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EJ|USA

Goal!

food. fitness. fandom.

IN THIS ISSUE: SOCCER NATION | MOON COMPETITION | GOING CAR-FREE | MAKERS MOVEMENT

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EJ|USA

Outdoor Outreach works with underprivileged kids in San Diego. It takes one person to step in and make a difference.

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Goal!

food. fitness. fandom.

fandom | the realm of avid enthusiasts

SOURCE: ONLINE ETYMOLOGY DICTIONARY, DOUGLAS HARPER

FEATURE

5 **THE PICTURE OF HEALTH**
Fit for Life ▧ Fighting Obesity ▧ Survival of the Fittest ▧ Who's Beautiful?

Departments

3 **SNAPSHOTS OF AMERICA**
Reading Habits | Good to Be Home Again? | Secondary School, College Completion Rates Climb | A Town Called Santa Claus

4 **COMMUNITIES**
Cruise Control

14 **ARTS**
Roaming Mars with a Writer

16 **PEACE & SECURITY**
From Victim to Activist

18 **MARKETPLACE**
Just Make It!

LEISURE
21 For Girls or Boys?
22 Soccer Nation

24 **EDUCATION**
Music Schools Attract International Talent

26 **SCIENCE**
2015: A Moon Odyssey

28 **SCOTT PACE: LAST WORD**
Taking Business to the Moon and Beyond

29 **RESOURCES**
All About English
Connecting the Dots

"We take at-risk youth ..." said Chris Rutgers, "and put them in incredible outdoor settings."

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Step It Up

We on the *EJ|USA* staff don't complain, but we do find ourselves "stress eating." When deadlines loom or design problems threaten, bags of candy appear on desks and meeting tables.

In reporting this issue, we had to think about our daily habits — like office workers everywhere, we are too sedentary. We often use databases to do research, rather than old-fashioned "shoe-leather reporting. " We send text messages instead of walking across the street to have a conversation. These tools help us do our work, but they also make us lazy.

I exercise most days before work, but research shows that is not enough. We need to step it up. Obesity rates are high, and U.S. health experts worry about hypertension, diabetes and cancer.

I'm asking my boss for a step increase. Federal workers call their regular pay raises "step increases," but this request is for a "treadmill desk," as described in the article by Christopher Connell titled "Fighting Obesity. " I hope to report soon that I am working and walking at the same time.

In these pages, you'll find other ways Americans are confronting health problems and boosting fitness, plus reports on trends, such as a move by teenagers away from driving and an increase in soccer fandom in this country. Our editors explore commercial plans to go to the moon and a sci-fi writer's view of photos from Mars. Turn the page. And when you're done reading, take a walk.

– Elizabeth Kelleher

HEADSHOT: RAFAEL SUANES

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Reading Habits

A recent report reveals that U.S. teenagers read more books in all formats (print, audio, e-books) than Americans in all other age groups.

Pew Internet's *Younger Americans' Library Habits and Expectations* examined how younger Americans approach reading, libraries and technology, and concluded that the under-30 age group remains anchored in the digital age, but retains a strong relationship with print media and libraries.

From December 2011 to November 2012, the reading of e-books among 16- to 17-year-olds more than doubled, from 13 percent to 28 percent. For print books, the older teens are again at the head of the pack — 85 percent said they've read at least one print book in the past year.

Good to Be Home Again?

Young Americans view setting up their own households as the most important step toward independence. But an increasing number of young adults — 36 percent of those aged 18–31 — are living with their parents, up from 32 percent in 2007, according to a study by the Pew Research Center.

Recession-era unemployment has made independent living too expensive for many people, the Pew report says. More people are also attending college, kicking up the percentage of young adults who live at home while studying.

ADAPTED FROM ©ISTOCK/THINKSTOCK

Secondary School, College Completion Rates Climb

Young adults in the United States are completing secondary school, going to college and finishing college at record levels, according to a Pew Research Center analysis of newly available census data. In 2012, for the first time, one-third of the nation's 25- to 29-year-olds completed at least a bachelor's degree.

Ninety percent have finished at least a secondary school education, while 63 percent have completed at least some college. A large majority of American adults (73 percent) agree that a college education is now necessary to get ahead in life.

A Town Called Santa Claus

Over 150 years ago, the residents of Santa Fe, a small town in southern Indiana, couldn't open a post office because another Indiana town had already claimed that name. Faced with choosing a new name for their town, they met in a church to come up with an alternative. According to local legend, a gust of wind blew open the church doors, the congregation heard bells jingling outside and a child exclaimed, "It must be Santa Claus!"

A community elder proposed Santa Claus as the town's name and it stuck. According to the director of the local visitors bureau, the town has the only official post office in the world that shares Santa's name.

Besides the famous post office to which a half-million pieces of mail come every holiday season, the town boasts a Santa Claus museum, a holiday theme park and a 40-ton Santa Claus statue.

Members of the bike share program DecoBike in Miami Beach, Florida.

DECOBIKE

Cruise Control

More Americans Are Waiting to Drive

SUSAN MILLIGAN

American pop-culture history is filled with romantic references to cars. They're celebrated in songs and movies, with young people eager to acquire the symbol of adulthood, freedom and overall coolness. But for increasing numbers of teens and young adults, the automobile today has a different image: one shaped by the high cost of buying it, the hassle of learning to operate it, and the fact that it is just not that important to their social lives.

Is young America done with car culture? Some recent studies suggest that is the case. Teens and 20-somethings are delaying getting driver's licenses, buying fewer cars, and covering fewer kilometers when they do drive.

And the cool factor? It's not what it used to be. The toy of choice is more likely to be the latest version of a smartphone.

"There's been this cultural shift," said Tony Dutzik, analyst at the Boston-based Frontier Group. In an earlier generation, "car culture was a defining thing. Your social status as a young person was defined in part by the kind of car you had. Your level of freedom was defined by your ability to travel. A lot of that is less resonant for the current generation."

Only half of teenagers get a driver's license before turning 18, according to the AAA Foundation for Traffic Safety, whereas closer to 70 percent did a few decades ago.

Young adults are increasingly moving to urban areas, where it is easier to get around without a car, Dutzik said.

"It's more acceptable now, for economic, health or environmental reasons, for people to ride bikes, walk or use public transportation," University of Michigan researcher Brandon Schoettle said.

Colby Reese of Miami Beach, Florida, was 15 when he got his first car — "the first thing I wanted to spend money on." He washed it every day, even though he wasn't old enough to drive it. Now, the 36-year-old Reese is senior marketing director at DecoBike, a company that runs bicycle-share programs in Florida and New York. Such programs allow people to rent a bike at one location and drop it off somewhere else.

In California, where numerous bike-share programs exist, people find that they don't need cars anymore to stay in touch, said Dave Snyder, director of the California Bicycle Coalition. "People crave connection, and as the ability to connect with smartphones and the Internet and Twitter grows, people don't need to get into their cars and go to the local hangout," he said.

That's supported by a Gartner study. The technology research firm finds that 46 percent of people aged 18–24 would choose Internet access over having their own car. ▧

CONNECTING THE DOTS: BOSTON ●; ANN ARBOR ●; MIAMI BEACH ●; WASHINGTON ●

22 percent of 20-somthings answered "**never**" to the state of Michigan's question: **When will you get a driver's license?**

Bike-Shares Take Off

Bike-share programs are in **more than 500 cities in 49 countries**, with a combined fleet of more than 500,000 bicycles.

79 **bike-share programs in China**, leading the world with 351,070 bicycles.

FEATURE

The Picture of Health

It's what we do, what we eat and how we see ourselves.

Outdoor Outreach's after-school adventure club gives underprivileged kids the opportunity to try outdoor sports and learn about good nutrition.

COURTESY OUTDOOR OUTREACH

Fit for Life

TIM NEVILLE

The numbers are scary. Every day, children spend 7 ½ hours in front of a video game or television screen while only a third get any exercise. Americans eat more junk food and fewer vegetables than they should. Since 1970, obesity rates have quadrupled for children and doubled for adults. In short, the President's Council on Fitness, Sports and Nutrition has a big job to do.

Yet the numbers tell only part of the story. Groups across the United States are finding creative ways to boost society's fitness by focusing on underprivileged kids and adults who want to stay healthy but lack the means or knowledge to do it on their own. For millions of Americans, joining a gym and eating organic turkey breast are luxuries they can't afford.

The efforts to combat America's expanding waistline are as diverse as the country is wide. Programs often tackle underlying issues like education, poverty and gangs. In Houston, the Harris County Aquatics Program helps kids get into competitive swimming, acquiring a fitness skill that can last for life. The Home Run Baseball Camp in Washington boosts literacy rates while connecting kids with America's national pastime. Even prison inmates by the hundreds are learning to manage anger, increase strength and flexibility and eat well through yoga, thanks to the Prison Yoga Project at more than 20 facilities.

"A lot of us grew up without a mother or a father, so gangs fill in," said Juan Herrero of San Diego, who escaped a rough street life thanks to Outdoor Outreach, a program that introduces inner-city kids to rock climbing, surfing and hiking. "If I hadn't got into rock climbing, I'd be six feet under. It takes one person to step in and make a difference."

For Herrero, that person was Chris Rutgers, founder of Outdoor Outreach. Rutgers had his own rough childhood but found his way to a healthy existence after discovering skiing while working a minimum-wage job at a Utah resort. "Kids are products of the people they encounter," he said. "We take these at-risk youth who have never left a 10-block radius, surround them with positive role models and put them in these incredible outdoor settings."

For many, the change of scenery is life-altering. Outdoor Outreach offers an after-school adventure club in neighborhoods where kids have little to do and there isn't a place to buy something healthy to eat for miles around — a "food desert," as experts say. These kids meet once a week and plan expeditions such as climbing California's highest peak, 4,421-meter Mount Whitney. They learn about good nutrition and get school tutoring. Once they taste success, the adventure-club kids often keep climbing. More than 95 percent attend college.

"For many people who play, say, football, they do it for a bit and then become couch potatoes for much of their lives," Rutgers said. "Outdoor enthusiasts are healthy … because they do these sports for life."

Anne Mahlum knows all about that. As a lifelong runner, the Philadelphia resident logs upwards of 80 kilometers a week on Pennsylvania roads. One day while running by a shelter, she realized her sport could help the homeless get back on their feet. That's what she named the running club and life-coaching organization she started for homeless people, and now there are Back on My Feet clubs in 11 cities. "Running is just setting a goal and putting one foot in front of the other until you get there," Mahlum said. "Like anything in life, you get better the more you do it."

"Better" in this case means people who smoke less, lose weight and lower their cholesterol. Illnesses fade, so they need fewer medications. Attitudes improve. Confidence soars. About half of these runners find work or a place to live — a success rate four times higher than usual for this type of social work, Mahlum said.

"If you say 'homeless running,' it doesn't really make sense at first," she said. "But think about human nature. We all want to be appreciated, valued, loved and cheered for. Running … provides that over and over again. Once they experience that — that people are actually rooting for them and don't want anything in return — it's life-changing." ▧

"Running is just setting a goal and putting one foot in front of the other until you get there."

- ANNE MAHLUM

FOUNDER OF BACK ON MY FEET

COURTESY BACK ON MY FEET

Running past a homeless shelter inspired Anne Mahlum to action.

CONNECTING THE DOTS: HOUSTON ●; WASHINGTON ●; SAN DIEGO ●; PHILADELPHIA ●

First lady Michelle Obama has made fitness a signature issue. "The novelty of having a person of her profile talking about health and fitness gets attention," said James Levine of the Mayo Clinic.

WHITE HOUSE/SAMANTHA APPLETON

Fighting Obesity

CHRISTOPHER CONNELL

The shift from arduous physical labor on farms and in factories to more sedentary jobs in big cities is often blamed as a prime culprit of increasing obesity in rich and poor countries alike. But some public health experts now believe technology can be part of the solution too.

With obesity rates doubling and even tripling in places around the world, health workers are experimenting with sending timely text messages with eating advice to people's mobile phones and getting them to wear souped-up pedometers that provide instant feedback on calories burned.

In the United States, other reasons for optimism include the expulsion of junk food from school cafeterias and the high-profile "Let's Move" campaign led by first lady Michelle Obama, which has spurred a revival and expansion of physical activity in schools. The Centers for Disease Control and Prevention (CDC) recently reported a drop in obesity among low-income preschool children in many states.

First the Deep Fat Fryers Have to Go

Susan Johnson, nutrition director for the Jackson-Madison County schools in Tennessee, knew fryers were part of secondary school kids' weight problems. Cafeteria cooks baked most dishes, but if they ran short, "it was just too tempting, and the next thing I knew there'd be some fish in that fryer."

