum Family Compass Fund has provided support for the Youth Mentorship Program, which has offered at-risk teens the opportunity to develop life and work skills at The Henry Ford for nearly three decades.

In 2019, The Henry Ford will also launch the new William Davidson Initiative for Entrepreneurship. "The overall goal of Initiative for Entrepreneurship is to leverage the Archive of American Innovation and assets of The Henry Ford to inspire future and current entrepreneurs to be more successful," said Patricia E. Mooradian, president and CEO of The Henry Ford.

Initiative for Entrepreneurship has four core directives, or pillars, which include expanded youth programming, speaker series, residencies and workshops. The continued digitization of The Henry Ford Archive of American Innovation is also one of the foundational elements of the initiative.

Explore the digital collections of The Henry Ford Archive of American Innovation at [thf.org](http://thf.org). Learn more about the William Davidson Initiative for Entrepreneurship at [theinnovationproject.org](http://theinnovationproject.org).



CLOCK PROTOTYPE  
AND WOODEN SCULPTURE  
FROM THE HENRY FORD  
ARCHIVE OF AMERICAN  
INNOVATION







**PROPST WASN'T**  
**ALWAYS A DESIGNER**  
**OF “THINGS” BUT**  
**OF SITUATIONS.**  
**HE ATTACKED ISSUES**  
**FROM THE REVERSE,**  
**FINDING CLUES IN**  
**THE ALGORITHMS**  
**OF HUMAN BEHAVIOR**  
**WORKING IN HIGH-**  
**STAKES SPACES.**

◀ Action Office I

PHOTO COURTESY OF HERMAN MILLER

# SIDHARTH ANANTHA

**PROFESSION:**

HIGH SCHOOL  
STUDENT

**INNOVATION:**

SEEING FOR  
THE BLIND

**ATTRIBUTES:**

CURIOUS  
PEOPLE WATCHER,  
RELENTLESS  
INVESTIGATOR,  
INSIGHTFUL  
HUMANITARIAN



**SIDHARTH ANANTHA,  
A HIGH SCHOOL STUDENT AT  
LEXINGTON HIGH SCHOOL IN  
LEXINGTON, MASSACHUSETTS,  
CONSIDERS HIMSELF MANY  
THINGS.**

He's a violinist, engineer, robotics tutor, mentor, entrepreneur, inventor. He's also a highly attuned "observationist" and a humanitarian hyper aware of the economic and health care challenges of developing countries, including his birthplace, India. In 2016, he had been mulling over an idea to create a high-tech, low-cost, easy-to-use solution for helping the blind navigate their surroundings — a direct response to a stat that troubled him. "Ninety percent of the world's blind live in developing countries," said Anantha. "Health care in India, for example, is not as developed as it is in the U.S. Many people, including the blind, don't get or can't afford the care they need."

While waiting for takeoff on a commercial flight, Anantha noticed a blind woman tapping her support cane to count the rows to her seat. From this simple observation bloomed the formal trappings of an ingenious hands-free solution that Anantha now calls Seeing for the Blind. It combines sonar with an Arduino processor in a small device that can be easily attached to glasses or shoes to provide auditory and/or haptic obstacle distance awareness for those with

significant vision impairments. "A lack of sight makes it hard to navigate and know where you are in relation to objects," said Anantha. "My invention solves this problem by using echolocation to give the blind an awareness of their surroundings and create a sense of navigation."

Anantha's enthusiasm, research and smart applications of science and good sense helped him win big at the 2017 National Invention Convention and Entrepreneurship Expo in Virginia. In 2018, he returned to the Invention Convention, held in Henry Ford Museum of American Innovation, with a more refined Seeing for the Blind product. It garnered him, among other accolades, The Henry Ford's Model I Youth Innovator Award. Anantha is currently in the throes of the patent application process for his invention. And he's not done with it yet. His "what's next" for Seeing for the Blind is to perfect the device's ability not only to tell the blind that something is near or in front of them but what that something actually is.

"I want to have a meaningful effect on the world," said Anantha, who wants to become an aerospace engineer and design jets that run on clean electricity, as well as establish his own foundation to help train next-generation inventors. "I want to build things and become the Tesla of aviation. Airplanes have always been my obsession."

— Jennifer LaForce

▼ The Seeing for the Blind device can be easily attached to glasses. It provides auditory obstacle distance awareness for the visually impaired.

PHOTOS BY NICK HAGEN



## The STEMIE Coalition | Invention Convention

In September 2018, The Henry Ford acquired The STEMIE Coalition, a nonprofit global consortium of youth invention and entrepreneurship programs designed to strengthen invention education offerings to children across the country and around the world. As a result of the acquisition, several members of The STEMIE Coalition, including its CEO Danny Briere, became part of The Henry Ford organization (see story on Page 50), and Henry Ford Museum of American Innovation is now the permanent home of the National Invention Convention and Entrepreneurship Expo, which is the marquee event of The STEMIE Coalition. National Invention Convention provides a live, in-person opportunity for youth inventors and entrepreneurs (K-12) to display their critical thinking skills through inventing, innovating and entrepreneurial activities. More than 400 young innovators, inventors and future entrepreneurs participated in last year's convention. Similar numbers are expected this year.

**2019 National Invention Convention  
and Entrepreneurship Expo**  
May 30-31

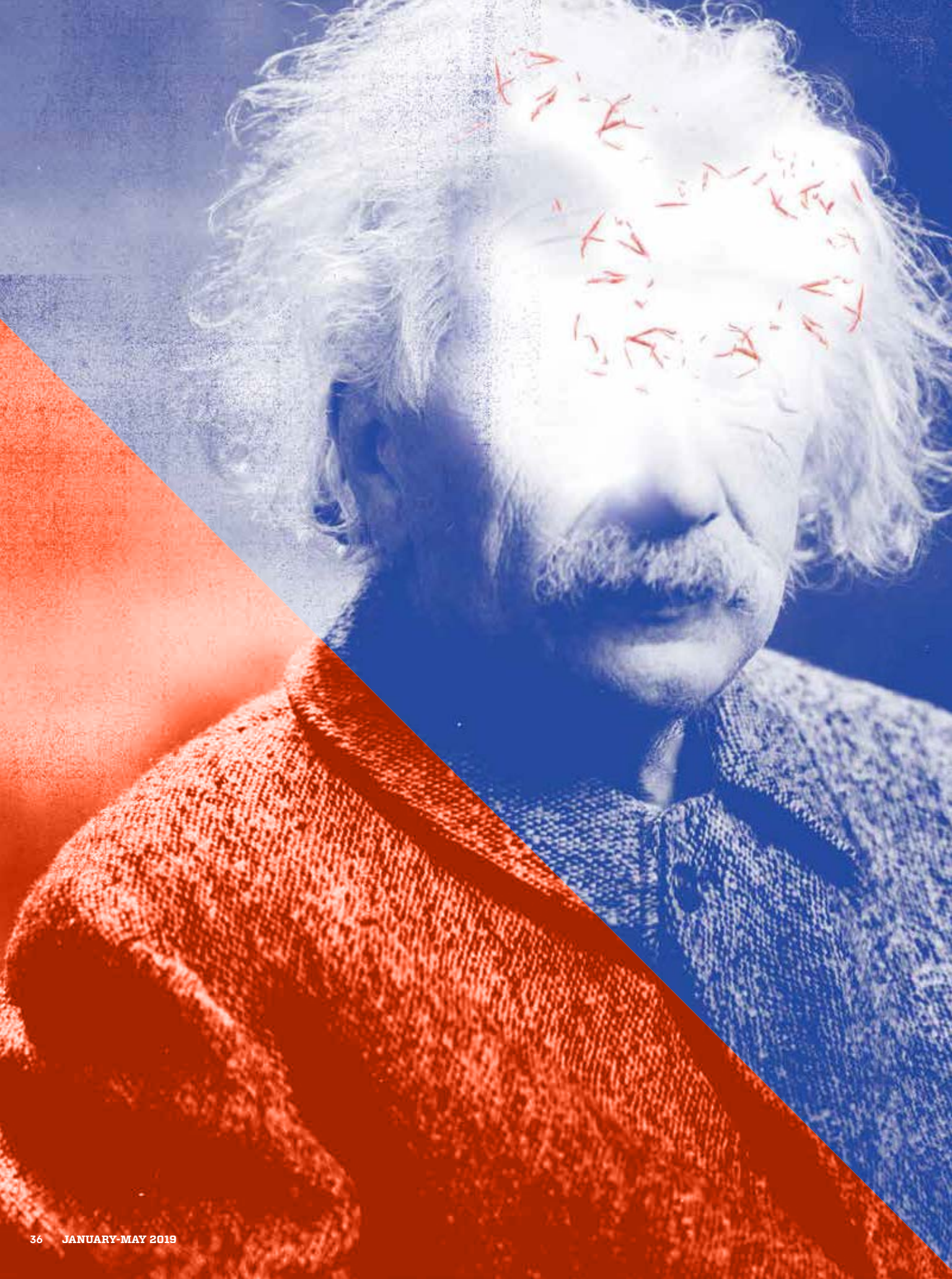
Henry Ford Museum of American Innovation



"What The Henry Ford is doing to promote innovation and inspire the younger generations is outstanding."

