

DIRECTOR'S LETTER



01

WINTER 2018

DEAR COOPER HEWITT FRIENDS,

Cooper Hewitt is on the move and sprinting toward the future with a bold vision for America's design museum. Our new strategic plan reflects nearly a year of teamwork involving everyone on staff, volunteers, and our dedicated Board of Trustees to discuss our goals for the next three years and define the tactics needed to realize them. Reaffirming our commitment to educate, inspire, and empower people through design, we are encouraging everyone to discover the importance of design and its power to change the world.

We hit the ground running in September at the London Design Biennale. Representing the United States for the second time, Cooper Hewitt entered a provocative design response to the pervasive uses of facial recognition technology—and won the Biennale medal for the most inspiring interpretation of the exhibition's theme of emotional states. We were—literally!—jumping for joy to receive such a tremendous honor from the Biennale's international jury, sharing the podium with Egypt and Latvia, who were also recognized for their outstanding contributions to this global celebration of design's universal importance.

Back home on campus, we're picking up the pace with our newest exhibition *The Road Ahead: Reimagining Mobility* (December 14, 2018–March 31, 2019) in the Barbara and Morton Mandel Design Gallery. The public looks to the nation's design museum to ask, answer, and debate urgent questions. This exhibition considers how design will improve and expand options for moving everything from commuters, cyclists, and pedestrians to groceries, health care, and even parking spaces. It's the springboard for this issue

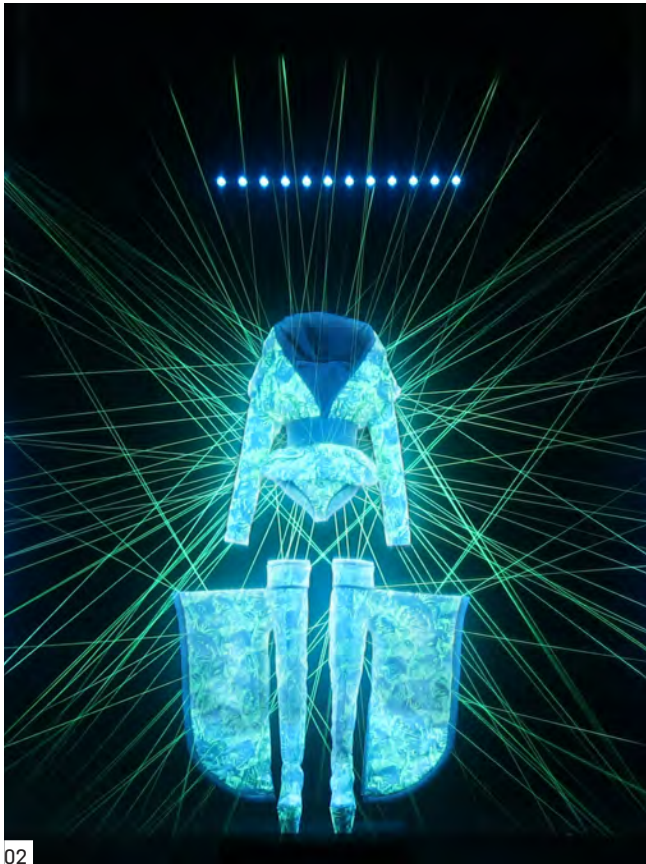
of *Design Journal*—filled with insights from interaction designers, social scientists, policy makers, and more on this important subject.

Always alert for opportunities to energize our museum with fresh vision, the award-winning Dutch design studio Scholten & Baijings is the focus of our latest installation in the Process Lab. Cooper Hewitt's historic darning samplers were the inspiration for the design team's newest textiles collection for Maharam, and visitors can now explore the experimental process that informs these innovative designs and more. *Scholten & Baijings: Lessons from the Studio* is an interactive dive into the design team's investigations of color, form, and material, and illuminates the importance of the human hand in contemporary design.

This confluence of history and design innovation continues in *Tablescapes: Designs for Dining*. A generous grant from the Smithsonian Women's Committee facilitated the cutting-edge technical research needed for the conservation of our magnificent *surtout de table*, an architectural masterpiece believed to have enhanced the dining table of Prince Eugène de Beauharnais, stepson of Napoleon. On view for the first time in thirty years, the *surtout* is the centerpiece of *Tablescapes*, where it is flanked by installations of the 1930s graphic table linens of American designer Marguerita Mergentime that were intended to be conversation starters, and a sustainable dining experience of the future from the 2017 National Design Award winner for Product Design Joe Doucet and 2017 National Design Award winner for Fashion Design Mary Ping. Juxtaposing three distinct dining visions, *Tablescapes* is sparking lively gallery discussions around design's enduring impact on the rituals of the daily meal.