So she yanked the fryers out of the school kitchens. (They had already been banished from elementary schools.)

The Jackson schools have won state and national recognition for helping children and teens eat healthier. A "Farm to Tray" program brings food fresh from farms to cafeterias. They even grow their own hydroponic lettuce, cucumbers and tomatoes in a vocational school greenhouse, and teens give nutrition lessons in elementary schools.

"It's amazing to see the little children eating salad because the teenagers told them to," said Johnson.

The schools serve free breakfasts — whole-grain biscuits, turkey-sausage patties, fruit or juice, and milk — to children at their desks each morning because it helps students stay focused on schoolwork all day.

Johnson, school nutritionist of the year in Tennessee and the Southeast United States, said she's seen the obesity epidemic "get worse, and now it's getting better."

Still, the World Health Organization reports that 35 percent of adults in the world — 1.4 billion people — are overweight. A half-billion of them are obese. Obesity is a major cause of deaths from heart disease, stroke, type 2 diabetes and even certain cancers.

Kelly Brownell, dean of Duke University's Sanford School of Public Policy, believes the U.S. has turned the corner and countries such as China and India — where obesity has overtaken hunger as a primary concern — can "catch the problem early if they take it seriously and avoid some of the problems we've had."

"I'm quite optimistic," said Brownell, co-author of *Food Fight: The Inside Story of the Food Industry, America's Obesity Crisis, and What We Can Do About It*. "Things like a soda tax, once considered extremely radical, now are considered routine, and things that once were hard battles, such as getting rid of junk food in schools, are now part of the landscape."

A 2012 report in *The Lancet*, the British medical journal, concludes that communication technology, "especially mobile phones," could do almost as much good as offering exercise classes in communities.

"What looks like our biggest bang for the buck comes from using simple cell phone technology — text messaging — in low- and middle-income countries," said the CDC's Michael Pratt, a physician with a degree in exercise physiology.

Susan Woolford, who runs a pediatric weight management center at the University of Michigan's C.S. Mott Children's Hospital, used to text teens — "Instead of ice cream, try frozen yogurt" — but found that didn't work. "When they see 'ice cream,' that's all they think about," she said. Now the hospital's messages stress only the healthy alternatives, without mentioning hamburgers, fries or ice cream.

Researchers at the Massachusetts Institute of Technology's Media Lab created a personal robot that serves as a diet-and-exercise coach; it will go on the market soon and cost $199. Cynthia Breazeal, in a TED Talk, said it had a bigger influence on healthy eating than getting the same advice from a computer screen. "Robots touch something deeply human within us," she said.

Doctors have long known that exercise is good for the heart: A famous 1953 British study showed the conductors who walked up and down the stairs of London's double-decker buses collecting fares had less coronary disease than the drivers. But people now can get medical information from handheld devices that once required a visit to doctors' offices.

Apple Inc.'s iPhone and other smartphones have built-in accelerometers that measure movement and the intensity of exercise. "You can tell if somebody is walking briskly or uphill," said Abby King, a Stanford University obesity expert who is testing ways to increase activity by sending motivational messages over ordinary mobile phones.

A recent Pew Research Center survey finds that half of smartphone owners use their devices to get health information, and one in five has downloaded a health app. But Yushima Fukuoka, a researcher at the University of California, San Francisco, said many people who download these programs "never open that app again or they just use it a few times."

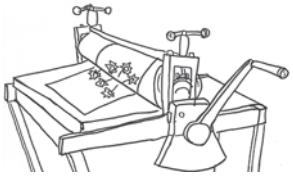
Technology remains a double-edged sword. Marlene Schwartz, director of Yale University's Rudd Center for Food Policy & Obesity, worries about marketers pitching energy drinks and sugary foods reaching children over the Internet via handheld devices.

"Parents can keep television out of a child's bedroom or limit the amount of time the child watches TV, but once your child has a cell phone or other, independent way of getting online, parents really lose control of the situation," she said. ▧

CONNECTING THE DOTS: SAN FRANCISCO ●; JACKSON ●

The Little Things

In weight gain and loss, little things count a lot. Duke University expert Kelly Brownell said there are a myriad of ways in which physical activity has been eroded in people's lives. People used to:



Get paid to exercise. (It was called their job.) Now people have to pay to exercise.

Use a typewriter rather than the computer. Typing burned more calories.

Roll down the windows in their cars. Now people push a button.

Walk across the room to change the TV channel. Now people stay on the sofa and use a remote.

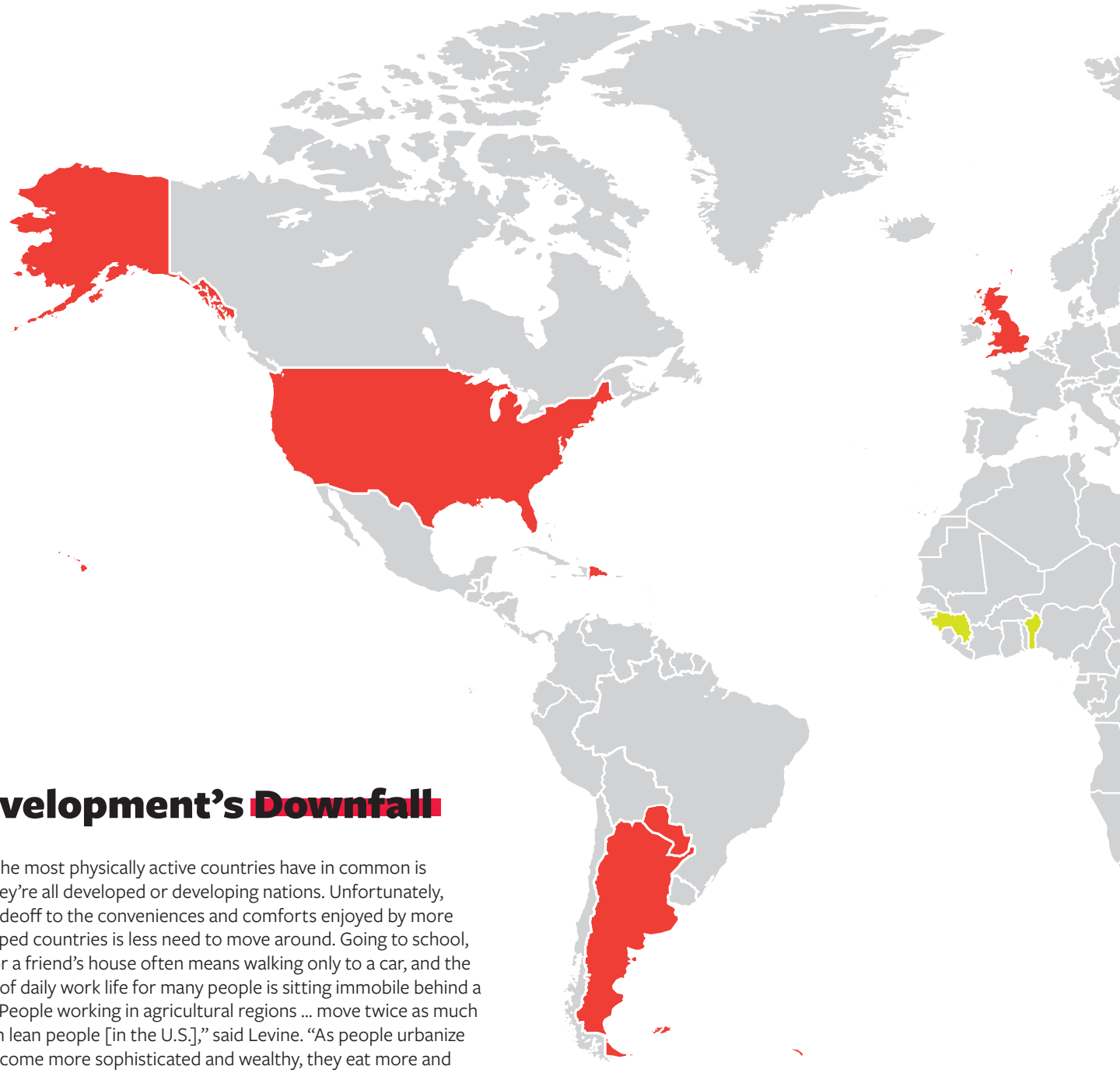
Walk While You Work

James Levine, a Mayo Clinic researcher and professor at Arizona State University, is the champion of the treadmill desk, which allows office dwellers to burn calories by walking at a slow pace while they work on a computer perched on a stand. Levine, author of *Move a Little, Lose a Lot*, stays in constant motion himself as he works, lectures and meets with colleagues. "It really is civilized to walk and talk," he said. Meetings are shorter, more to the point "and no one goes to sleep."

Levine fashioned his first treadmill desk out of a used treadmill and a hospital tray table. Now several big manufacturers compete for the business, and exercise workstations are popping up in corporate and government offices. The once-sedentary can burn 100 calories-plus an hour and walk several miles a day while taking care of office work.

Survival of the Fittest

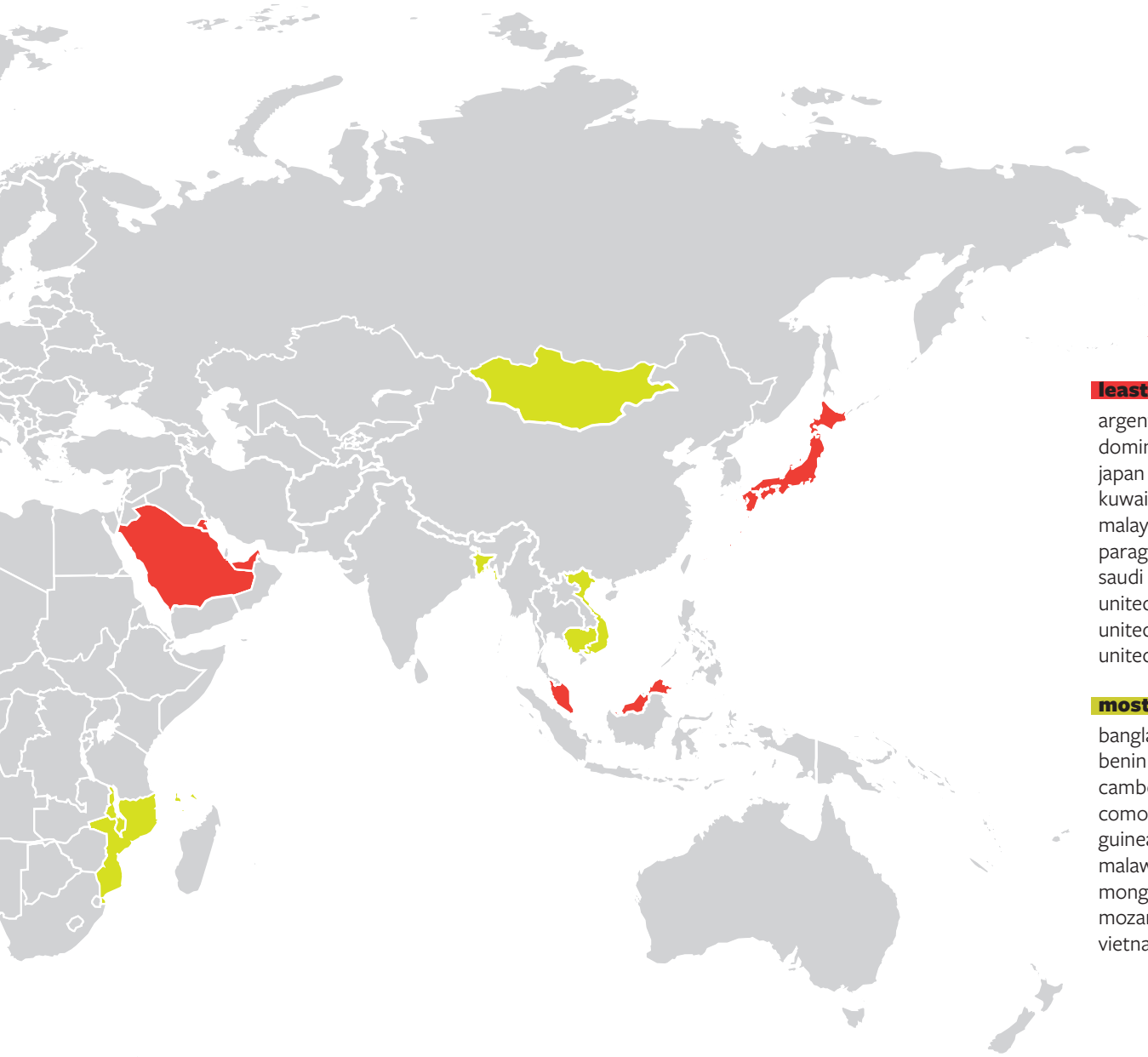
Every year 3.2 million people die from a disease that could easily be avoided by playing sports, riding a bike, dancing or walking. With physical inactivity exacting such a toll, health experts these days are pushing hard for activities that get people moving. This map illustrates the world's least and most physically active countries, according to a 2008 study from the World Health Organization. Obesity expert James Levine of the Mayo Clinic said it shows the global scope of this problem. His take-away message: "Probably 40 to 60 percent of people are too inactive, and it's an international problem."