— Sidharth Anantha





The background is a solid blue color with a subtle, grainy texture. A diagonal orange stripe runs from the top left towards the bottom right, passing behind the title. On the left side, there is a vertical strip of a darker blue, more textured material, possibly representing a book cover or a piece of fabric. A pink, rectangular bandage is placed diagonally across the bottom left corner, overlapping the orange stripe and the darker blue area.

# Mind Over Matter

Addressing educational equity  
is how America's lost Einsteins  
will be found

**By Alana Semuels**

ILLUSTRATION BY JULIE FRIEDMAN;  
ALBERT EINSTEIN BY ORREN JACK TURNER,  
COURTESY OF WIKIMEDIA COMMONS



# W

hen Danny Briere asks kids to draw a picture of what an inventor looks like,

they almost always draw the same thing: an old white man who has frizzy hair, a mustache and a striking resemblance to Albert Einstein.

That bothers Briere, managing director of The STEMIE Coalition, a nonprofit global consortium that was recently acquired by The Henry Ford to help teach kids around the world how to think like inventors (see story on Page 50). He knows that with the right mindset, smart kids from all different backgrounds can be innovative and entrepreneurial but that many kids think the only people who become inventors are old white men.

## WORTH THE RISK

America needs more inventors. For 80 years, the patent office of the United States was the leading place in the world for patent filings. But China surpassed the U.S. in 2011, and today countries including South Korea, Japan and Germany all file more patents than the U.S., when measured by the size of a country's economy.

At the same time, the startup rate is declining in the U.S., and small businesses make up a smaller share of the economy than they did in the past. That matters not just for reasons of pride. Economists say that half of the country's annual economic growth, which is what helps Americans become richer and improve their standard of living, is attributed to increases in innovation. More than half of the economic growth in the country since the end of World War II, in fact, has been attributable to technological innovation.

Why aren't Americans inventing as much as they used to?

Some economists have theorized that the decline in patents may be because U.S. companies are spending less on risky ideas. Others say that the century of innovation that lasted from 1870 to 1970 was an anomaly that will never be replicated.

Raj Chetty has another idea. Chetty, an economist who recently returned to Harvard University after three years at Stanford, runs the nonprofit Opportunity Insights, which uses data on 20 million children and their parents to analyze upward mobility in America and what factors make children do better than their parents economically. He's used the data to show definitively that the ZIP code where a child is raised has a huge effect on the likelihood that that child will go to college and make a good living and that income inequality has made it harder for children from low-income families to earn more than their parents.

Chetty also used the data to look into who becomes an inventor in America. By linking patent records to income tax records, he and his colleagues found that kids who grow up rich — in the top 1 percent of the income distribution — are 10 times as likely to become inventors as those born to families with below-median incomes. Kids who grow up around innovators, or who have personal relationships with innovators, are also much more likely to become inventors themselves than those who don't. ▶



## Why aren't Americans inventing as much as they used to?

IS IT  
BECAUSE U.S.  
COMPANIES  
ARE SPENDING  
LESS ON RISKY  
IDEAS?

IS IT BECAUSE  
THE CENTURY  
OF INNOVATION  
WAS AN  
ANOMALY?

Or is it  
because of ZIP  
codes, income  
distribution  
and exposure?

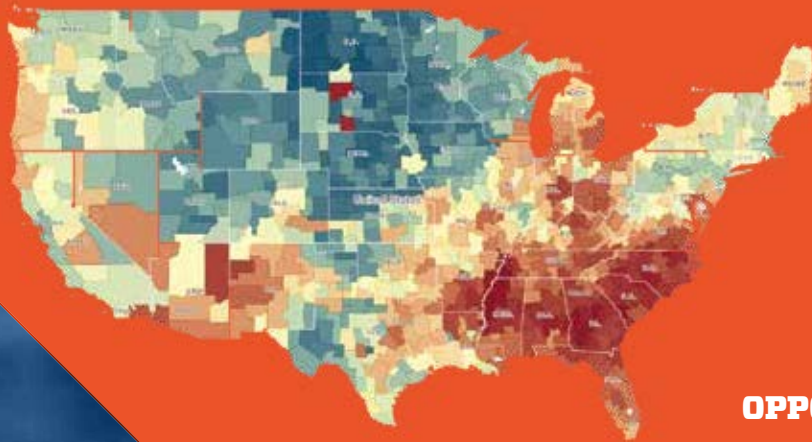
### ONLINE

Learn more about Opportunity Insights and how to improve economic opportunities for children  
[opportunityinsights.org](https://opportunityinsights.org) ▶

▶ Raj Chetty (opposite page), a professor of economics at Harvard University and the director of Opportunity Insights, is conducting extensive research on how, as a nation, we can give children from disadvantaged backgrounds a better chance of succeeding.

PHOTO COURTESY OF JOHN D. & CATHERINE T. MACARTHUR FOUNDATION





## THE OPPORTUNITY ATLAS

The U.S. Census Bureau collaborated with Raj Chetty and Nathaniel Hendren at Harvard University, along with John Friedman at Brown University, to create the Opportunity Atlas, an online visualization tool that gives public access to highly localized data on social mobility for the first time. Users can view estimates for factors such as children's earnings distributions, incarceration rates and other outcomes in adulthood by parental income, race and gender for every census tract in America. This valuable information can help us better understand which neighborhoods offer children the best chances of climbing the income ladder in the future and where opportunities are being missed.

Explore the Opportunity Atlas at  
**[opportunityatlas.org](https://opportunityatlas.org)**.

OPPORTUNITY ATLAS MAP  
COURTESY OF U.S. CENSUS BUREAU  
AND OPPORTUNITY INSIGHTS



“There are lots of kids from low-income backgrounds, women and minorities, who seem like they would have very high ability to produce really impactful innovations but are not going through the pipeline.”

— Raj Chetty

Exposing kids to innovators, Chetty and his team hypothesized, could go a long way toward finding these “lost Einsteins” and helping them pursue their interests in innovation. “There are lots of kids from low-income backgrounds, women and minorities, who seem like they would have very high ability to produce really impactful innovations but are not going through the pipeline,” Chetty said.

Kelly Reynolds knows how difficult it can be to become an inventor without the right connections. Reynolds grew up in Brooklyn, raised by a single dad who was a transit conductor. When she was working as a single mom in New York City, she came up with an invention: an electronic device mount for a stroller so that her daughter could watch children’s shows on the subway without constantly dropping the tablet. Reynolds applied for a patent and tried to get funders, but she found she didn’t have the contacts she needed to raise money to start manufacturing the product or selling it. She had to focus on saving money, not spending it on an invention that might not go anywhere, and she didn’t have any family members who could help her out.

“People who come from low- or middle-income families, we’re limited,” said Reynolds. “If your daughter says, ‘I have an invention,’ they say, ‘We have to pay rent.’”

## LOST & FOUND

There are groups across the country trying to change this dynamic and help different types of people pursue inventions and innovation. A company called Pioneer, for instance, recently launched a website that calls for good projects that don’t have to be fully formed inventions or companies.

Every month, the community of applicants will vote on ideas that have been submitted, and Pioneer will give a \$5,000 grant to the person with the best idea and then fly that person to San Francisco to receive mentorship from experts in their field.

Pioneer is “an attempt to find the most brilliant people in the world, wherever they are, and to identify cheap and scalable interventions that might help them achieve their goals,” founder Daniel Gross wrote in a blog post announcing the effort, which also referenced Chetty’s work.

Similarly, StreetCode Academy, a San Francisco Bay Area non-profit, has launched a campaign, Who’s Next, which also seeks to find “lost Einsteins” by exposing local kids to technology and mentorship networks. ▶



▲ Daniel Gross

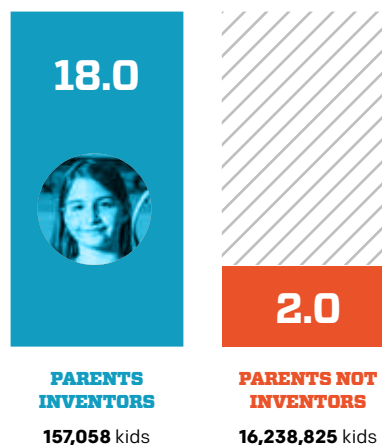
### DID YOU KNOW? /

Daniel Gross, founder of Pioneer, is an Israeli-born entrepreneur who as a teenager co-founded a social search startup that was later acquired by Apple. Gross then joined Apple as director of machine learning before becoming a partner at Y Combinator, a provider of seed money for startups. Pioneer is his effort to help people with talent and potential realize their ideas.

“While Pioneer will provide money to people, it’s not about the money. My hope is that this experiment can broaden people’s horizons of how they view themselves. I met amazing peers and challenged myself to do what I thought I couldn’t because of my environment.”