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The Cooper Hewitt team jumps for joy because we brought home gold for the United States at the 2018 London Design Biennale. Our digital interactive installation won the medal for most inspiring interpretation of the Biennale's theme of Emotional States.



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Also stimulating timely conversations, *Rebeca Méndez Selects*—guest curated by the 2012 National Design Award winner for Communication Design—is an extraordinary array of historic and contemporary design objects, rare illustrated scientific texts, and dozens of colorful conserved bird specimens drawn from the collections of Cooper Hewitt, Smithsonian Libraries, and the National Museum of Natural History. Further enhanced with custom-designed digital interactives that animate the Nancy and Edwin Marks Gallery with the sights and sounds of bird life, the exhibition is an evocative design statement to safeguard the environment.

Farther afield, Cooper Hewitt's message of design empowerment is reverberating across the nation via our exhibitions of socially responsible design currently on view at the Centers for Disease Control and Prevention in Atlanta and at the Bill & Melinda Gates Foundation Discovery Center in Seattle. And we continue to build out our National Design Awards education programming, thanks to the generous support of our NDA CITIES campaign. Having established a dynamic presence in San Francisco and Boston, we've now added Detroit to our itinerary as we travel the country to connect our past and present National Design Award winners with local communities. Looking ahead to January, we are very excited to bring Cooper Hewitt's vision of a more inclusive future to the World Economic Forum at Davos. Joining with

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One of more than sixty designs that will be featured in the *Cooper Hewitt Design Triennial* this spring. A luminous contemporary kimono and boots made from silk injected with the genes of coral and jellyfish illustrate how designers are augmenting nature to enhance natural materials. Tranceflora, 2015-19; Hiromi Ozaki + Masaya Kushino, Another Farm (Tokyo and Kyoto, Japan); Glowing transgenic silk; Dimensions variable



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Secretary David J. Skorton and Smithsonian colleagues, we will present a special installation of the innovative designs from our critically acclaimed exhibition *Access+Ability*, curated by Curatorial Director Cara McCarty, to the annual assembly of the globe's leading change-makers.

Finally, the United Nations' recent report on climate change challenges all of us to radically rethink our relationship with nature. This May, more than sixty contemporary design projects confronting the crisis and advocating a new appreciation of the natural world will be installed throughout our campus. Organized in collaboration with Cube design museum in the Netherlands, *Nature—Cooper Hewitt Design Triennial* will open simultaneously on both sides of the Atlantic, amplifying its educational impact. With human survival at stake, our sixth design triennial is more than an exhibition. It's a call to action.

The future is wide open at Cooper Hewitt! I invite you to be codesigners of an even better tomorrow.

@baumtweet
 @baumstagram
 @cooperhewitt
 cooperhewitt.org

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A member of the ADAPT community (formerly United Cerebral Palsy of New York) tackles a design challenge with a designer from 2018 National Design Award Winner Blu Dot.

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Our NDA CITIES education program connects National Design Award winners like Craig Wilkins, 2017 winner of our Design Mind award, with underserved students across the U.S. We welcome your support!

2018 NATIONAL DESIGN AWARDS GALA

Cooper Hewitt celebrated the 19th National Design Awards on Thursday, October 18, 2018



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(left to right) 2018 Director's Award winner Darren Walker; 2012 Communication Design Award winner Rebeca Méndez

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(left to right) Caroline Baumann, Director, Cooper Hewitt; Cooper Hewitt Trustee Scott Belsky; Cooper Hewitt Trustee Elizabeth Ainslie

03
2018 Interaction Design Award winner Neri Oxman

04
(left to right) 2018 NDA cochairs Kelsey T. and Randy J. Hunt

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Cooper Hewitt celebrated the 19th National Design Awards with decor by David Stark Design and Production.

06
David J. Skorton, Secretary, Smithsonian Institution

07
2018 Lifetime Achievement Award winner Gail Anderson

08
(left to right) Marilyn Stevens, Target; Stephanie Grotta, Target; Greg Van Bellinger, Target

09
(left to right) Ramya Mahalingam, McKinsey & Company; Parsa Kamali, McKinsey & Company; Andrea Varalli, McKinsey & Company; Mahin Samadani, McKinsey & Company; Richard Vander Meer, McKinsey & Company; Rob Mathis, McKinsey & Company; Radhika Agarwal, McKinsey & Company.