Development's Downfall

What the most physically active countries have in common is that they're all developed or developing nations. Unfortunately, the tradeoff to the conveniences and comforts enjoyed by more developed countries is less need to move around. Going to school, work or a friend's house often means walking only to a car, and the reality of daily work life for many people is sitting immobile behind a desk. "People working in agricultural regions ... move twice as much as even lean people [in the U.S.]," said Levine. "As people urbanize and become more sophisticated and wealthy, they eat more and more and move less and less, and that combination [leads to] obesity and noncommunicable diseases."

Physical inactivity is the fourth highest risk factor for global mortality.



least fit

argentina
dominican republic
japan
kuwait
malaysia
paraguay
saudi arabia
united arab emirates
united kingdom
united states

most fit

bangladesh
benin
cambodia
comoros
guinea
malawi
mongolia
mozambique
vietnam

Who's Beautiful?

ANDREA ADLEMAN

"We're not trying to protect girls from the problems, but to engage girls to join us in the movement as activists."

- DANA EDELL

EXECUTIVE DIRECTOR, SPARK

The fashion and beauty industries have long taken the lead in telling consumers how to look their best. But recent efforts by groups concerned about the messages those industries send to females are forcing change.

Experts have studied the health consequences of beauty stereotypes, and their findings are startling. "Images and messages women and girls receive are linked to eating disorders, low self-esteem and depression," said Shari Miles-Cohen of the American Psychological Association (APA).

New advocacy groups have formed to combat beauty stereotypes and promote appreciation for females' diverse shapes, sizes and ages, following the 2007 publication of a groundbreaking APA report on the sexualization of girls.

One such group is SPARK, which stands for Sexualization Protest Action Resistance Knowledge. SPARK is a "girl-fueled activist movement" founded in direct response to the APA report. Its core leaders are 31 girls from five countries (Indonesia, Singapore, the United Kingdom, the United States and Canada).

"We're not trying to protect girls from the problems, but to engage girls to join us in the movement as activists," said SPARK Executive Director Dana Edell. "Our mission is to include girls to find the solutions."

In 2012, SPARK staged a splashy protest in the heart of New York City targeting *Seventeen* magazine. Activists wanted the magazine to publish just one spread a month that did not use computer software to retouch the models' appearance. Two months later, *Seventeen* agreed to stop using software to alter pictures of models.

The protest, said Edell, "got people talking about the ways these images really impact girls' lives. The message got out that the quest for perfection is unrealistic and dangerous for girls' sense of self and their physical, mental and emotional well-being."

In a widely viewed TedX talk last year, Columbia University graduate and supermodel Cameron Russell urged girls to set their sights higher than modeling, offering them a raw, insider critique of the industry. Speaking to the hundreds of girls that have approached her with dreams of becoming a model, she emphasized that having "thinner thighs" or "shinier hair" will not necessarily make you happier. Models "are the most physically insecure women … on the planet," she said.

This June, members of the San Francisco-based advocacy group About-Face protested outside a Victoria's Secret store in lingerie to encourage appreciation for diverse body types and sizes.

The impact of efforts to change public opinion is significant, according to About-Face director Jennifer Berger. "The shift has actually been fairly large," said Berger, whose organization was founded in 1995 to help girls reject media stereotypes and develop healthy self-esteem.

The movement toward more realistic portrayals of females in media got a boost from the Dove line of personal care products with the company's Campaign for Real Beauty, which features nonmodels representing different body types.

In its own study of over 1,200 10- to 17-year-olds, Dove found that 72 percent said they felt tremendous pressure to be beautiful. They also found that girls' confidence decreased as they grew older.

Sports, experts say, are a way to help girls realize their full potential. "It sends a different signal when there are girls on the playground running, jumping and playing sports," said Miles-Cohen of APA. "As more and more girls realize they can engage their bodies that way, there's less emphasis on sexualized imagery."

With the attention groups like About-Face and citizens like Cameron Russell have brought to the issue of beauty standards, more Americans are questioning the mainstream image of women they've seen in the media. They're continuing a cultural conversation that's changing minds, policies and practices. ▧

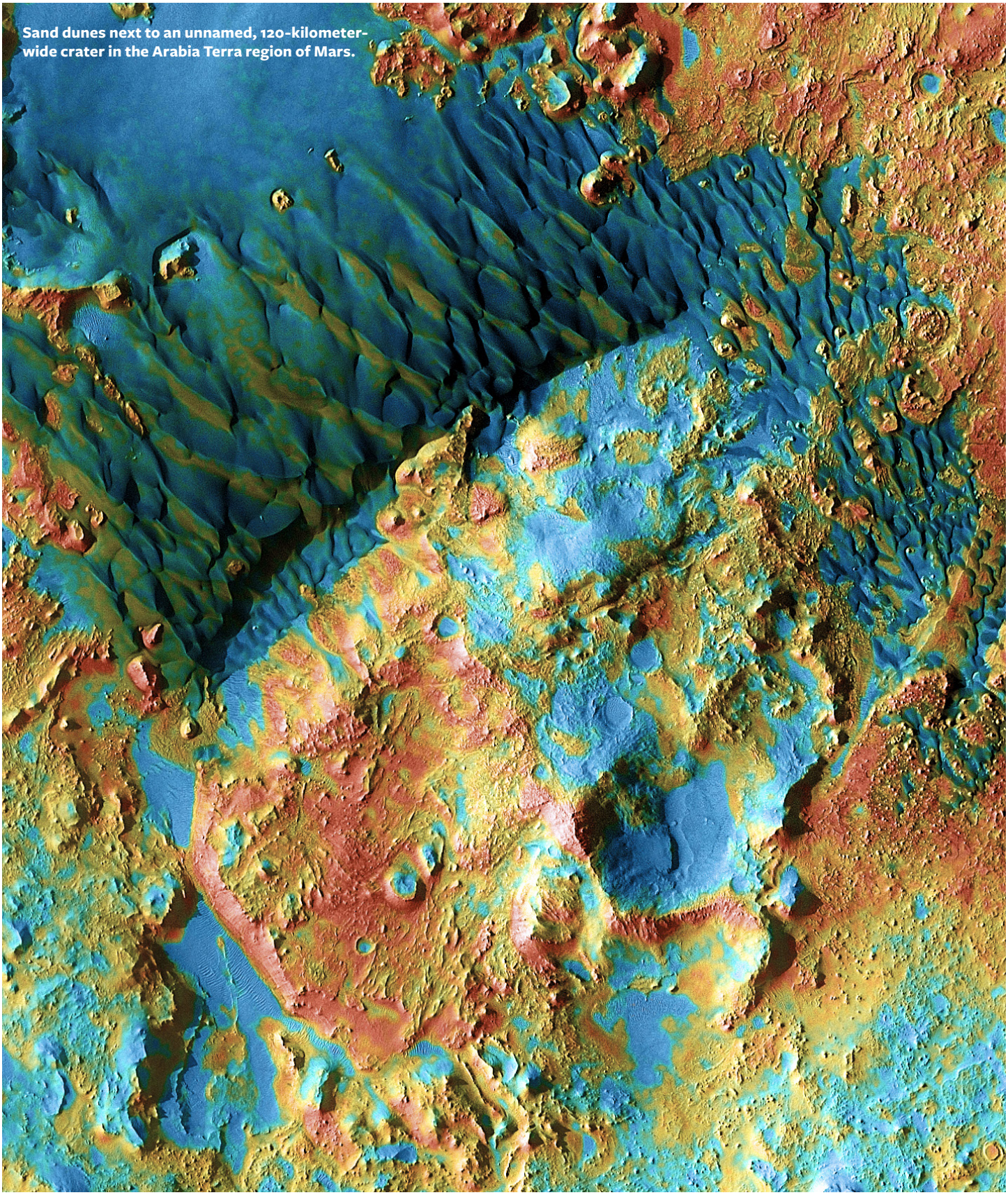
CONNECTING THE DOTS:
NEW YORK ●; SAN FRANCISCO ●

Supermodel Cameron Russell condemns unhealthy representations of girls in the media and encourages girls to pursue higher goals than modeling.

©CHESTER HIGGINS JR/THE NEW YORK TIMES/REDUX

In New York, two teenagers protest the common practice of retouching photos in popular magazines.

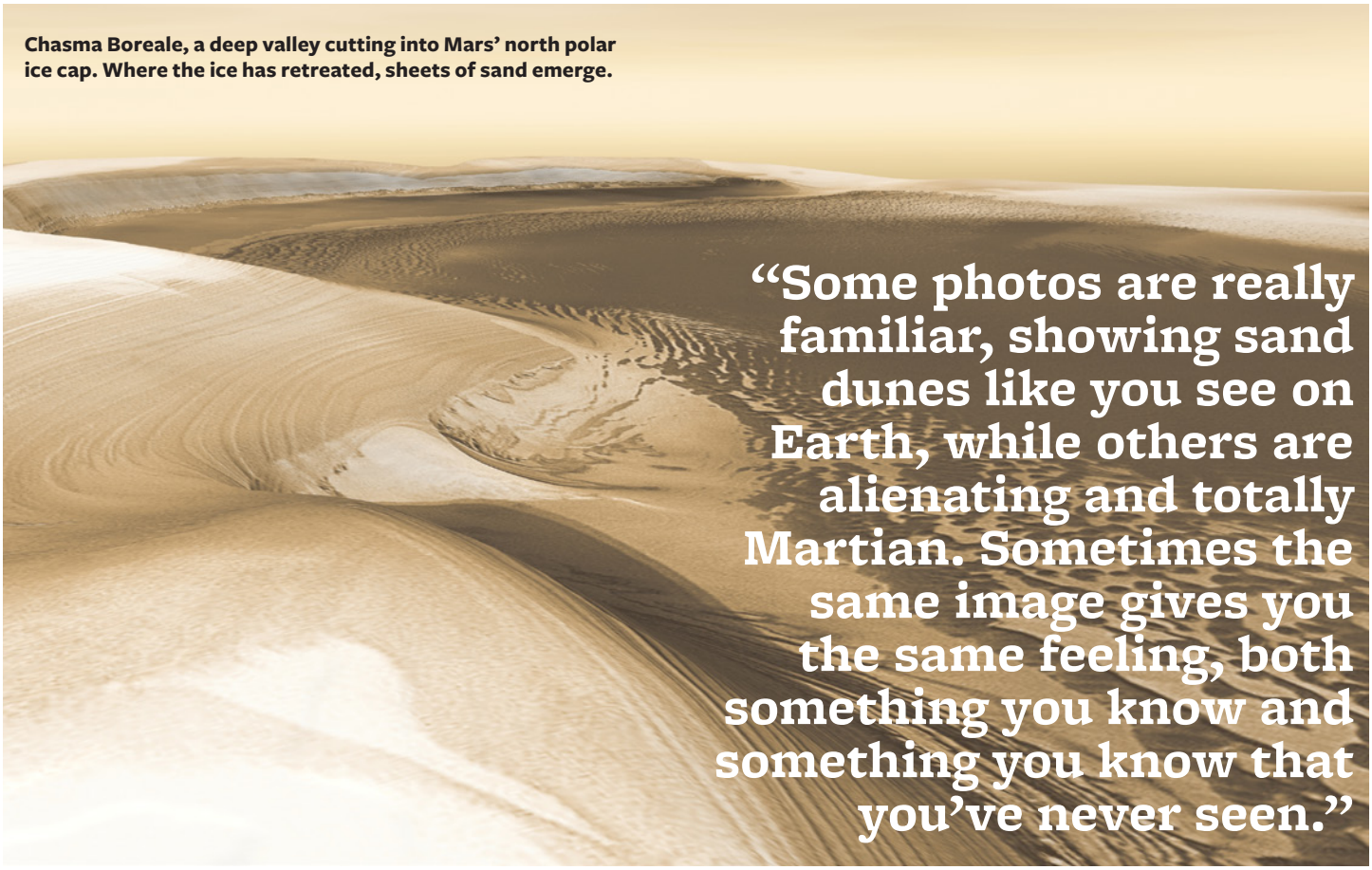
©AP IMAGES



Sand dunes next to an unnamed, 120-kilometer-wide crater in the Arabia Terra region of Mars.