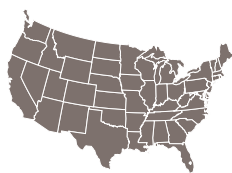
— Daniel Gross

## Patent Rates for Children of Inventors vs. Non-Inventors<sup>1</sup>



### 1 Who Becomes an Inventor in America? The Importance of Exposure to Innovation

Alex Bell, Raj Chetty, Xavier Jaravel, Neviana Petkova and John Van Reenen  
Quarterly Journal of Economics, forthcoming  
December 2017



## LOCATION, LOCATION, LOCATION

Two University of Chicago economists, Ufuk Akcigit and John Grigsby, and Tom Nicholas of Harvard Business School recently published a paper examining what traits inventors shared in the golden age of innovation between 1880 and 1940. They found that, like today, people who had more well-to-do parents were more likely to become inventors than those who did not.

But people could do things to increase their chances of succeeding as an inventor. Densely populated states, for instance, were more inventive during this time, prompting many promising inventors to pick up and move to these regions. Thomas Edison, for example, moved from his birthplace in rural Ohio to Menlo Park, New Jersey, where he could better access financing to do his research — which in turn helped lead to his 1,093 U.S. patents.

The three university researchers also found that geographically connected states were more inventive because inventors could more easily and cheaply sell their products to more people. Melvin De Groote, who moved from his home in West Virginia to various cities that were more geographically accessible, received 925 U.S. patents, and the technology he invented was used for decades in the oil industry.



- StreetCode Academy, a nonprofit in the San Francisco Bay Area, recently launched a campaign focused on tech education and mentorship to help bridge the innovation gap. Who's Next exposes underserved communities to the technological landscape and raises awareness about the nonprofit's skills training and network for providing professional development opportunities, mentorship and real-world work experiences.

PHOTO BY SQUINT FOTO

#### **DID YOU KNOW? /**

The average software engineer income in the Silicon Valley is \$105,404; at the same time, the average household income in East Palo Alto is \$42,342. StreetCode Academy aims to close the income gap by providing the necessary technology education to prepare communities of color for jobs in the technology industry, which currently has the most income potential in the Silicon Valley.



## THE INNOVATION PROJECT

No innovator left behind. No entrepreneur excluded. The Henry Ford is working continually to remove barriers to accessing its content, making its experiences, artifacts and learning environments available to everyone — especially those who traditionally have been left behind.

The Henry Ford's Youth Mentorship Program, for example, has been offering at-risk teens the opportunity to develop life and work skills on-site at The Henry Ford for nearly three decades. The Henry Ford's Community Outreach Program — which makes the institution's collections and educational experiences more accessible to resource-challenged families, at-risk youth, kids fighting cancer and victims of violence — has been working with local organizations for a dozen years. More recently, The Henry Ford has implemented highly successful sensory-friendly programming and tactile tours, making its campus accessible to even more individuals and families.

The Henry Ford still wants to do more and will do more as part of its multimillion-dollar comprehensive campaign called The Innovation Project, where plans already exist to create new accessible environments on campus, expand existing programs to be more accessible and relevant to a broader audience, and renovate facilities to accommodate individuals with a range of abilities as well as their family members and companions. (See Letter from the President on Page 6.) The campaign's core learning initiatives also have the potential to help The Henry Ford equip educators and learners with the real-world skills they need to narrow the talent gap and nurture the future talent pipeline.

For details on programs and initiatives comprising The Henry Ford's The Innovation Project, go to [theinnovationproject.org](http://theinnovationproject.org).

### DID YOU KNOW? /

In September 2018, The Henry Ford acquired The STEMIE Coalition, a nonprofit global consortium of youth invention and entrepreneurship programs. Together, they are strengthening invention education offerings to children across the country and around the world, with a goal to help 10 million kids learn how to unlock real-world skills for identifying problems, sharing solutions and implementing ideas.

More broadly, people like The STEMIE Coalition's Briere are trying to get school systems to implement invention education, in which students are taught to think creatively about how to identify and then solve problems around them. STEMIE, in fact, stands for STEM + Invention + Entrepreneurship, which the coalition believes yields an innovative mindset in a child for life.

Previously, teachers had focused on steering kids to STEM — science, technology, engineering and mathematics — or educating them on how to become entrepreneurs. But as computers learn how to do more and more jobs in STEM fields, Briere said more school districts and teachers are seeing the importance of invention education and how it can impact the inventive and entrepreneurial workforce of tomorrow. Invention education isn't just teaching kids science or technology facts or how to sell products — it's about teaching them how to identify problems on their own and think creatively for a lifetime.

Schools can teach invention in any number of ways, offered Briere: A teacher going over the history of the cotton gin, for example, could launch a seven-week program that encourages kids to invent something useful in their lives. They could use tools like Model I, a new learning platform created by The Henry Ford that teaches about the habits and actions of innovators using its collections and stories of innovation as a foundation (see story on Page 24).

### CHANGING PERCEPTIONS

Briere hopes the U.S. government will someday follow the model of South Korea, which mandated that every child get an invention education. Interest in the U.S. is already growing, he said.

In 2016, STEMIE began holding an annual national invention convention in which kids across



▲ Danny Briere

the country enter inventions and compete on their merits. Each year, more and more children are getting involved. In 2018, 108,000 inventions were judged across the country, with the top contenders journeying to The Henry Ford for the first time for the final competition. Now, Henry Ford Museum of American Innovation is the event's permanent home, and The STEMIE Coalition has been acquired by The Henry Ford. Together, the two organizations' goal is to see 10 million American kids learn how to be innovative, inventive and entrepreneurial.

Some invention convention submitters have already garnered national attention, such as the girl who proposed an idea for bulletproof school walls and the 13-year-old who created a lollipop that cures hiccups. Even if the inventions themselves don't make it to the marketplace, Briere noted the fact that if more school districts are teaching kids that they, too, can be inventors, it is going to help create change in the way innovation is perceived in America. Even giving students the confidence to know that they can be inventors has the potential to completely change their career trajectory.

After students go through the STEMIE invention convention curriculum, Briere said, he asks them again to draw a picture of a typical inventor. This time, they draw themselves. ●

**STEM + INVENTION + ENTREPRENEURSHIP = INNOVATION**

The Snow Straw, invented by Sophie Zezula, addresses the timely issue of plastic straw pollution. Zezula's straw is made entirely of ice. It won second place (fifth-grade category) at the 2018 National Invention Convention and Entrepreneurship Expo.



The Bully Band, invented by seventh-grader Molly Grace Deptula, is a wearable device prototyped from a modified Fitbit that transmits video and audio to an app made exclusively for school administrators. It won third place in the "Recognizing Females in The STEMIE Coalition" category at the 2018 National Invention Convention and Entrepreneurship Expo.



The Lightning Shock Sticker, invented by fifth-grader Michael Muldoon, can be placed directly on the exterior of any sports helmet in areas where an impact is most likely. If a hit to the head has a g-force rating of roughly 95 g's, the sticker turns red, alerting coaches and players to seek medical attention. The sticker won third place (fifth-grade category) at the 2018 National Invention Convention and Entrepreneurship Expo.



**RESEARCH** Audrey Larson, past invention convention participant and inventor of Safe K.I.D.S., a retractable bulletproof school wall ►

**RESEARCH** Mallory Kievman, past invention convention participant and inventor of the Hiccupop, a lollipop that cures the hiccups ►

PHOTOS BY NICK HAGEN







## ISHANI'S STORY

When Ishani (left) was born 14 weeks premature, she spent months in the NICU fighting for her life. As a result of her premature birth, she has a condition that requires her to wear leg braces. This doesn't slow her down. She is a vibrant elementary school student who participated in the 2018 Michigan Invention Convention and debuted her Mochi Ka Boot, a comfortable, waterproof, warm boot that can be worn over ankle-foot orthosis supports. She envisions a day when kids just like her can play outside with friends in the snow.

PHOTO BY EE BERGER

**9** years  
old

**1.5** her weight  
(in pounds) at  
birth at 26 weeks

**3** The months she worked  
on her invention called  
the Mochi Ka Boot

**2018**

The year she  
participated in  
her first invention  
convention at  
The Henry Ford





# STAR TREK™

## EXPLORING NEW WORLDS

LIMITED-ENGAGEMENT EXHIBIT

**MAY 11-SEPTEMBER 2, 2019**  
**Henry Ford Museum of American Innovation™**

**FREE TO MEMBERS OR WITH MUSEUM ADMISSION**

**THF.org/startrek**

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MUSEUM OF  
POP CULTURE

Set a course for Henry Ford Museum of American Innovation to experience **Star Trek: Exploring New Worlds**, a fully immersive, limited-engagement exhibition. Navigate through more than 100 rare artifacts and props, including the original U.S.S. *Enterprise* navigation console. Beam yourself into the action with the transporter simulator and the KHAAN! scream booth and discover how this iconic franchise has been inspiring generations to explore and innovate for over fifty years.

### EXHIBITION HIGHLIGHTS

- Set pieces from *Star Trek: The Original Series*.
- More than 100 props and artifacts from the six *Star Trek* television series and films, including an original series tricorder, communicator and phaser, a Borg cube, Klingon disruptor pistol, tribbles and more.
- Rare costumes, including the Spock tunic worn by Leonard Nimoy and Lt. Uhura's (Nichelle Nichols) dress.
- Spaceship filming models, including the U.S.S. *Enterprise*, *Deep Space 9* space station and more.