National Design Awards programming is made possible by generous support from

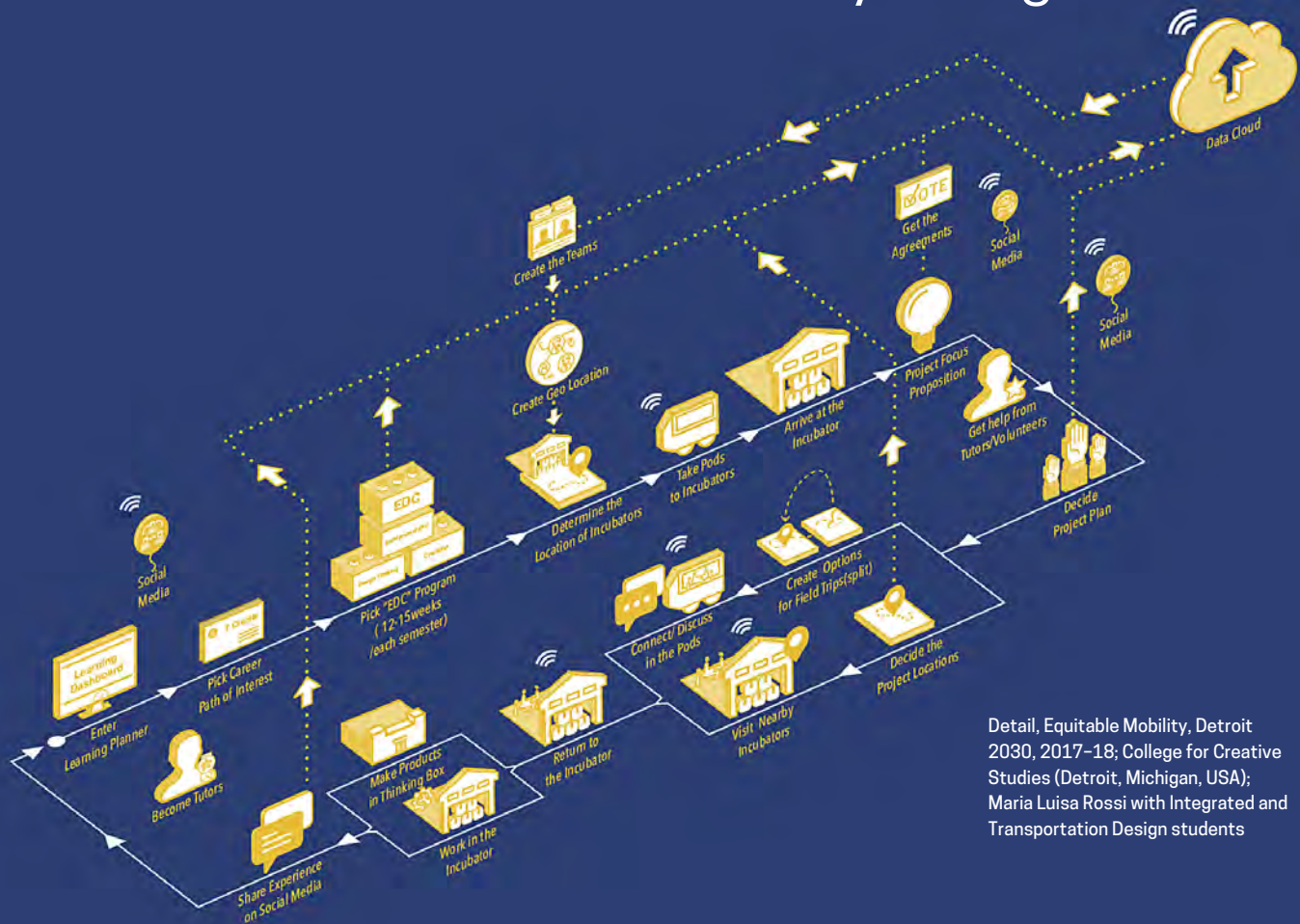


Additional funding is provided by Design Within Reach, Facebook, and Bloomberg Philanthropies.

DESIGN PULSE:

MOBILITY

What is the future of mobility design?



Detail, Equitable Mobility, Detroit 2030, 2017–18; College for Creative Studies (Detroit, Michigan, USA); Maria Luisa Rossi with Integrated and Transportation Design students

MARIA LUISA ROSSI

Professor of MFA Integrated Design at the College for Creative Studies

In Detroit the lack of mobility options results in fewer opportunities for activities, employment, and access to services. As a mobility neophyte, when engaging in future mobility scenarios, I prefer to think of *possible* futures, that which might happen, as opposed to *probable* futures, that which is most likely to happen. The community, and how mobility ultimately can enable all citizens' participation in society, is for me the central focus.