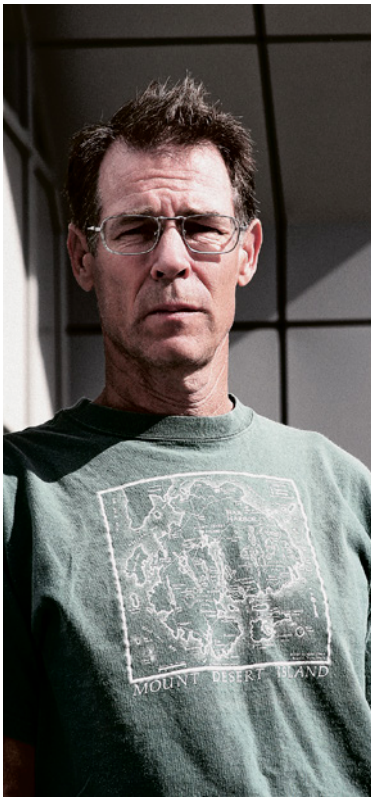
Roaming Mars with a Writer

SASHA INGBER



Chasma Boreale, a deep valley cutting into Mars' north polar ice cap. Where the ice has retreated, sheets of sand emerge.

"Some photos are really familiar, showing sand dunes like you see on Earth, while others are alienating and totally Martian. Sometimes the same image gives you the same feeling, both something you know and something you know that you've never seen."



©NISBET WYLIE/SFX MAGAZINE

Science fiction writer Kim Stanley Robinson knows Mars. He's quick to list five places he would visit — including Olympus Mons (Mount Olympus), the largest volcano in the solar system, and the deep Noctis Labyrinthus (Labyrinth of the Night) — as though they were already tourist attractions.

His fondness for wide, open spaces began in Orange County, California, where he grew up. As a child, he played in the orange groves close to his house. As a teenager, he watched the orange trees being uprooted and groves being paved over to make way for suburban sprawl. The experience left an impression of how quickly one's surroundings can change.

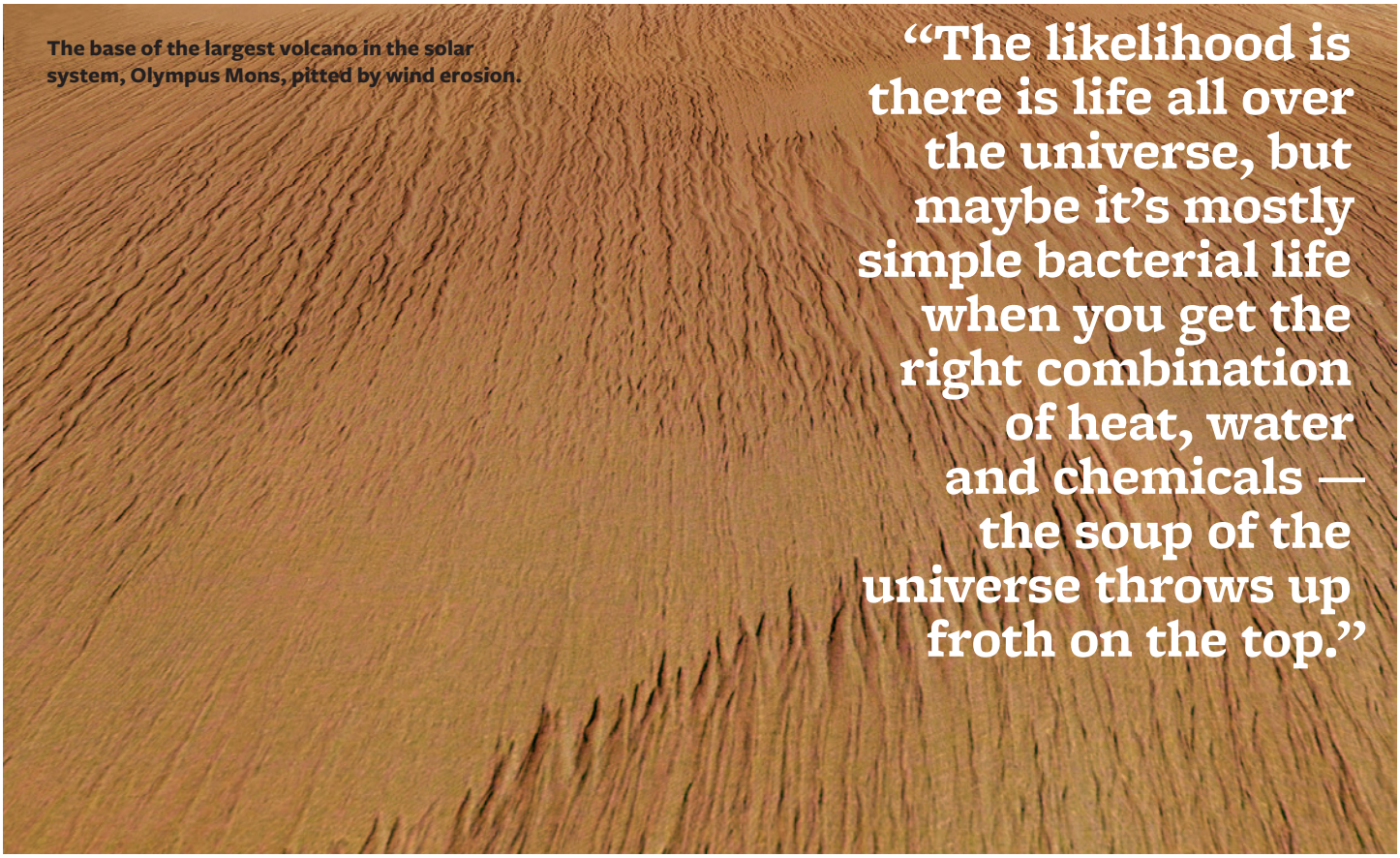
Years later, Robinson saw photos of the red planet from NASA's 1976 Viking mission. They reminded him of another place in California where he had spent his free time, the High Sierra mountain range. "Mars looked like a cool place to go backpacking," he said. "I thought, 'I could write a science fiction story about going there.'"

By the mid-1990s, Robinson had spent hundreds of hours studying the planet through NASA's images and academic publications. After 10 years of writing, he published his Mars trilogy, a 2,000-page series about the colonization of the planet. It has sold more than 2 million copies internationally.

"I wanted to portray a positive future for humanity," said Robinson. The trilogy follows a group of scientists and engineers who transform Mars from a barren planet into an idealistic world. That includes drilling through the planet's crust to release heat, thickening the atmosphere, and improving travel between Mars and Earth with a space elevator.

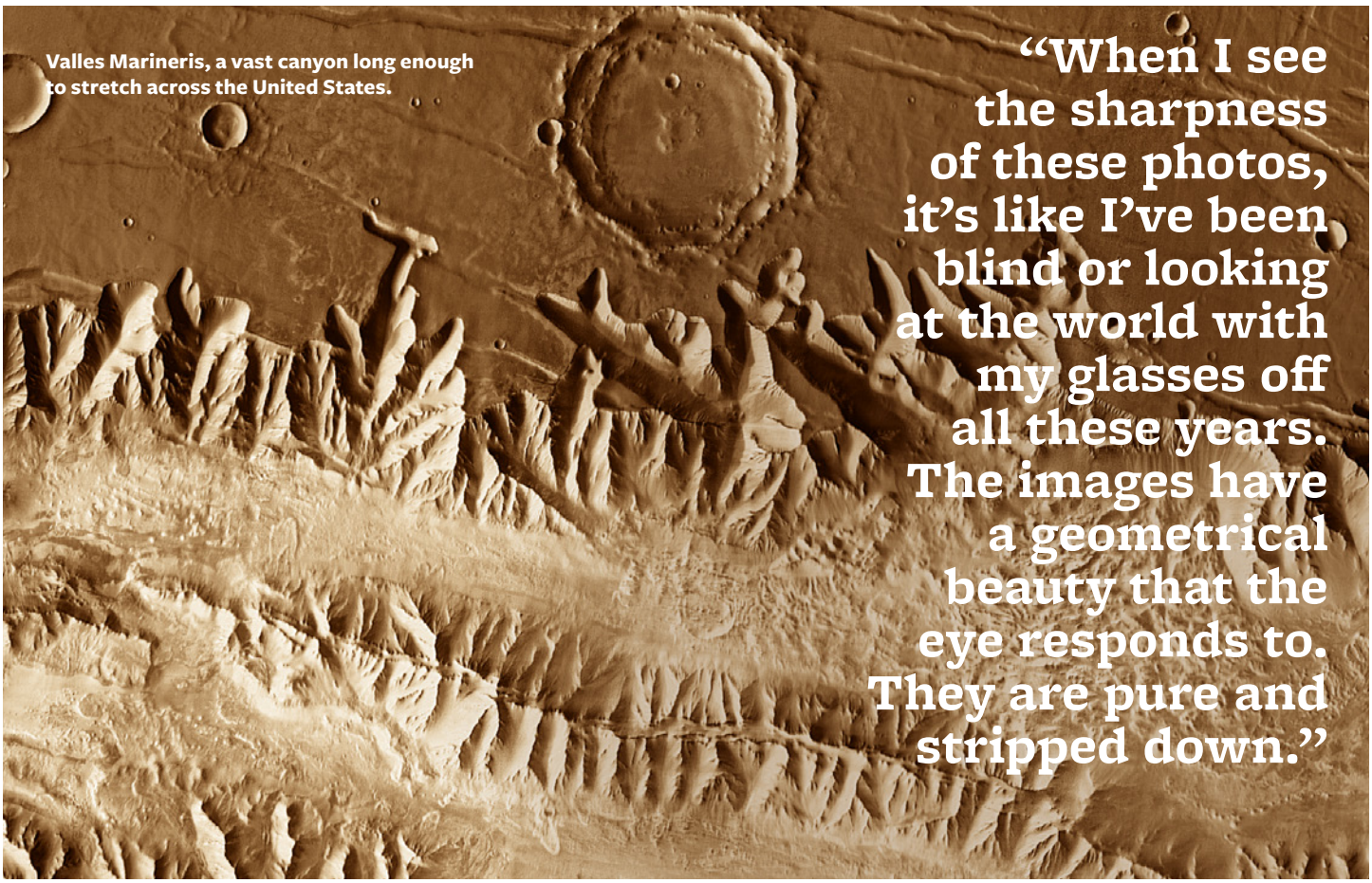
"We have the technological ability, and we can pull together the wisdom to make a decent and exciting civilization," said Robinson. "My Mars books are not about an escape plan but a demonstration of the things we have to do on Earth."