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the  
**Henry  
Ford**®





# Members Take It Forward.

Your membership to The Henry Ford helps support a national treasure — and provides you with exclusive perks like unlimited free admission, discounts on shopping and dining, plus signature experiences. Members are vital to helping preserve the past and craft the future by fueling imaginations in next-generation innovators and entrepreneurs. We thank you for your generous support, and we look forward to seeing you soon.



## SPRING IN THE VILLAGE

Join us April 12 for an **EXCLUSIVE MEMBER PREVIEW** of Greenfield Village before it opens to the public. Get ready for a season of sheepshearing, wool carding, spring garden work, fieldwork and new lambs.



## Exclusive Member Previews

Greenfield Village  
Member Preview April 12  
Star Trek® Exploring New Worlds  
Member Preview May 10  
(opens May 11)  
Towers of Tomorrow with  
LEGO® Bricks Member Preview  
October 11 (opens October 12)



## First Dibs on Ticket Sales

Purchase your tickets before they go on sale to the public during exclusive presale dates for members.

Summer Camps  
Visit [thf.org/summercamps](http://thf.org/summercamps)  
for on-sale date  
Day Out With Thomas™  
on sale March 6  
Railroader's Breakfast  
on sale March 6

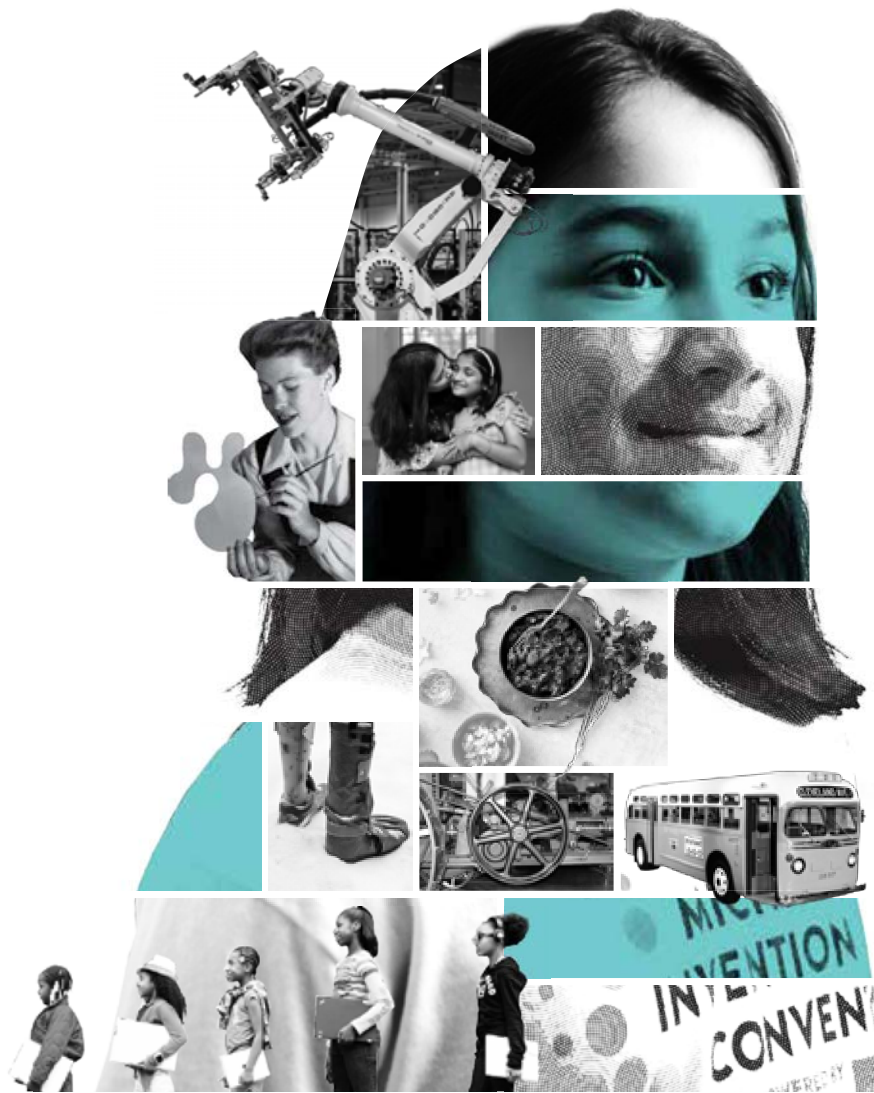
## Member Appreciation Days

**JANUARY 25-27**  
**APRIL 19-21**

Mark your calendar for double discounts on dining and shopping plus other exclusive perks, just for members.

MODEL T AND KIDS WITH HENRY FORD'S KITCHEN SINK  
ENGINE BY EE BERGER; SHEEP BY MARISSA HINDMAN





As a supercharged fourth-grader, Ishani has been sparked by her experiences at The Henry Ford. In fact, here at the 2018 Michigan Invention Convention, she debuted the Mochi Ka (Cobbler's) Boot, her invention to protect AFO (ankle-foot orthosis) leg braces in the snow.

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# INSIDE EVERY CHILD IS THE POTENTIAL TO CHANGE THE WORLD

“The Henry Ford believes every child should have the opportunity to reach their potential. With the launch of **The Innovation Project**, we're on a mission to realize it. Our \$150 million comprehensive campaign will advance innovation, invention and entrepreneurship for a whole new generation of learners and leaders, regardless of barriers or backgrounds — a value that The Henry Ford prioritizes at every level of our organization.

If one spark can change a life and change the world, imagine what a million can ignite. **Join us.”**

— Patricia E. Mooradian, President and CEO  
The Henry Ford



THE INNOVATION PROJECT

[THEINNOVATIONPROJECT.ORG](http://THEINNOVATIONPROJECT.ORG)



# INSIDE THE HENRY FORD

The Henry Ford is three must-see attractions, 250 acres of unexpected and one awe-inspiring experience. Flip through the following pages to find out what's happening inside this mind-blowing cultural institution during the winter and spring.

Henry Ford Museum of American Innovation **50**

Greenfield Village **52**

Ford Rouge Factory Tour **54**

Acquisitions + Collections **56**

2019 Events **58**

Connect 3 **62**

# THINK BIG

The STEMIE Coalition's Danny Briere reflects on his "wow" museum moment and how joining forces with The Henry Ford will bring invention education to kids everywhere

The

Henry Ford Magazine sat down with Danny Briere, managing director of The STEMIE Coalition, soon after The Henry Ford acquired The STEMIE

Coalition in a joint effort to strengthen invention education around the world. The coalition is a nonprofit global consortium of youth invention and entrepreneurship programs best known for producing the National Invention Convention and Entrepreneurship Expo for K-12 students.

Briere is now the guy tasked with spearheading a vast outreach to ensure The Henry Ford has an active part in unleashing the next generation of innovators, inventors and entrepreneurs.

**THF Magazine** ▶ Can you share your first impressions of The Henry Ford and what happened next?

**Briere** ▶ As soon as I stepped foot in Henry Ford Museum of American Innovation, I knew it was the right place for me and The STEMIE Coalition and would be the right permanent home for National Invention Convention. I have always viewed our convention as a brainstorming activity that gets the whole family involved. It deserves a destination where a family can go and say, "Wow!" The museum is that place where kids can be surrounded by the spirit of innovation.

After the Michigan Invention Convention last spring, the museum quickly became the forever home of National Invention Convention, and The STEMIE Coalition and The Henry Ford officially aligned to make invention education available to millions of teachers and kids around the world.

**THF Magazine** ▶ What does the STEMIE initiative stand for, and how is it different from general STEM education?

**Briere** ▶ STEMIE stands for STEM + Invention + Entrepreneurship, which STEMIE believes yields an innovative mindset in a child for life. To keep America at the forefront of the world economy, we need an inventive and entrepreneurial workforce that can solve problems in creative new ways. This is the heart of American innovation. Through The STEMIE Coalition and Invention Convention, we are seeing firsthand how invention education can reinforce and grow each child's ability to identify problems on their own and come up with amazing solutions.

**THF Magazine** ▶ What's unique about the merging of missions of The STEMIE Coalition and The Henry Ford?

**Briere** ▶ We're both nonprofits, and the merging of nonprofits doesn't happen often. We're not motivated by money or big egos, only by our joint missions to bring invention education to every child. Together, we bring a lot to the mix: The Henry Ford with its long game driven by a passionate, capable team, and The STEMIE Coalition staff, which sports a fail-fast, fail-often, push-forward attitude. Combined, we have a long-term view with an aggressive "think big" movement.

**THF Magazine** ▶ What will equal success for this partnership?

**Briere** ▶ That we give millions of children the opportunity. That every kid grows the confidence they need to know they can do it. That every participant in our programs knows they can make meaningful change in the world. That we have helped create the next generation of serial innovators.

## ONLINE

For more information, hours and pricing for Henry Ford Museum of American Innovation, visit [thf.org/museum](http://thf.org/museum) ▶

▼ The impressive group of participants at the 2018 National Invention Convention and Entrepreneurship Expo lets out a giant cheer for innovation with (below from left) Abby Fisher, director of educational programming for The STEMIE Coalition; Patricia E. Mooradian, president and CEO of The Henry Ford; Mo Rocca, host of *The Henry Ford's Innovation Nation*; and Danny Briere, managing director of The STEMIE Coalition.

PHOTO BY KMS PHOTOGRAPHY







**Michigan Invention  
Convention  
April 27  
Henry Ford Museum of  
American Innovation**

Michigan-based youth inventors and entrepreneurs in grades 3-12 display and pitch a product representative of their problem-solving skills with a chance to move on to the National Invention Convention and Entrepreneurship Expo.

**PLUS:** April 27 is The Henry Ford's Spring Educator Open House. Educators and a guest receive free access to the museum as well as the opportunity to attend sessions and enjoy free tickets to other The Henry Ford venues. Registration required. [thf.org/eoh](http://thf.org/eoh)

To learn more about Michigan Invention Convention and how you can be a part of future events and build awareness in your schools and communities, visit [thf.org/education/competitions-and-events/michigan-invention-convention-program](http://thf.org/education/competitions-and-events/michigan-invention-convention-program)



**2019 National  
Invention Convention  
and Entrepreneurship  
Expo presented by  
United Technologies  
Corporation  
May 30-31  
Henry Ford Museum of  
American Innovation**

A live, in-person opportunity for youth inventors and entrepreneurs in grades K-12 to practice their critical thinking skills through inventing, innovating and entrepreneurial activities.



# CORE CREATIVE

Historic Greenfield Village spaces provide a past-forward view of how we innovate, invent and collaborate

## Tech

hubs like Silicon Valley and R&D powerhouses like Xerox's PARC. Mom-and-pop hackerspaces and blow-out fab labs all across the globe. No matter their size, brand stature or pathways to creativity, these locations all thrive on people's innate need to gather together to innovate, invent and create.

Visit Greenfield Village, and one of America's first-ever R&D labs and invention factories is in your midst: Thomas Edison's Menlo Park. When Edison first moved his operation to Menlo Park, New Jersey, it consisted of one building and a dozen workers. Like most provocative tech hubs, it quickly morphed into a collaborative community of 80 talented individuals representing multiple disciplines populating a campus consisting of a library, machine shop, carpentry studio, glassblowing house and more. "Edison's Menlo Park is a model of R&D excellence," said Marc Greuther, chief curator and vice president of historical resources at The Henry Ford. "With no set hierarchy and an egalitarian atmosphere, Edison understood that if you had the right people and the right equipment, and you did it in the right location, you could really set a pace — create a place where ideas quickly translated into tangible objects."

Opened in Greenfield Village in 1930, Henry Ford's Soybean Lab exemplifies a more traditional R&D lab, a place where a corporation puts technical experts to work to invent, refine and perfect its products and procedures. "Ford built the lab to affirm his support of farmers, his influence on industry and his desire to turn agricultural products

into industrial profit," said Debra Reid, curator of agriculture and the environment at The Henry Ford. "He was not the only person researching the potential of the new cash crop in the 1930s, but he was the individual working with some of the most noted soybean researchers and boosters in the country." In 1941 at an annual Dearborn festival, Ford even debuted his Soybean Car, a project completed in his Soybean Lab by tool-and-die guy Lowell Overly and chemist Robert Boyer.

Today, Ford Motor Company continues to benefit from its founder's fascination and extensive R&D with the soybean. Since 2011, for example, soybean-based foam has been a key material used in the seat cushions, seat backs and headrests of every vehicle Ford builds in North America.

While Menlo Park can be easily slotted as America's original tech hub and Ford's Soybean Lab described as a more traditional R&D laboratory, Greenfield Village's Liberty Craftworks gives clarity to what constitutes a unique makerspace. Whether it's the Glass, Pottery, Tin or Weaving shops, each of these spaces is a creative gathering point for the village's artisan community to practice their crafts, share ideas and make things daily — from the serving ware used at Firestone Farm to the handblown glass ornaments sold in The Henry Ford's gift shops. Collaboration outside the village walls is also key to what makes Liberty Craftworks such an active makerspace. The Greenfield Village Glass Shop, for example, invites several renowned glass artists from across the globe to take up temporary residence at The Henry Ford each year to showcase and share their artistry.

### SHOP

Handcrafted pottery, glass and tin produced by Greenfield Village artisans in Liberty Craftworks online at [thf.org/shop](http://thf.org/shop) ▶

### ONLINE

For more information, hours and pricing for Greenfield Village, visit [thf.org/village](http://thf.org/village) ▶

**DID YOU KNOW?** / Henry Ford had New Jersey soil from Thomas Edison's Menlo Park campus transported to Dearborn in 1929 and spread over the lab's new site in Greenfield Village.



Purchase wool rovings made in Greenfield Village and yarn that's produced from the Merino sheep at the Village Store. Members save 10% on shopping in stores and online.

## IN THE MAKING

While many of Greenfield Village's makerspaces are making year-round, springtime is one of the village's livelier times, full of opportunities to see how things are made.

Think sheep to shirt as you watch the annual shearing of Firestone Farm's Merino sheep. Then travel to the Gunsolly Carding Mill to see how fibers are turned into clean wool rovings ready to be spun into thread. The carding shop machinery operates just three weekends a year, so it's an early spring village experience not to be missed.

Make your way to the working farms of Firestone and Daggett and the homes of Henry Ford and the Mattox family where fields are being plowed and planted. Let the ideas spark for your own garden. Then apply the inspiration gained from marveling at all that hands-on hard work, and make a takeaway of your time in Greenfield Village with your own hands. Visit the Armington & Sims Machine Shop, and shape a brass candlestick using a 1917 turret lathe. Sign up for a workshop at the Glass Shop, and become a glass artist in your own right. Your blown-glass flower creation will be shipped directly to you.



## EARLY SPRING ACTIVITIES

**GREENFIELD VILLAGE  
MEMBER PREVIEW**  
April 12

**SHEEP SHEARING -**  
Firestone Farm  
**WOOL CARDING -**  
Gunsolly Carding Mill  
April 26-28; May 3-5, 10-12

**GARDENING DAILY** (weather  
and grounds dependent)  
Firestone Farm, Daggett  
Farm, Ford Home, Mattox  
Family Home

**SPRING FIELDWORK DAILY**  
Firestone Farm

▲ In 1928, Henry Ford commissioned the reconstruction of Thomas Edison's Menlo Park Laboratory for Greenfield Village. He took great care in ensuring America's first-ever R&D lab looked as it had in 1886, with every beaker and test tube in place as they would have been in Edison's time. Ford's intention: for the reconstruction to serve as an homage to the great American innovator that would inspire future generations.

PHOTO BY JAMES SALESKA PHOTOGRAPHY



# HOORAY FOR ROBOTICS

Seeing manufacturing in action builds student appreciation for STEM studies

In

2018, the Gator-Bots, Henry Ford Academy's robotics team, spent some time at the Ford Rouge Factory Tour filming a spot for an upcoming advertising

campaign for The Henry Ford. The commercial's purpose: to show how experiences such as the factory tour can spark ideas and help the next generation unleash its potential to innovate.

It seemed an apropos film set for the high school group, which built robots last year that could collect power cubes off the floor and lift them to be stacked on scales. Every day, Ford Rouge Factory Tour goers get a bird's-eye view of the Dearborn Truck Plant's final assembly line and see firsthand how a complex web of robotics, equipment, parts delivery and skilled workers comes together to manufacture one Ford F-150 per minute.

This year, Henry Ford Academy is betting that future competitions featuring the Gator-Bots and their robots branded with alligators will fire up even more students to pursue college degrees in fields related to science, technology, engineering and math (STEM).

"I am so proud to work with our robotics team," said Tammy Goodman, a teacher and mentor at Henry Ford Academy, a public charter high school on The Henry

Ford campus. "It's unbelievably fun, of course, but our team also does something wonderful. Many of our students have not considered a career in STEM previously, either because they didn't think they were capable or they weren't exposed to adults who work in those fields."

They are considering such careers now. According to Goodman, her students' exposure to robotics has them graduating from high school eager to pursue careers in technology, programming and scientific research. "That is the strength of FIRST robotics in our school," she noted.

FIRST is a global robotics competition that gives out more than \$80 million in college scholarships each year. Ford Motor Company also provides funding through the Detroit and Downriver Area Robotics Alliance (DADARA) and through its Ford STEAM Blue Oval Scholarship. Typically, Henry Ford Academy has 20 to 25 students involved in FIRST each year.

In January, the Gator-Bots senior team started strategizing hard about the functionality of its next set of robots, prepping for FIRST's 2019 robotics season and its Destination: Deep Space competition.

It's a serious commitment, said Goodman. During the build season, which lasts through mid-February, the crew meets up to six times a week, constructing, testing, rebuilding and perfecting compact marvels of robotics innovation.