Nearly 20 years and 11 missions later, most of the geographical details in the Mars trilogy are still accurate. As NASA explores Mars and its possibilities for past and present life, Robinson reflects on recent images taken by roaming rovers. ▧



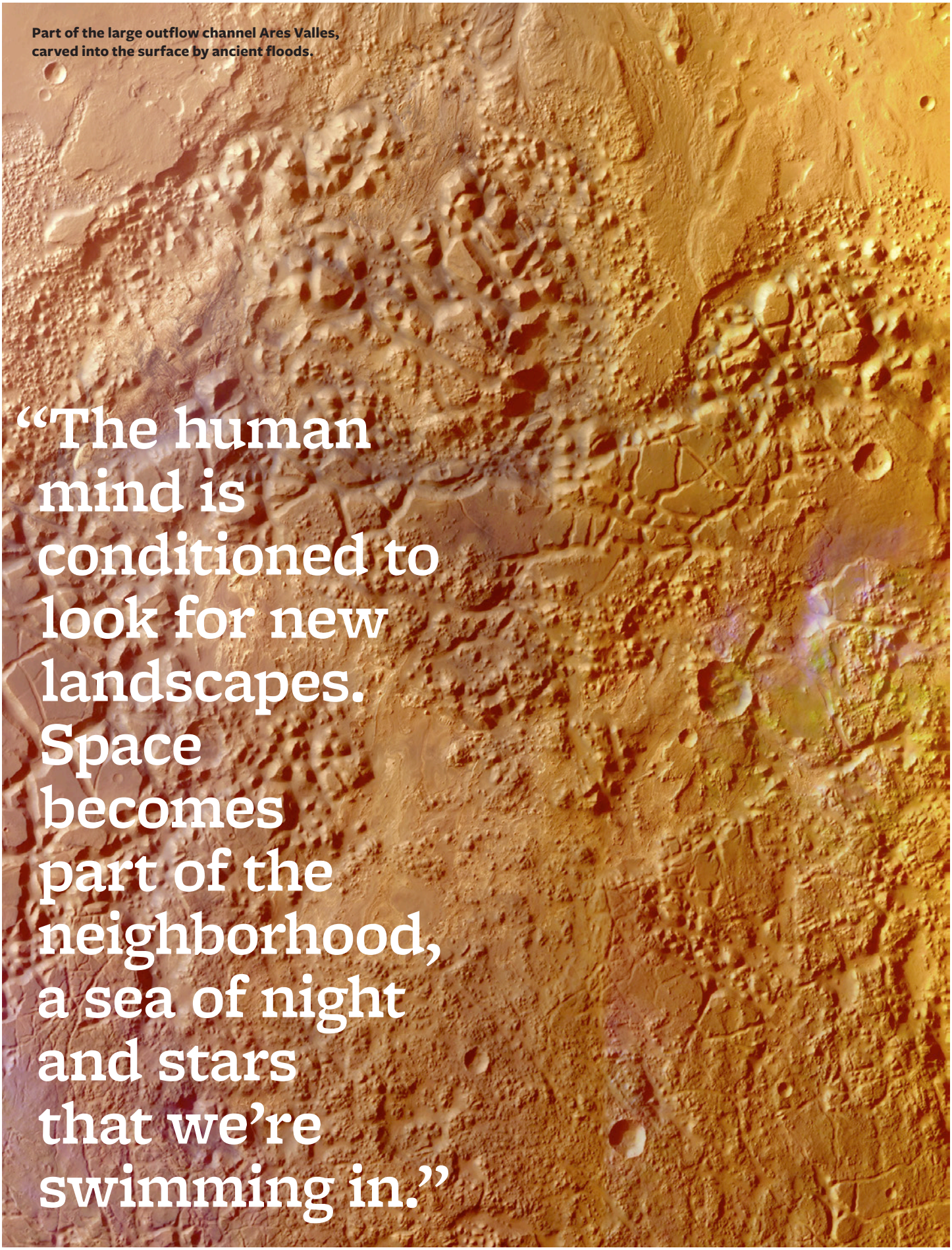
The base of the largest volcano in the solar system, Olympus Mons, pitted by wind erosion.

"The likelihood is there is life all over the universe, but maybe it's mostly simple bacterial life when you get the right combination of heat, water and chemicals — the soup of the universe throws up froth on the top."



Valles Marineris, a vast canyon long enough to stretch across the United States.

"When I see the sharpness of these photos, it's like I've been blind or looking at the world with my glasses off all these years. The images have a geometrical beauty that the eye responds to. They are pure and stripped down."



Part of the large outflow channel Ares Valles, carved into the surface by ancient floods.

“The human mind is conditioned to look for new landscapes. Space becomes part of the neighborhood, a sea of night and stars that we’re swimming in.”

ALL IMAGES ©NASA

Abduction survivor Alicia Kozakiewicz helped pass "Alicia's Law," to boost funding for protecting children, in five states. "Only 45 more to go," she said.

COURTESY ALICIA KOZAKIEWICZ

From Victim to Activist

LAUREN MONSEN

"Be aware that the Internet has become a hunting ground for predators, with you as the prey," Alicia Kozakiewicz tells teenagers.

Kozakiewicz, 24, delivers that message at schools across America. The Internet-safety expert also trains law enforcement personnel and has testified before the U.S. Congress. She runs the nonprofit Alicia Project, which promotes cyber-safety laws. She is also pursuing a master's degree in forensic psychology. Her future looks bright.

But 11 years ago, her future was nearly erased.

In 2002, when she was 13, an online predator lured her from her Pennsylvania home and abducted her to Virginia. The FBI rescued her after four days, when the abductor posted a video of his captive online. He was sent to prison.

Kozakiewicz partners with groups that share her mission and help her advocate for kids everywhere.

Visit!
www.aliciaproject.org

How to Stay Safe

1 "Protect yourself from becoming a victim," said Alicia Kozakiewicz. "Never share private information online, such as your name, address, school, etc., with a person you don't know and trust in real life."

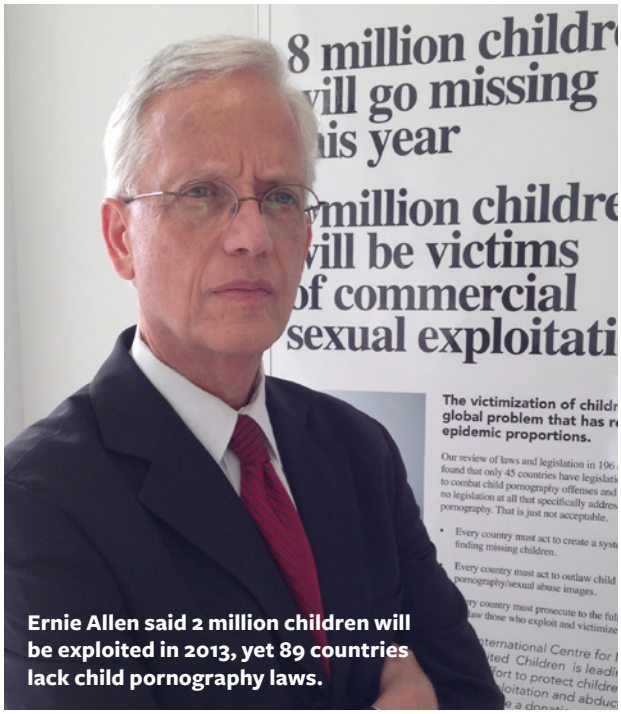
2 "Choose your [online] handle, username or screen name carefully, as much can be derived from it, prompting a predator to initiate contact with you."

3 "Disable geotagging on your mobile devices. It has the ability to pinpoint and disclose your location."

4 "Counseling is crucial to survivors, as it allows a safe place to share what was endured — at the individual's own pace. Survivors must be given time to heal."

5 "The severe-trauma survivor is likely to experience post-traumatic stress disorder (PTSD) and to suffer from flashbacks, which may be triggered without warning. At times, it may seem like 50 steps forward and 100 steps back. That's okay."

6 "Most helpful in my recovery was the support structure provided by my family, who not only provided unconditional love but also guided my steps as I created a new life for myself. Additionally, an outlet for me was sharing my story in an effort to help keep other children safe." ▧



Ernie Allen said 2 million children will be exploited in 2013, yet 89 countries lack child pornography laws.

COURTESY ICMEC

8 million

children are estimated to be missing globally.

SOURCE: INTERNATIONAL CENTRE FOR MISSING AND EXPLOITED CHILDREN

Saving Kids from Predators

One group that Alicia Kozakiewicz (see opposite page) partners with is the International Centre for Missing and Exploited Children, launched in 1998 by Ernie Allen, who had earlier co-founded and run a center that focuses solely on U.S. children.

The international center — based in Alexandria, Virginia — works with governments worldwide to combat child abduction, exploitation and sex trafficking.

It also grapples with the issue of parental child abduction across international borders, which typically occurs during custody disputes.

"We've trained police in 121 countries," Allen said. "We're building a Global Missing Children's Network, and 22 countries participate — the most recent members are Russia and Belarus. We're the network's hub."

Thanks to the international center, many practices are spreading. There's a hotline number, managed by nonprofit groups in each participating European country, to report missing children (116-000). "Hotlines in each country use the same number, and each country's operators respond in the local language," Allen said.

Child-abduction alerts are used in 17 other countries, including Australia, Malaysia, the Netherlands and South Korea. The Global Missing Children's Network has created a multilingual database on missing children, much like the FBI's U.S. database.

One hundred countries have enacted changes since the center began reporting annually in 2006 on countries' progress against child pornography.

"We're finding advocates for children in every country we work with," Allen said. "We give them tools. Training produces a cadre of expert judges, prosecutors, law enforcement."

The unregulated, virtual economy of the Internet poses new problems.

Pornographers peddle photos online of children being sexually abused. "These are crime-scene photos. Each time an image is shared online, a child is victimized all over again. It's not enough to prosecute people who have these photos; we have to get Internet servers to take these photos down," Allen said.

"The challenge is how to maximize Internet freedom while implementing reasonable measures to protect children."

Child trafficking is also moving to cyberspace. Where underage victims were once visible on streets, and more easily rescued, predators now hide them indoors and sell them to customers who pay online.

These crimes "take a tremendous toll on the health and well-being of the victims," said U.S. Representative Carolyn Maloney of New York, who is pushing legislation to combat child sex trafficking.

The advocates are hopeful.

When children are rescued, "you're never going to restore that time lost," Allen said, but "kids are resilient."

Kozakiewicz agrees. She aims to work in law enforcement "to rescue children and help recover those children's souls." ▧

Just Make It!

ANDRZEJ ZWANIECKI

COURTESY ONEWHEEL

Makers experiment with laser cutting in the TechShop of San Francisco.

COURTESY TECHSHOP

The motto on the glass door of the TechShop in San Francisco says it all: Build Your Dreams Here. Inside the do-it-yourself workshop, table saws, 3-D printers, laser cutters and scanners are spread out around three vast floors. Two men discuss an object one holds in his hand. Nearby, a young woman wearing a protective mask polishes a metal cog gripped in a vise.

Despite the presence of computers, these dreams are built not of bytes but of metal, plastic, wood and other physical materials. TechShops are outposts of a budding, so-called maker movement that includes tinkerers, inventors, hobbyists, craft makers, backyard mechanics, artists and almost anybody else. The objects they create, sometimes unique, range from robots to electronic gadgets to tchotchkes.

Makers are all ages and come from strikingly different backgrounds. What they have in common is a passion for learning and for creating whatever they fancy. These folks buzz with excitement about a welding class.

Several trends drive the interest in making things for sale or personal use: falling prices of sophisticated tools for design and manufacturing, such as 3-D printers and computer-aided-design software; the popularity of social networking; and the resurgence of small communities of like-minded people.

Makers take advantage of high-tech innovation and crowd-sourced solutions. They tap into open-source software. But they distance themselves from techies in their belief that too much creative energy has been expended on developing digital products. "We lost touch with getting our hands dirty," said Jesse Harrington Au, a maker-program manager at Autodesk Inc., a software company that caters to makers. As an antidote to sitting all day at computers, Au, with 15 others, recently built a roadster car.

Makers don't want to be confused with hobbyists of earlier times, who saw tinkering in garages and kitchens as a solitary pursuit. "The maker movement is about sharing," said Au. "The cross-pollination effects are huge." That's why spaces to meet are popping up in warehouses, libraries and community centers. TechShops have opened in six cities recently, and the company plans to expand to three more. The annual Maker Faire launched by *Make* magazine draws crowds in San Francisco, New York and Detroit. Communities organize dozens of minifairs around the world, including China, Chile, Egypt, Kenya and South Korea.

Enthusiasts believe the maker movement's influence will go beyond manufacturing. "We'll see more art, more niche products, and more people learning and enjoying themselves than ever before," Tackett Austin of TechShop said.

Not all makers want to sell their creations. But for those who do, the new tools provide a shortcut to entrepreneurship. Makers can crowdfund development, create inexpensive prototypes, and contract with a factory to manufacture the product. Quirky.com promises to manufacture products based on ideas submitted by creators and endorsed by its users. "The maker movement is a game changer for the inventors and tinkerers of the world," said Austin.

He and many others are inspired by Chris Anderson, former editor-in-chief of *Wired* magazine. In his book *Makers: The New Industrial Revolution*, Anderson says the movement will change manufacturing from a mass-production process based on capital to a flexible, diffused process based on ingenuity and networking. While some experts remain unconvinced about the movement's transformative power, even skeptics acknowledge it can foster a technically skilled workforce — welders and machine tool operators, for example — which the United States and other countries badly need. ▧

©ISTOCK/THINKSTOCK

Making the Future

***EJ|USA* talks with Thomas Kalil, deputy director of the White House Office of Science & Technology Policy**

Q. Why are makers important?
Kalil: You're seeing a lot of people, young and old, making things that are personally meaningful. It's getting young people excited about STEM [science, technology, engineering and math] or careers in advanced manufacturing. It's advancing values we think are important in themselves — creativity, problem-solving, **innovation** and self-advocacy.

Q. How can people become "makers" if they don't have tools or a workshop?
Kalil: This is a 21st-century version of **shop class**. For the cost of a gym membership [in the U.S.], you can become a member of TechShop and access millions of dollars in tools — such as laser cutters or computerized machine tools — that allow you to design and make things. If you're an entrepreneur, you no longer have to own the means of production.

Q. What about makers who want to do more than just invent — who want to mass produce and sell?
Kalil: Increasingly, there are companies that will take designs and then make and ship them. It's democratizing the design of products.

Q. The U.S. economy has shifted away from manufacturing. Can makers change that?
Kalil: People are creating more local manufacturing. Some of these things have gone overseas, but we can use new tools to bring them back. This is particularly true in areas where consumers might pay extra for customization — shoes **customized** to a foot or a bicycle tailored to a person's frame.

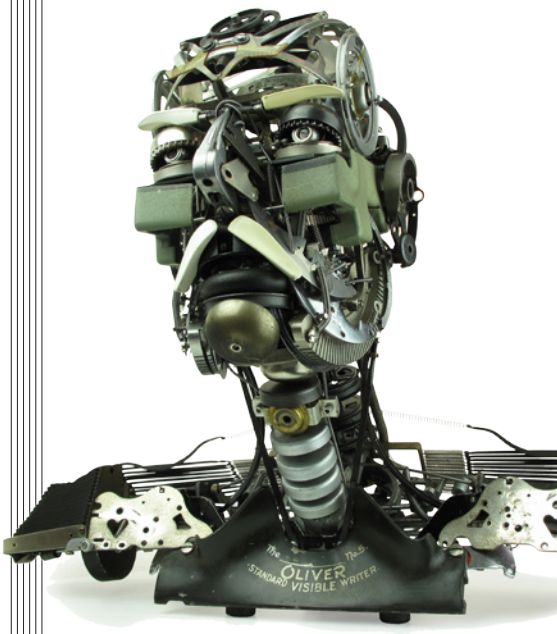
Q. How do colleges and universities fit in?
Kalil: At MIT [the Massachusetts Institute of Technology], admissions officers have decided to allow students who are makers to upload their portfolios as part of the application. It's not just test scores; it's knowing what applicants are sufficiently passionate about to make with their own hands. MIT wants to recruit those kinds of students. *–S.M.*

CONNECTING THE DOTS: SAN FRANCISCO; NEW YORK; DETROIT

Creative Control

Products from the 2012 Bay Area Maker Faire

Self-balancing gyroscopic motorcycle



Bust V (Grandfather) by Jeremy Mayer made of typewriter parts

Sashimi Tabernacle Choir features 250 electromechanical fish and lobsters bolted to an old Volvo that dance to music

FROM TOP: LIT MOTORS; COURTESY PHOTO; ©AP IMAGES

For Girls or Boys?

KOURTNI GONZALEZ

This year, 13-year-old McKenna Pope (right) will be able to give the perfect Christmas toy to her brother Gavyn.

©AP IMAGES

McKenna Pope faced a Christmastime crisis. Her little brother had asked for a much-advertised toy oven as a gift, but 13-year-old McKenna confronted shelf after shelf of pink and purple miniature ovens and a glaring absence of traditionally masculine colors.

The experience motivated her to begin a petition on Change.org, a website where people can highlight issues in their communities and mobilize supporters to their cause. More than 45,000 people signed McKenna's petition to Hasbro Inc., the maker of the Easy-Bake Oven, calling on the company to introduce an oven for boys. Hasbro listened and unveiled a masculine blue and silver model at the 2013 New York Toy Fair. McKenna's campaign drew attention to the fear among some parents of the message gender-stereotyped toys send to their kids.

Hasbro isn't the only company that has come under criticism for marketing toys by using restrictive gender stereotypes. Major toy retailer Toys "R" Us Inc. was criticized for only showing girls playing with "girl toys" such as dolls and princess costumes and boys with "boy toys" such as trucks and chemistry sets. The company has since promised to depict both boys and girls playing with the same toys in their catalogues and to remove explicit references to gender in their store signs.

Parents have found fault with LEGO's heavy marketing to boys and underrepresentation of females in their minifigures character sets. In eight out of the 11 available minifigures series, one-fourth or fewer of the characters are female, and in the remaining three sets, females make up slightly less than one-third of all characters.

The types of female characters LEGO creates are causing a stir as well. Female characters include a nurse, mermaid, cheerleader and Hollywood starlet, most of which are easily identifiable by long eyelashes and colored lips.

In response to the criticism, this year LEGO released a much-anticipated female scientist character, but characters such as the surgeon, police chief, explorer and pilot are still all male.

Nancy Zwiers, founder and chief executive of Funosophy Inc., a toy design firm in California, believes the toy industry is "not looking to shape kids." With her 20-plus years of experience in the toy industry, she thinks it's completely normal for younger kids to "want to play with gender-specific toys, and sometimes ones that make you cringe as an adult." She urges parents not to worry about this, saying that "they'll grow out of it and become more balanced" as they get older.

Still, concerned parents fear gender-specific toy designs such as LEGO's will encourage boys to pursue careers in science and math while encouraging girls to stick to teaching, nursing and other professions that emphasize nurturing and social interactions. ▧

Toys Old and New

Kids become more tech-savvy every year and scientists are teaming up with psychologists to engineer "smart toys" designed to engage and educate children better than traditional toys like tops, blocks and yo-yos. **Jean Schreiber,** early childhood education consultant, joins **Nancy Zwiers** to weigh in on balancing entertainment with education.

Traditional Toys: Jean Schreiber

According to Schreiber, open-endedness is what makes block play truly unique. Some activities, like certain computer or video games, can be close-ended, meaning the child masters only a narrow set of skills by the game's end. Block play teaches social skills like collaboration, creativity, body awareness in space, and language skills in addition to problem-solving, spatial reasoning and developing an intuitive understanding of balance and gravity. Parents get a firsthand perspective on the challenges that arise as children use blocks in Schreiber's workshops for parents. After these workshops, said Schreiber, they understand that "it's not just play; it's a real challenge." Unfortunately, advertising plays an influential role in determining what Americans buy their children, she said. "People are quick to want to buy what the ads are showing for new toys that have lots of bells and whistles." She feels that more people will come around when they see the value of time for children to be creative, explore and discover on their own.

Tech Toys: Nancy Zwiers

For kids under age 2, Nancy Zwiers backs blocks all the way. However, don't expect many kids to choose blocks after age 8, she said. Amid a rising concern over too much screen time and not enough outdoor play time, many parents are striving to strike a balance between limiting their kids' use of electronics for entertainment purposes and for giving them the academic edge that some "smart toys" purport to provide. While being able to touch and manipulate things like blocks in the physical world is important for kids, said Zwiers, electronic toys are not harmful and can even be beneficial if they engage the child. Zwiers says that children are capable of learning simply by observation, and that research shows that "beyond age 2, the brain's mirror neurons can activate when a child is watching someone do something." This implies a similar effect on the brain no matter if a child is actively engaged in physical play or passively watching a screen, she said, and this validates screen-based play.

Soccer Nation

FRED BOWEN

Football is undoubtedly the world's most popular sport. Almost half of the world's population watched the men's 2010 FIFA World Cup. More may watch the 2014 World Cup when it is played in Brazil.

But for many years in the United States, football — or soccer, as it is called in America — lagged behind American football, baseball, basketball and other sports in popularity. For example, a men's professional soccer league, the North American Soccer League, folded in 1984 after 17 seasons.

Well, watch out. New signs suggest that the United States is finally becoming a soccer nation. This change, as often happens with any change, started with the nation's young people.

The Sports and Fitness Industry Association is a group of more than 750 businesses, including such well-known manufacturers as Nike and Adidas, that make and sell all sorts of sports equipment. The association keeps a close eye on how many people are playing the different sports. Its 2013 study estimates that around 5 million American kids ages 6–12 play soccer.

In part because of laws that require U.S. schools to give girls the same athletic opportunities as boys, soccer is also very popular among girls in America. The study finds that almost as many secondary school girls as boys play soccer.

5 million American kids play soccer.

Soccer is becoming as much a part of growing up in America as owning a pet or learning to ride a bicycle.

These young American soccer players are predictably turning into soccer fans. A recent poll conducted by ESPN, the sports television network, finds that soccer is the second most popular sport among Americans ages 12–24. Soccer ranks only behind professional American football but ahead of professional basketball, college football and pro baseball.

With the explosion of televised European soccer games on American cable networks, young Americans are becoming fans of the top international clubs. It is no longer unusual to see an American teenager or 20-something wearing a Messi or Neymar jersey or sporting the home colors of Arsenal or Inter Milan.

American soccer fans are also following their own Major League Soccer teams. The 19-team league (with plans to expand to 24 teams by 2020) started play in the '90s, following the excitement of the 1994 men's World Cup that was played in stadiums across America. During the intervening years, the league has built a solid fan base, as evidenced by the construction of 11 soccer-only stadiums.

On the women's side, the National Women's Soccer League, an eight-team professional league, began play this year. This is the third major attempt at a women's pro soccer league in the United States.

The big question is: **Will all this growing interest in soccer make the United States a force in the upcoming World Cups?**

Even though they have not won the World Cup since 1999, the American women will likely be a force at the 2015 tournament in Canada. The women's team won the gold medal at the 2012 Olympics and is Number 1 in the FIFA world rankings. The team is led by such international stars as Abby Wambach, Alex Morgan and Hope Solo.

The American men have never been an international powerhouse like the women, but they are safely at the top of the North and Central American and Caribbean qualifying group. Riding a streak of excellent play in 2013, which included a friendly 4-3 upset victory over Germany and winning the continental championship, the men's national team looks like a sure bet to qualify for the 2014 World Cup.

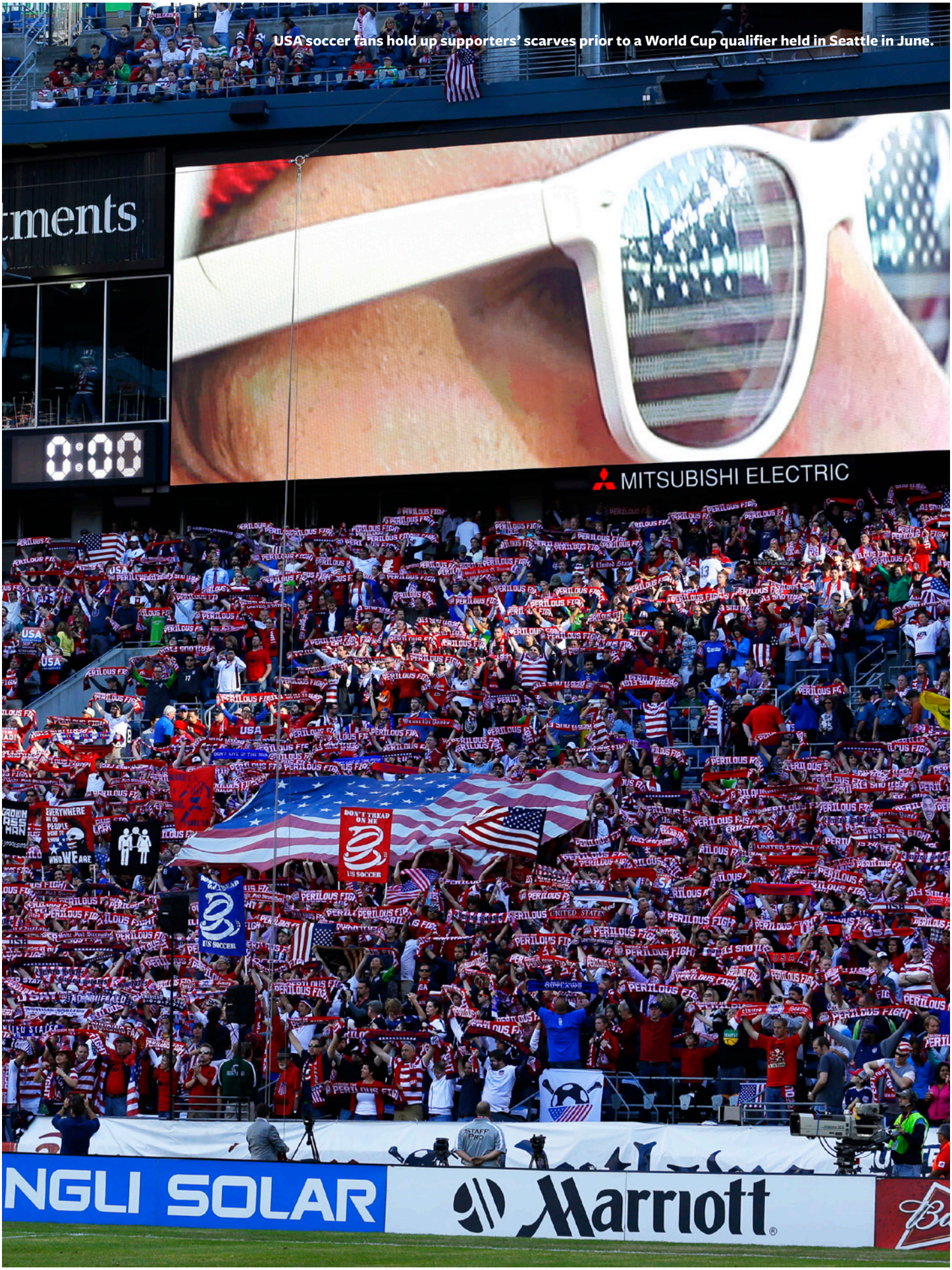
Millions of kids who play the game, a growing fan base for the U.S. and international leagues, and improving national teams: All are promising signs for the future of U.S. soccer.