► Henry Ford Academy's Gator-Bots robotics team recently had the opportunity to see its STEM studies take shape. The team got a closer look at state-of-the-art robotic applications on the final assembly line at the Dearborn Truck Plant while filming a spot for an advertising campaign for The Henry Ford.

PHOTO BY JAMES SALESKA  
PHOTOGRAPHY

**ONLINE** To explore The Henry Ford's Stories of Innovation with Dean Kamen, who helped found FIRST, visit [thf.org](http://thf.org) ►

**ONLINE** To learn more about FIRST and its 2019 robotics season, visit [firstinspires.org/robotics/frc](http://firstinspires.org/robotics/frc) ►

**ONLINE** For more information, hours and pricing for the Ford Rouge Factory Tour, visit [thf.org/rouge](http://thf.org/rouge) ►



**SAVE THE DATE**  
**Manufacturing Day**  
**2019**  
**Friday, October 4**

### **A DAY FOR LEARNING ABOUT MAKING**

On October 5, 2018, some 500 students from school districts all across south-east Michigan descended on the Dearborn Truck Plant, eager to take the Ford Rouge Factory Tour as part of Manufacturing Day.

The sheer number of attendees and size of the host site made it the largest celebration of Manufacturing Day in the metro Detroit area.

Along with getting to take the official tour, the students had the added opportunity to interact with the Dearborn Truck Plant staff to ask questions about what it's like to manufacture the Ford F-150 in a state-of-the-art facility on the historic Rouge grounds — basically a place where every day is Manufacturing Day. "Students can talk with assembly line workers, UAW staff and some outside vendors such as the Michigan Department of Transportation," said Douglas Plond, operations manager for the tour. "It's a day with uplifted programs specifically focused on these students' STEM studies."

The overall purpose of the event, according to Plond, is to get kids thinking more about possible career paths in science, technology, engineering, math (STEM) and advanced manufacturing. "Each year, this event increases interest in the STEM professions," he said.

Manufacturing Day is held each year on the first Friday of October. For more information, visit [mfgday.com](http://mfgday.com).



# WHAT'S INSIDE THE (X)BOX?

An engineering student's curiosity questions a controversial copyright act

## When

Andrew "Bunnie" Huang used a screwdriver to open a Microsoft Xbox gaming system in 2002, he willingly opened a legal Pandora's box.

"Whenever you give me a locked box, I want to open it," Huang would later tell reporters at the *Kalamazoo Gazette*. "Microsoft really locked their box tight, and all it did was make me want to get into it more."

As a student completing his Ph.D. in electrical engineering at Massachusetts Institute of Technology's Artificial Intelligence Laboratory, Huang became infamous as the first hardware hacker of the Xbox video game system. His subsequent book, *Hacking the Xbox: An Introduction to Reverse Engineering*, became a controversial guidebook for the modchip (short for modification chip) movement.

The inspiration to dissect an Xbox came after Huang's Ph.D. adviser, Tom Knight, suggested his students research gaming consoles as "high-performance but low-cost" systems. What Huang discovered when he opened the Xbox's case was a device being marketed as a single-purpose machine for playing video games, but it

was actually a powerful personal computer with a large hard drive and RAM, a fast processor and built-in broadband internet capabilities. The only difference from the PC was that most of the Xbox's features were locked down.

In an MIT lab, Huang removed chips from an Xbox motherboard and extracted their contents. Using his knowledge as an electrical engineer, he mapped how information was being exchanged on the motherboard between various components and figured out how to subvert the process.

The most significant item in Huang's hacked Xbox is a custom modchip attached to the motherboard. This chip "eavesdrops" on communication between various components on the motherboard and is activated by flipping a switch glued nearby. "Activating the \$50 chip allowed people to unlock the full potential of the Xbox as a media center: to watch films, browse the web, listen to music," said Kristen Gallerneaux, curator of communications and information technology at The Henry Ford. "Using an adapter, he also modified the joystick port to communicate with a keyboard, and, with a little work, he found that you could switch the operating system to program in Linux."

### DID YOU KNOW?

Andrew Huang's Xbox project exposed security issues with the gaming system. The NVIDIA chip inside the Xbox later became the subject of a securities lawsuit in which Huang's findings were used as an exhibit.

- ▶ The HyperTransport tap board visible in this photograph is the custom modchip at the heart of Bunnie Huang's Xbox project. The flip switch to the right is used to activate the chip and bypass Xbox security.

FROM THE HENRY FORD ARCHIVE OF AMERICAN INNOVATION









# 2019 Events

Celebrate.  
Play.  
Imagine.

## STAR TREK: EXPLORING NEW WORLDS

MAY 11-SEPTEMBER 2  
Henry Ford Museum of American Innovation

The first episode of *Star Trek: The Original Series* aired on September 8, 1966. Now, more than 50 years later, TV viewers and moviegoers' obsession with the space odyssey is no less intense.

This summer, *Star Trek: Exploring New Worlds* comes to Henry Ford Museum of American Innovation. A celebration of the *Star Trek* phenomenon, this exhibition showcases the enduring impact the show and subsequent movies and spinoffs have had on our culture, from arts and sports to technology and fashion. It also gives an insightful look into how the original series, filmed during a time of social unrest in the 1960s, boldly tackled boundary-breaking topics, such as interracial relationships, featuring a cast of culturally and ethnically diverse actors.

In total, the exhibition features more than 100 artifacts and props from the *Star Trek* TV series, spinoffs and films. Included is the rarely

seen navigation console of Captain Kirk from the original series; a host of costumes worn by characters Kirk, Spock, Uhura and Dr. McCoy; and a 6-foot *U.S.S. Enterprise* filming model from *Star Trek: The Next Generation*.

Interactive elements include the Khan Booth, where visitors can record their own version of the memorable scene from *Star Trek II: The Wrath of Khan*, and the Transporter Room, where guests can act out being transported to an alien planet.

For hard-core fans, there is also Citizens of the Galaxy, where you can listen to clips and interviews from people whose lives have been influenced, changed or even saved by *Star Trek*.

The exhibition is an exclusive look at how a pop culture entertainment icon can inspire people to imagine, create and explore the final frontier and beyond.



**FREE  
TO MEMBERS**

*Star Trek: Exploring New Worlds* is free to members or with museum admission.

**ONLINE** To learn more, visit  
[thf.org/startrek](http://thf.org/startrek) ►

CLOCKWISE FROM TOP LEFT: KHAN COSTUME FROM *STAR TREK: INTO DARKNESS*; UHURA UNIFORM; KLINGON BATTLE CRUISER; GEORDI LA FORGE VISOR FROM *STAR TREK: THE NEXT GENERATION*; KLINGON P.A.D.D. FROM *STAR TREK GENERATIONS*; KLINGON WEAPONS AND KLINGON BATTLE CRUISER

KHAN COSTUME COURTESY OF THE PARAMOUNT PICTURES ARCHIVE; GEORDI LA FORGE VISOR AND KLINGON P.A.D.D. COURTESY OF THE PAUL G. ALLEN FAMILY FOUNDATION; KHAN COSTUME AND VISOR PHOTOS BY BRADY HARVEY



PRESENTED BY

**MoPOP**  
MUSEUM OF  
POP CULTURE

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# 2019 Events

## YEAR-ROUND

### PNC Tinkering for Tots Preschool Program

Second Monday of each month,  
10 a.m.-noon  
November-April:  
Museum  
May-October: Village

### Throwback Thursday Nights\*

Select Thursdays,  
7 p.m. (Museum)  
Giant Screen Experience  
thf.org/tbt

### Make Something: Saturdays

September-May,  
10 a.m.-3 p.m.  
Museum  
Presented by Macy's

## JANUARY

### MLK Day

January 21  
Museum  
Admission fee and activities courtesy of The Henry Ford

### Member Appreciation Days

January 25-27  
The Henry Ford

## FEBRUARY

### Celebrate Black History

February 1-3, 6-10, 13-17 and 20-24  
Museum  
Presented by Ford Motor Company Fund

### National Engineers Week Celebration

February 16-23  
Museum/Giant Screen Experience/Ford Rouge Factory Tour

### William Davidson Initiative for Entrepreneurship Speaker Series\*

Lauren Bush Lauren  
February 21 (Museum)

## APRIL

### Greenfield Village Member Preview

April 12  
Village

### Greenfield Village opens

April 13  
Village

### Member Appreciation Days

April 19-21  
The Henry Ford

### Michigan Invention Convention

April 27  
Museum

### Day Out With Thomas™

April 27-28  
Village  
Locally presented by Meijer



**Towers of Tomorrow with LEGO® Bricks**  
October 12, 2019 - January 5, 2020

### Railroader's Breakfast\*

April 27-28  
Village

## MAY

### Outdoor Living Lab Tour\*

May 1-September 28  
Ford Rouge Factory Tour

### Sensory-Friendly Saturday\*

May 4  
Village

### Day Out With Thomas™

May 4-5 and 11-12  
Village  
Locally presented by Meijer

### Railroader's Breakfast\*

May 4-5 and 11-12  
Village

### Star Trek™ Exploring New Worlds Member Preview

May 10  
Museum

### Star Trek™ Exploring New Worlds

May 11-September 2  
Museum

### Artist in Residence

Albert Young  
May 14-18  
Village

### Civil War Remembrance

May 25-27 (Open Saturday 'til 9 p.m.)  
Village

### National Invention Convention and Entrepreneurship Expo

May 30-31  
Museum

## JUNE

### Star Trek™ Exploring New Worlds

Running through September 2  
Museum

### Artist in Residence

Robin Cass  
June 4-8  
Village

### Historic Base Ball Games

June 8-9, 15-16 and 22-23  
Village

Historic Base Ball in Greenfield Village is made possible through the generous support of Cynthia and Edsel B. Ford II

### Motor Muster

June 15-16 (Open Saturday 'til 9 p.m.)  
Village

### Sensory-Friendly Saturday

June 22  
Museum

### Summer Camp\*

June 24-28  
The Henry Ford

## SEE SUPERPOWER DOGS

**ONLINE** To learn more, visit [superpowerdogs.com](http://superpowerdogs.com) ►

Meet Halo, Henry, Reef, Ricochet and a host of other amazing pups in the film *Superpower Dogs*. Opening in March at The Henry Ford's Giant Screen Experience, this immersive adventure shares the true inspiring stories of some remarkable four-legged superheroes who save lives and share special bonds with their human partners. From an elite disaster response trainee and an avalanche rescue expert to a lifeguard and a surfing legend support pet, *Superpower Dogs* explores the incredible abilities of dogs and the science behind their superpowers.



**COMING THIS SUMMER: Apollo 11: First Steps and In Saturn's Rings**

HENRY ATOP SNOW-CAPPED MOUNTAIN WEARING GOGGLES © 2018 PHIL TIFO FOR COSMIC PICTURE

# FREE

## ADMISSION FOR MEMBERS

to all traditional (educational or documentary) films at The Henry Ford's Giant Screen Experience.

STAY CONNECTED WITH THE HENRY FORD. ▶



thf.org

### JULY

#### Star Trek:™ Exploring New Worlds

Running through September 2 Museum

#### Annual Salute to America\*

July 3-6 ( Village

#### Summer Camp\*

July 8-12, 15-19, 22-26 and 29-August 2 The Henry Ford

#### Historic Base Ball Games

July 13-14, 20-21 and 27-28 Village

#### Maker Faire® Detroit\*

July 27-28 ( Open Saturday and Sunday 'til 6 p.m.) The Henry Ford

In collaboration with Maker Media

### AUGUST

#### Star Trek:™ Exploring New Worlds

Running through September 2 Museum

#### Summer Camp\*

July 29-August 2 and August 5-9 The Henry Ford

#### Historic Base Ball Games

August 3-4 and 17-18 Village

#### World Tournament of Historic Base Ball®

August 10-11 Village

Historic Base Ball in Greenfield Village is made possible through the generous support of Cynthia and Edsel B. Ford II

#### Member Appreciation Days

August 23-25 The Henry Ford

### SEPTEMBER

#### Star Trek:™ Exploring New Worlds

Running through September 2 Museum

#### 69th Annual Old Car Festival

September 7-8 (Open Saturday 'til 9 p.m.) ( Village

#### Fall Flavor Weekends

September 28-29 Village

#### Farmers Market

September 28 Village

#### OCTOBER Manufacturing Day

October 4 Ford Rouge Factory Tour

#### Fall Flavor Weekends

October 5-6 Village

#### Farmers Market

October 5 Village

#### Towers of Tomorrow with LEGO® Bricks

Member Preview October 11 Museum

#### Towers of Tomorrow with LEGO® Bricks

October 12, 2019-January 5, 2020 Museum

#### Hallowe'en in Greenfield Village\*

October 11-13, 17-20 and 24-27 ( Village Presented by Meijer

#### Eagle Tavern Harvest Supper\*

October 11-12, 18-19 and 25-26 ( Village

#### Hallowe'en Fairy-Tale Feast Package at A Taste of History\*

October 11-13, 17-20 and 24-27 ( Village

### NOVEMBER

#### Towers of Tomorrow with LEGO® Bricks

Running through January 5, 2020 Museum

#### Sensory-Friendly Saturday

November 23 Museum

#### Member Appreciation Days

November 23-25 The Henry Ford

#### Members Annual Holiday Lighting Ceremony\*

November 25 ( Museum

#### Visits with Santa

November 29-December 24 Museum

### DECEMBER

#### Towers of Tomorrow with LEGO® Bricks

Running through January 5, 2020 Museum

#### Visits with Santa

Running through December 24 Museum

#### Holiday Nights in Greenfield Village\*

December 5-8, 12-15, 17-23 and 26-28 ( Village

#### Holiday Nights Dinner Package at Eagle Tavern\*

December 5-8, 12-15, 17-23 and 26-28 ( Village

#### Holiday Nights Happy Hour at the Pavilion\*

December 5-8, 12-15, 17-23 and 26-28 ( Village

#### Holiday Nights Supper with Santa Package at A Taste of History\*

December 5-8, 12-15, 17-23 and 26-28 ( Village

### 2019 HOURS

#### Henry Ford Museum of American Innovation™

Open 7 days a week, 9:30 a.m.-5 p.m.

#### Greenfield Village®

April 12 Open exclusively to members plus guests covered by their membership for Member Preview Day

Open to the public April 13-November 3: 7 days a week, 9:30 a.m.-5 p.m.

November 4-December 1: Open Friday-Sunday, 9:30 a.m.-5 p.m.

December 2-31: Closed; open select evenings in December

#### Giant Screen Experience

Open daily with extended hours

#### Ford Rouge Factory Tour

Open Monday-Saturday, 9:30 a.m.-5 p.m. (Call for bus times and seasonal hours)

#### Benson Ford Research Center®

Reading room open Monday-Friday, 9:30 a.m.-5 p.m.

All attractions closed Thanksgiving and Christmas days

All programs and dates are subject to change

The Henry Ford is an independent nonprofit organization. We depend on ticket purchases, income from our stores and restaurants, and tax-deductible contributions and memberships for support

For the latest updates and more information on special events and programs, call 313.982.6001 or visit thf.org

Sign up for e-newsletter at thf.org/enews

Text JOINTHF to 36898 (Standard message and data rates apply)

\*Additional fee and/or advance reservation required.

( Special evening hours during these events.

# Connect 3

Curators uncover curious connections between artifacts and ideas

## → Accidental Discoveries

How do a 1928 Ford Model A car, a colorful coverlet and a jar of artificial sweetener relate?



### ▲ 1928 FORD MODEL A TOURING CAR

In 1903, chemist Edouard Benedictus accidentally dropped a glass beaker that broke but didn't shatter because it was coated with plastic from a previous project. Suddenly, safety glass was here to stay. It was soon to be used for the windshield of the 1928 Ford Model A.

#### MAKE THE CONNECTION:

The crash of a chemist's coated beaker is what leads to car glass that's much more crash resistant.

### ► COVERLET WOVEN BY WILLIAM NEY

In 1856, chemistry prodigy William Henry Perkin was in a quandary, trying to create a synthetic quinine. Instead, he discovered aniline purple, the first faux dye, which quickly caught weavers' wondering eyes.

#### MAKE THE CONNECTION:

The scientist's search for an antimalarial treatment substitute leads to a plentiful color palette for coverlets and other textile and paper goods.



"A windshield, a coverlet, an artificial sweetener. These objects reveal the power of accidents and observation. Each chemist made a groundbreaking discovery, all because they recognized the vast potential of a mistake."

— Katherine White, associate curator, digital content, The Henry Ford



### ▲ WEIGHT WATCHERS SWEET'NER JAR

While pondering food preservatives in 1878, chemist Constantin Fahlberg spilled a substance on himself that made everything he touched taste sweet. His unintentional spillage was the segue to a sugar substitute.

#### MAKE THE CONNECTION:

The need to save our food from speedy spoilage leads to an artificial answer to nature's sweetener named sugar.

#### WATCH

The *Accidental Discoveries* Connect 3 video authored by Katherine White, associate curator, digital content at The Henry Ford [thf.org/connect3/accidental-discoveries](http://thf.org/connect3/accidental-discoveries) ►



# Driving a **Brighter Future**

Since its founding in 1949, Ford Motor Company Fund has worked to improve people's lives, investing more than \$1.5 billion around the world to support innovative programs in Community Life, Education, Safe Driving and the Ford Volunteer Corps.



Ford Motor Company Fund is proud to partner with the Henry Ford Museum of American Innovation to bring learning and inspiration to life.



[www.community.ford.com](http://www.community.ford.com)  
#fordgivesback @fordfund\_



# TOWERS OF TOMORROW

WITH  
**LEGO®  
BRICKS**

LIMITED-ENGAGEMENT EXHIBIT

**OCTOBER 12, 2019-JANUARY 5, 2020**

**Henry Ford Museum of American Innovation™**

Step into a larger-than-life LEGO® wonderland featuring 20 of the world's most iconic and astonishing skyscrapers. ***Towers of Tomorrow with LEGO® Bricks***, a first-of-its-kind, limited-engagement exhibition, is rising up in Henry Ford Museum of American Innovation.