America may not be as soccer-mad as England, Italy or Brazil, but the country is slowly but surely taking its place among the soccer nations. ▧

CONNECTING THE DOTS: SEATTLE

Football Facts & Figures

- When U.S. Youth Soccer was established in 1974, there were 100,000 registered players. Now, there are **more than 3 million**.
- According to Steven Goff, *Washington Post* reporter, there are more than **50 American-born players playing in top European leagues** such as the English Premier League, the German Bundesliga and the Italian Serie A. For example, Michael Bradley, a midfielder for the U.S. national team, is playing for Roma in the top Italian professional league (Serie A).
- In an indication of the improved reputation of Major League Soccer (MLS), American star **Clint Dempsey** signed with the Seattle Sounders after being a leading scorer in the English Premier League.
- **24 million people** in America watched the 2010 men's World Cup final between the Netherlands and Spain.
- **13 million** watched the 2011 women's World Cup final between the U.S. and Japan.
- **Attendance at MLS games averages 18,000**, comparable to attendance for the National Basketball Association and the National Hockey League.
- In Seattle, a young, hip West Coast city, the city's soccer team, the Sounders, averages **more than 40,000 fans a game**, almost twice the attendance for the Mariners, the city's professional baseball team.
- Recent immigrants to the United States are bringing their love of soccer. **The largest numbers of recent immigrants hail from soccer countries** — primarily Mexico, but also the United Kingdom, Germany, South Korea and several countries in Central America.

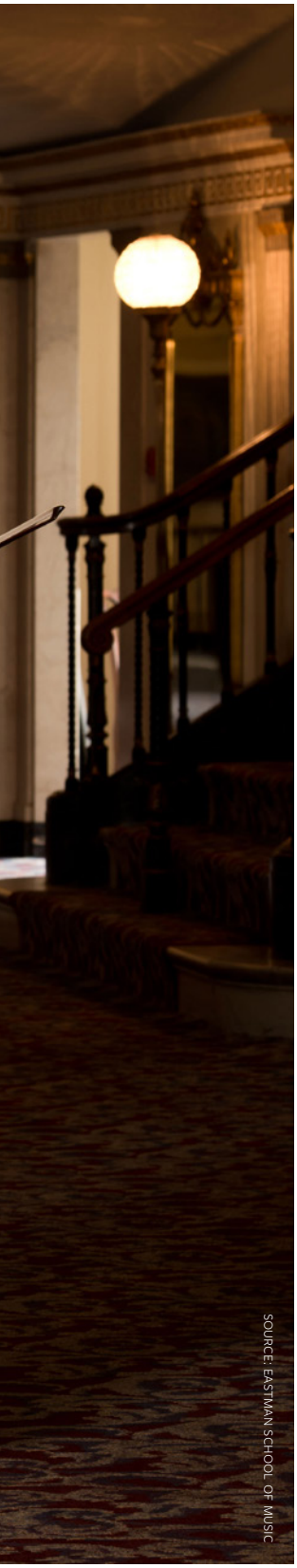


USA soccer fans hold up supporters' scarves prior to a World Cup qualifier held in Seattle in June.

©AP IMAGES

The Eastman String Quartet (Markiyan Melnychenko from Ukraine, Kelsey Farr and Hyeok Kwon from the U.S. and violinist CheHo Lam from Hong Kong) played for President Obama following his second inauguration.

Music Schools Attract International Talent



SOURCE: EASTMAN SCHOOL OF MUSIC

Most international students attending U.S. colleges and universities pursue degrees in business, the sciences, math, engineering and computers. But talented young musicians from China, South Korea, Japan and other countries also flock to renowned music schools and conservatories such as Eastman and Juilliard.

Some of these young pianists, violinists, composers and conductors are already among the best of their generation back home. China has an estimated 40 million piano students. Why seek an American college degree?

Violinist CheHo Lam of Hong Kong, who performed with an Eastman School of Music quartet for President Obama after his second inauguration, chose Eastman "to grasp firsthand information from professors who are closest to Western culture."

Lam auditioned for the New York school, part of the University of Rochester, after a master class in Hong Kong with an Eastman professor who had studied with "all the legends," including David Oistrakh, Isaac Stern and Fritz Kreisler. "These are people you can only watch on documentaries or DVDs, but your teacher is one of their students," Lam said. He recently signed a performance contract in New York.

Fang Zhang, 34, who has degrees from the Central Conservatory of Music in Beijing and Eastman, was also motivated to study in the U.S. after taking a master class from an American professor. A native of Shenyang, China (also the birthplace of pianist Lang Lang), Fang Zhang said that living and studying in the U.S. "is really good for our career, especially because we're learning Western culture." Top U.S. music schools "have really great music professors, musicologists and artists," he said. They also offer a wide array of opportunities. Indiana University's Jacobs School of Music in Bloomington, Indiana, for example, boasts six orchestras, 13 choirs, eight bands and numerous chamber ensembles, and stages 1,100 performances a year, including seven operas and three ballets.

Espen Jensen came to Bloomington from Norway in 1998 for a master's degree in classical guitar. Three degrees later, he is dean of admissions. "The structure of the American university suits international students well, especially at the graduate level," said Jensen. "Master's degrees tie in nicely with doctoral programs, which typically do not exist in many other countries."

Performing arts diplomas do not call for all the other academic courses universities normally require, and students may be admitted with lower written and spoken English skills. Universities and conservatories compete for the best graduate students with tuition waivers and teaching stipends. Fewer scholarships are offered to undergraduates.

Chinese pianist Zhang Zuo, 24, who performed a recital recently at New York's Lincoln Center, completed a bachelor's degree at Eastman and master's at the Juilliard School. Already the winner of international competitions, Zhang Zuo told the *Juilliard Journal* her professors broadened her playing technique and "completely changed me."

While Lam and Zhang Zuo have embarked on performance careers, many international graduate students see their future in teaching the next generation, as Fang Zhang is doing. He directs keyboard studies at Renmin University of China.

Robert Cutietta, dean of the Thornton School of Music at the University of Southern California in Los Angeles, said: "I often kid that when I get into the elevator, it's as likely I will hear Chinese or Korean as English. If you go back half a century, every artist had to have a European pedigree. Times have changed. Now Asians feel their coming of age is to study in the United States." ▧ *-C.C.*

CONNECTING THE DOTS: NEW YORK ●; BLOOMINGTON ●; LOS ANGELES ●; WASHINGTON ●

Tan Lihua

COURTESY PHOTO

Beijing's Orchestra Visit

MICHAEL GALLANT

Students aren't the only talented and ambitious Chinese traveling to the United States for musical reasons — in fact, at press time, one of China's premier classical music ensembles, the Beijing Symphony Orchestra, was planning its maiden voyage to the U.S. as well.

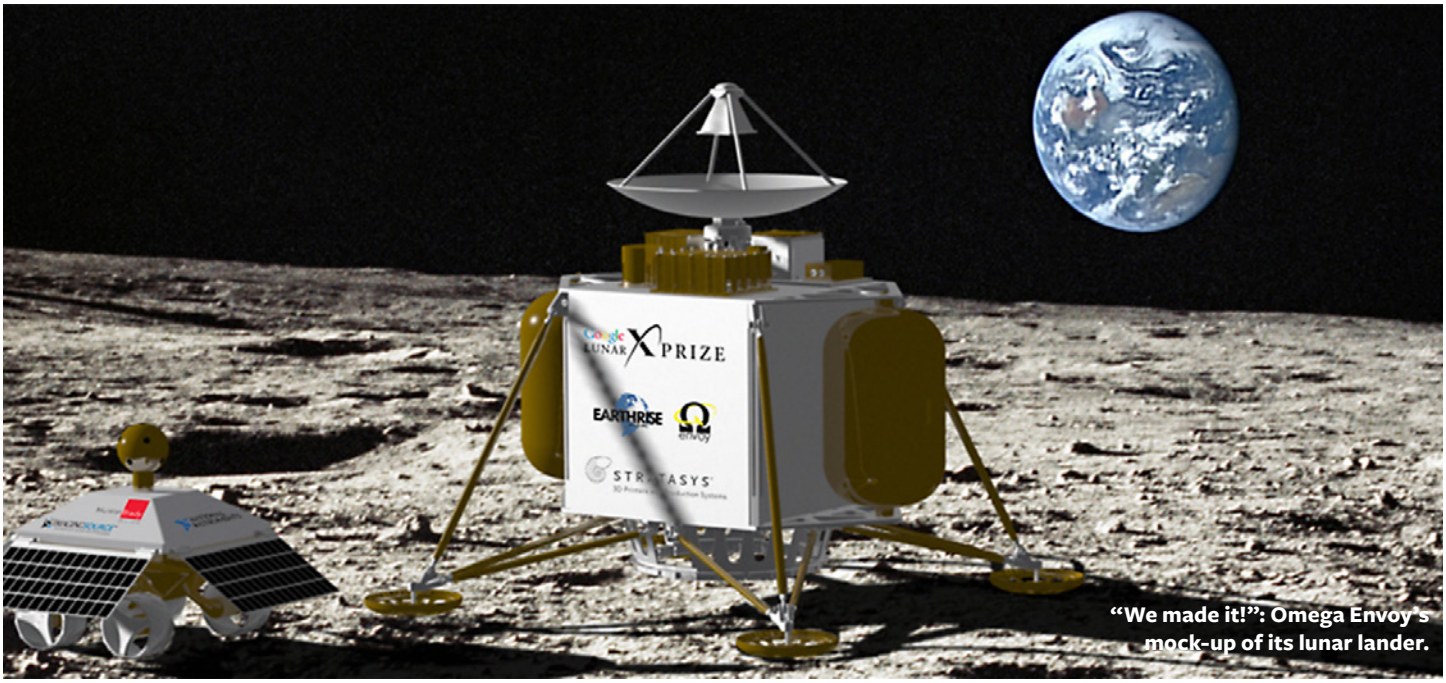
The orchestra was scheduled to perform its debut concert in New York on October 17, and play later outside Washington. Led by principal conductor and music director Tan Lihua, its program was set to include works by Sergei Prokofiev and contemporary Chinese composer Guo Wenjing.

"Of course, it feels momentous because this is the first time we are coming to the United States to perform, and we are making our debut at Carnegie Hall, one of America's finest performance halls," said Tan. "But also, we are incorporating both Western and Eastern music into our program to emphasize the occasion."

Rehearsing for the tour was an exciting event for Tan, who said he hopes the concerts will help his orchestra gain a reputation as a truly world-class ensemble.

Qin Ding, a Shanghai native currently studying music composition at the Manhattan School of Music in New York, was energized by the plans for the orchestra's visit. "All of my Chinese friends were excited — some of them had studied with players in the Beijing Symphony Orchestra, and some of my American friends were super-excited, too. They had never heard a Chinese orchestra!" ▧

2015: A Moon Odyssey



"We made it!": Omega Envoy's mock-up of its lunar lander.

COURTESY EARTHRISE SPACE INC.

Alex Hall has always wanted to go to the moon. She is an astrophysicist who worked in the aviation and space industries. But Hall long ago faced the fact that she couldn't be an astronaut and thus wouldn't be joining a NASA mission.

When Google Inc. and the X Prize Foundation approached her about running their lunar competition, though, she saw it as a close second to a moon visit and accepted.

The partners plan to award $20 million to the first team that lands a privately developed, unmanned craft on the moon. The robotic craft should travel across the moon's surface and send images and other data to Earth. The launch deadline, which has shifted once since the Google Lunar X Prize competition was announced in 2007, is the last day of 2015.

Fly It to the Moon

As the deadline nears, the heat is on 22 remaining teams (out of the initial 34 that registered). Many are U.S.-based, but countries as diverse as Brazil, Chile, Hungary, India, Israel, Japan, Malaysia, Spain, Romania and Russia are also vying for the prize. At least five projects are international in scope.

Competitors are busy designing, building and testing prototypes; some teams have initial agreements with commercial launch providers. Aerospace veterans are injecting experience into the efforts, but it is university students and recent graduates who account for most of the interest.

"Everybody on the team is really passionate about what they are doing," said Ruben Nunez, head of one of the youngest teams, Omega Envoy (see team's profile on next page).

Raising money has proved the toughest challenge. Only a few teams — such as Moon Express, based in Silicon Valley in California — are well-funded. But other teams manage: Astrobotic, Omega Envoy and Frednet have landed contracts ranging from $500,000 to $10 million from NASA for data from their projects. Omega Envoy and some others also have secured sponsorships from private companies and universities.

In the countries that have no aerospace experience, the teams deal with challenges that go beyond money. For example, the Independence-X team together with universities and private companies in Malaysia persuaded the country's government to enact space law that would open the door for a space industry in that country and for the team's full participation in the competition.

"The diversity of ideas is astounding," Hall said. Some teams — such as the U.S. Jurban team and Israeli's SpaceIL, both involving secondary school students — emphasize educational goals. Others mainly want to seize on commercial opportunities. For example, Moon Express is interested in extraction of minerals from the moon.

Most teams are united in a desire to carry on beyond 2015. "We're building a lot of the methods, systems and processes that we're going to need for further projects," said Fred Bourgeois, founder of Frednet, the only team in the competition based on open-source collaboration (see team's profile on next page).

Most believe the competition is a win, no matter who actually gets the prize. But winning, Bourgeois admits, "would be a good start" to fulfilling his life dream — "to build a city on the moon."

Losing would not erase a memory of a once-in-a-lifetime adventure, said Rahul Narayan, who started the Indus team, the only entry from India. "We'll still accomplish a fantastic engineering feat," he told Reuters India. The team consists of entrepreneurs, enthusiasts and explorers.

Looking at all teams, Hall is enthusiastic about pushing commercial space exploration beyond the Earth's geostationary orbit, where it has stalled. She hopes for personal satisfaction too.

"If I am there in mission control, when we have a team that launches and safely lands ... it will feel amazing," she said. ▧ *-A.Z.*

Race to the Moon

	OMEGA ENVOY RUN BY EARTHRISE SPACE, INC., A NONPROFIT IN ORLANDO, FLORIDA	FREDNET RUN BY THE OPEN SPACE SOCIETY, INC., A NONPROFIT IN HUNTSVILLE, ALABAMA
MOTTO	**The moon is just the beginning.**	**One people, one planet. Revolution through open collaboration.**
GENESIS	"Before my last graduation exam, I went to the company's headquarters at five in the morning because I had all these ideas in my head and I had to just dump them somewhere. And I pretty much wrote everything on the whiteboard in an hour." –Ruben Nunez, aerospace engineer and ESI founder	"When I was in high school, I saw the Enterprise [the prototype space shuttle] fly over my house. I grew up believing that someday I would live and work in space." –Fred Bourgeois, a software entrepreneur and OSSI founder
GOALS	▪ To become the first commercial entity that offers payload delivery to the moon. ▪ To develop technologies designed to pinpoint precision landing sites on celestial bodies. ▪ To encourage science, technology, engineering and mathematics programs at schools.	▪ To bring an open-source concept, which promotes free redistribution of an end product and access to its design and implementation details, to space exploration. ▪ To establish an open space foundation designed to create broadly available opportunities for space exploration. ▪ To bring together like-minded people to show that talents and efforts of many unified by a goal can produce remarkable accomplishments.
TEAM	Engineering, computer science and business students involved through paid internships plus young, but experienced, aerospace specialists.	An international group of about 700 volunteer developers, engineers, scientists, aficionados, enthusiasts and students, located in 60 countries, who collaborate on an online open-source platform.
COMPETITIVE ADVANTAGES	▪ Located in the same state as the NASA Kennedy Space Center with access to resources and experienced personnel. ▪ Payload delivery at lower price than those of competitors. ▪ Contracts with RAL Space, a U.K. company, and Google Lunar X Prize competitor Angelicum from Chile.	▪ First to remotely pilot robotic rovers in Earth-based locations using the Internet. ▪ Four-year experience in flying hovering prototypes.

CONNECTING THE DOTS: ORLANDO ●; HUNTSVILLE ●

Omega Envoy team

COURTESY EARTHRISE SPACE INC.

Taking Business to the Moon and Beyond

SCOTT PACE

Scott Pace heads the Space Policy Institute at George Washington University. Earlier, he served as associate administrator at NASA.

On a warm June day in Vienna, Austria, the topic on the table for discussion by international space experts was how to deal with orbital debris, radio frequency interference and solar events that pose threats to space activities upon which the world has come to rely. The United Nations Committee on the Peaceful Uses of Outer Space had asked for advice on shaping voluntary guidelines for national regulations on the long-term sustainability of space activities.

A European legal expert wanted greater regulatory weight given to international law and institutions. A Chinese counterpart was not so sure, saying, "We should be careful not to give too much power to bureaucrats as they can stifle the innovation of the private sector." I agreed with my Chinese colleague.

Balancing the space interests of governments and the private sector has been a U.S. concern since the Space Age began. During the Cold War, the Soviet Union opposed private space activities, calling them "piracy." The United States supported private enterprise and helped create the first commercial communications satellite company, Comsat. The compromise reached in the 1967 Outer Space Treaty is the foundation of international space law today. In the United States, private companies can apply for government licenses to operate and launch satellites or return objects from space. The treaty bars claims of national sovereignty over outer space or celestial bodies such as the moon.

A far more global and diverse set of space actors (public, private and even individuals) has replaced the original cast of Soviet and U.S. scientists and leaders. Interest by the private sector in mining the moon and asteroids, space tourism, and even private expeditions to the moon and Mars has grown dramatically.

As new human and robotic missions emerge from universities, nongovernmental organizations and industry, nations must rise to the challenge of balancing competing interests. New rules may be needed to operate private facilities in deep space or on the moon. The historic lunar landing sites must be protected. National and international dialogues on space policies will intensify and, if all goes well, launch a new era of space exploration and prosperity. ▧

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all about english

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ABDUCTION | to take (someone) away from a place by force, pp. 16, 17

BANG FOR THE BUCK | used to describe how much value is received when money is spent, p. 9

CUSTOMIZE | to change (something) in order to fit the needs or requirements of a person, business, etc., p. 20

EXPLOITATION | ... to use (someone or something) in a way that helps you unfairly, p. 17

FEAT | an act or achievement that shows courage, strength, or skill, p. 26

FORENSIC | relating to the use of scientific knowledge or methods in solving crimes..., p. 16

GRASP | ...to understand (something that is complicated or difficult), p. 25

HASSLE | to bother or annoy (someone) constantly or repeatedly..., p. 4

HIP | ...very popular or fashionable, p. 22

JUNK FOOD | food that is not good for your health because it contains high amounts of fat or sugar, pp. 7, 8, 9

KID | ...to say (something) in a joking way, p. 25

LABYRINTH | a place that has many confusing paths or passages..., p. 15

ORGANIC | grown or made without the use of artificial chemicals..., p. 7

PEDIGREE | the history of the family members in a person's or animal's past especially when it is good or impressive..., p. 25

POP UP | to appear in usually a sudden or unexpected way..., p. 9, 19

POWERHOUSE | ...a person, team, etc., that has a lot of energy, strength, and skill..., p. 22

PREDATOR | ...a person who looks for other people in order to use, control, or harm them in some way, pp. 16, 17

RADIUS | ...an area that goes outward in all directions from a particular place..., p. 7

RESONANT | ...strongly affecting someone especially with a particular quality, p. 4

SOUPED-UP | made greater in power or appeal, p. 8

SPURRED | to encourage (someone) to do or achieve something..., p. 8

STALL | to stop suddenly because of a problem..., p. 26

SUBURBAN SPRAWL | a situation in which large stores, groups of houses, etc., are built in an area around a city that formerly had few people living in it, p. 15

TINKER | to try to repair or improve something (such as a machine) by making small changes or adjustments to it, p. 19

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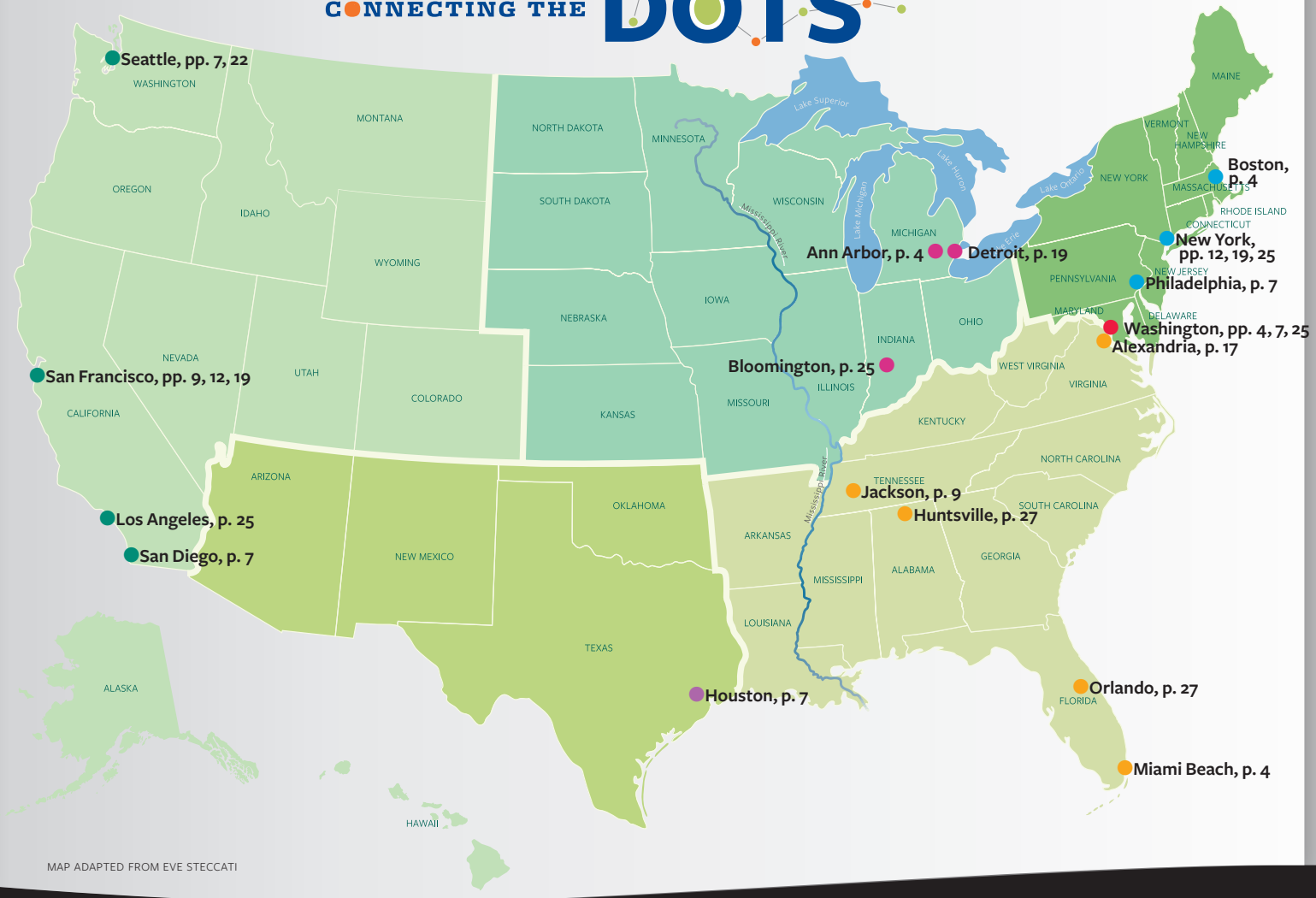

MAP ADAPTED FROM EVE STECCATI

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BUREAU OF INTERNATIONAL INFORMATION PROGRAMS