Let these masterpieces unleash your inspiration, choose from over 200,000 LEGO® bricks to build your own Tower of Tomorrow and contribute to the growing LEGO® metropolis.

**FREE TO MEMBERS OR WITH MUSEUM ADMISSION**

**To learn more, visit [thf.org/LEGO](http://thf.org/LEGO).**

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FORD MOTOR COMPANY FUND

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Ford**®



## VACATION PACKAGES

The Henry Ford offers affordable packages through several lodging partners that meet a variety of needs, including full service, limited service, historic charm, B&B style or campground. Pick the partner and package that's right for you at [thf.org/vacations](http://thf.org/vacations).

### DOUBLE PACKAGE

Room and two tickets to two attractions (Henry Ford Museum of American Innovation, Greenfield Village, Ford Rouge Factory Tour)

### FAMILY PACKAGE

Room and four tickets to two attractions (Henry Ford Museum of American Innovation, Greenfield Village, Ford Rouge Factory Tour)

Contact hotel directly for room availability. Packages and pricing vary by hotel.

# STAY, EXPLORE + SAVOR

Ready to plan your visit to The Henry Ford? All you need to know about available lodging options — including hotel names, locations and contact information — is here. When you book with one of The Henry Ford's official lodging partners, be sure to ask about available double and family vacation packages, which include attraction tickets and overnight accommodations. **Packages start at under \$137.**

Don't wait, book your date with America today at [thf.org/vacations](http://thf.org/vacations)

## CONTACT CENTER:

**313.982.6001**

Save time: order tickets online at [thf.org](http://thf.org). Discount tickets available at Meijer. Packages available at [thf.org/vacations](http://thf.org/vacations).

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MEMBER



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bestwesterngreenfield.com

See ad on Page 69



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5801 Southfield Expressway  
Detroit, MI 48228  
313.336.3340  
dearborn.doubletree.com

See ad on Page 75



#### **HOLIDAY INN SOUTHGATE BANQUET & CONFERENCE CENTER**

17201 Northline Road  
Southgate, MI 48195  
734.283.4400  
hisouthgate.com

See ad on Page 77

### LIMITED SERVICE



#### **COMFORT INN & SUITES - ALLEN PARK**

3600 Enterprise Drive  
Allen Park, MI 48101  
313.323.3500  
choicehotels.com/mi463

See ad on Page 79



#### **COMFORT INN & SUITES - DEARBORN**

20061 Michigan Avenue  
Dearborn, MI 48124  
313.436.9600  
choicehotels.com/  
michigan/dearborn/  
comfort-inn-hotels/mi385

See ad on Page 70



#### **COMFORT INN & SUITES - TAYLOR**

6778 S. Telegraph Road  
Taylor, MI 48180  
313.292.6730  
choicehotels.com/  
michigan/taylor/  
comfort-inn-hotels/mi189

See ad on Page 69



#### **COUNTRY INN & SUITES - DEARBORN**

24555 Michigan Avenue  
Dearborn, MI 48124  
313.562.8900  
countryinns.com/  
dearbornmi

See ad on Page 70



#### **HAMPTON INN - DETROIT/DEARBORN**

22324 Michigan Avenue  
Dearborn, MI 48124  
313.562.0000  
detroitdearborn.  
hamptoninn.com

See ad on Page 71

### HISTORIC



#### **THE DEARBORN INN, A MARRIOTT HOTEL**

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HOTEL		LOCATION AREA	DRIVE TIME*	SLEEPING ROOMS	POOL	PETS	MEETING ROOMS	MEETING SPACE (sq. ft.)	AD ON PAGE
FULL SERVICE	Best Western Greenfield Inn	Dearborn (I-94 corridor)	10	209	Indoor	•	4	1,047	69
	DoubleTree by Hilton Detroit-Dearborn	Dearborn	10	347	Indoor		16	12,000	75
	Holiday Inn Southgate Banquet & Conference Center	Downriver (I-75 corridor)	15	160	Indoor		8	9,000	77
	The Henry, an Autograph Collection by Marriott	Dearborn	5	323	Indoor	• \$	14	26,000	72
	Detroit Metro Airport Marriott	Airport (I-94)	15	249	Indoor		11	6,600	71
HISTORIC	The Dearborn Inn, a Marriott Hotel	Dearborn	3	229	Outdoor		17	17,000	79
LIMITED SERVICE	Comfort Inn & Suites - Allen Park	Dearborn (I-94 corridor)	10	163	Indoor		2 (15 each)		79
	Comfort Inn & Suites - Dearborn	Dearborn	4	116	Indoor		1	250	70
	Comfort Inn & Suites - Taylor	Dearborn (I-94 corridor)	10	78	Indoor		1 (15)		69
	Comfort Suites - Southgate	Downriver (I-75 corridor)	15	78	Indoor		1 (50)		77
	Country Inn & Suites - Dearborn	Dearborn	7	100	Indoor	•	1 (55)		70
	Courtyard by Marriott - Detroit Dearborn	Dearborn	10	147	Indoor		2	1,274	72
	Hampton Inn - Detroit/Dearborn	Dearborn	3	96	Indoor		0		71
	Hampton Inn & Suites - Allen Park	Dearborn (I-94 corridor)	10	101	Indoor		1	650	
	Holiday Inn Express & Suites - Allen Park	Dearborn (I-94 corridor)	10	106	Indoor		1	300	
	Holiday Inn Express & Suites - Southgate	Downriver (I-75 corridor)	15	114	Indoor		1	400	77
	Marriott TownePlace Suites - Dearborn	Dearborn	9	148	Outdoor	• \$	0		78
	Red Roof Inn - Detroit-Dearborn	Dearborn	7	111		•	0		71
	Staybridge Suites - Dearborn	Dearborn	7	99	Indoor	• \$	1 (35)		71
BED & BREAKFAST	York House Bed & Breakfast	Dearborn	10	3			0		78
CAMPING	Camp Dearborn	NW Oakland County	45	191	Outdoor		0		78
	Detroit Greenfield Campground/RV Park	I-94 corridor	20	212	On lake	•	Outdoor pavilion	600	78

\*Drive time in minutes to The Henry Ford.



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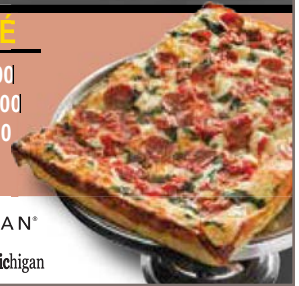
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# A LOOK BACK

## HEINZ TOMATO KETCHUP BOTTLE



Henry J. Heinz had a “recipe” for success. From humble beginnings bottling horseradish in his family’s basement, Heinz went on to revolutionize the concept of prepared foods and brand-name packaging. What accounted for the success of this entrepreneurial genius?

**He knew how to one-up the competition.**

Unlike all the others, Heinz used clear glass bottles to deliver on his products’ promise of quality and purity.

**He was persuasive.**

Heinz convinced housewives that his products saved them time and labor.

**He had vision.**

Ahead of his time, Heinz created a global market for his products.

**He was innovative.**

Heinz introduced wildly inventive promotions, from the pickle pin and the “57 Varieties” slogan to the Heinz Ocean Pier in Atlantic City, New Jersey.

**He understood the power of presentation.**

Heinz introduced eye-catching packaging, labels and point-of-purchase displays to retail stores.

**He actively engaged the consumer.**

Heinz promoted public tours of his model factory.



**DID YOU KNOW? /**

Henry J. Heinz moved his family’s Sharpsburg, Pennsylvania, house by barge to his company’s Pittsburgh factory in 1904. The house, where Heinz bottled his first product, was relocated to Greenfield Village in 1954 and currently features an exhibit on the H.J. Heinz Company’s innovative business practices and marketing techniques. Heinz House is located in Greenfield Village’s Main Street District.

**WATCH**

The Henry Ford’s Marc Greuther talk all things Heinz with Mo Rocca on *The Henry Ford’s Innovation Nation* [thf.org/innovation-nation/nano-clothes](http://thf.org/innovation-nation/nano-clothes) ►

HEINZ TOMATO KETCHUP BOTTLE,  
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**G E N E R A L   M O T O R S**

2018 Chevrolet Bolt AV Concept shown.

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GERMAN GRAND PRIX 1973

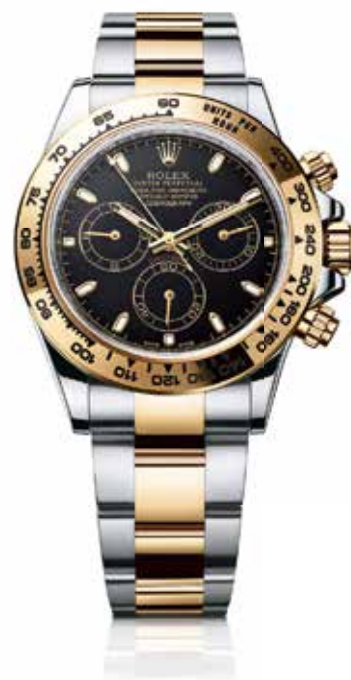


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