MIKE MILLEY

Director of Creative Consulting, LA Studio Designworks, A BMW Group Company

Cities have always embodied complex and interconnected mobility ecosystems. Today, these systems include a digital infrastructure as well—adding benefits and complexity in equal measure. Minimizing this complexity (and maximizing benefits) will require designers to think in a holistic, systems-first way. By reimagining the city as a mobility platform and taking a holistic approach to designing user experiences at scale, we will discover new ways to address today's urban mobility challenges and make our cities more livable tomorrow.



01

JANETTE SADIK-KHAN

Principal, Bloomberg Associates; former commissioner, NYC Department of Transportation

With emerging revolutions in people-focused street design and autonomous mobility, we have a once-in-a-lifetime chance to make new transportation technologies work for our cities instead of adapting our cities to new technology. We need to update the software of the street, using integrated data streams and new mobility apps to make it easier for people to get around by foot, bike, or bus, thus reducing the need for cars and their footprint on streets. We also need to update the hardware on streets by radically redesigning them so people can get around without needing a car in the first place.



02

GEOFF WARDLE

Executive Director, Graduate Transportation Systems and Design

Creating future mobility systems is complex, requiring multiple disciplines working together. A new genre of mobility designer will be charged with providing thought leadership, facilitation, and translation between the many engineers, planners, elected officials, developers, legislators, and government agencies who have conflicting agendas, speak different “languages,” and rarely consider the needs and aspirations of end-users. So, these multifaceted designers must also vigorously research, develop, and champion complete user experiences if solutions are to succeed.



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CHRIS PANGILINAN

Program Director, Technology and Rider Engagement, TransitCenter

Mobility is designed to bring people access to their communities. The design is inclusive of people of all ages and abilities, bringing more opportunity to those who lack it today. It is designed to efficiently move people and goods in a sustainable manner, leaving in its wake a network of streets that are vibrant and human centered. Private and public transportation providers coexist while adhering to values that are set forth by the community that they operate in.

01

Photorealistic rendering based off of concepts in the NACTO Blueprint for Autonomous Urbanism.

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Vimana, a thesis project by Akash Chudasama, graduate of Graduate Transportation Systems and Design program at ArtCenter College of Design, explored the future of the light aircraft industry to include pilotless, on-demand, electric, intercity, shared mobility services to compete favorably with commercial airline and high-speed rail alternatives.

03

3D Soundscape created by Microsoft allows blind people to navigate the city.

WHO OWNS THE CITY OF THE FUTURE?



01

By *Sarah Williams*

Autonomous vehicles, electric cars, and ride-sharing applications are disruptive innovations that hold unknown outcomes for society. Future forecasters suggest these technological advancements will produce clean, efficient neighborhoods for our overly congested cities. At the same time, it is also predicted that certain innovations, like automated vehicles, will lead to job losses and serious changes to the cities' economies. In reality, both outcomes are equally possible, which is why "We the People" must own the future of our cities and the data that powers that future.



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The public has already started to lose control of the digital city. This is because the data generated by and used to operate civic technologies is largely owned by private companies. Automobile ownership is a great example of our predicament. Car owners may own their vehicles, but they do not own the software that makes the vehicle function. The software is only licensed to the owner. This is true for much of the tech we use every day. Think about your computer or cell phone. The operating systems for these objects are licensed. Some proponents of open-source software say we are held hostage by these licenses because we cannot own them outright. The same logic applies to city infrastructure, which is increasingly digital and generating massive amounts of information about our every movement.

As an example, Waymo, Google’s autonomous vehicles program, has logged over 5 million miles of driving data. A single autonomous test vehicle produces about 30 terabytes per day, which is 3,000 times the amount of data Twitter produces daily. This data is stored and used to improve the algorithms needed to make autonomous vehicles function. Programmers at Google also use this data to construct digital representations of the physical world on their servers, which the autonomous vehicles use to guide their pathways on the road. Auxiliary data—obtained from security cameras and personal data, such as credit card purchases—can help construct and predict our daily movements. When this data is added to that digital world created for the car, it can be used to personalize our driving experience.

THE DIGITAL WORLD CREATED BY AUTONOMOUS VEHICLES WILL BE A PUBLIC GOOD

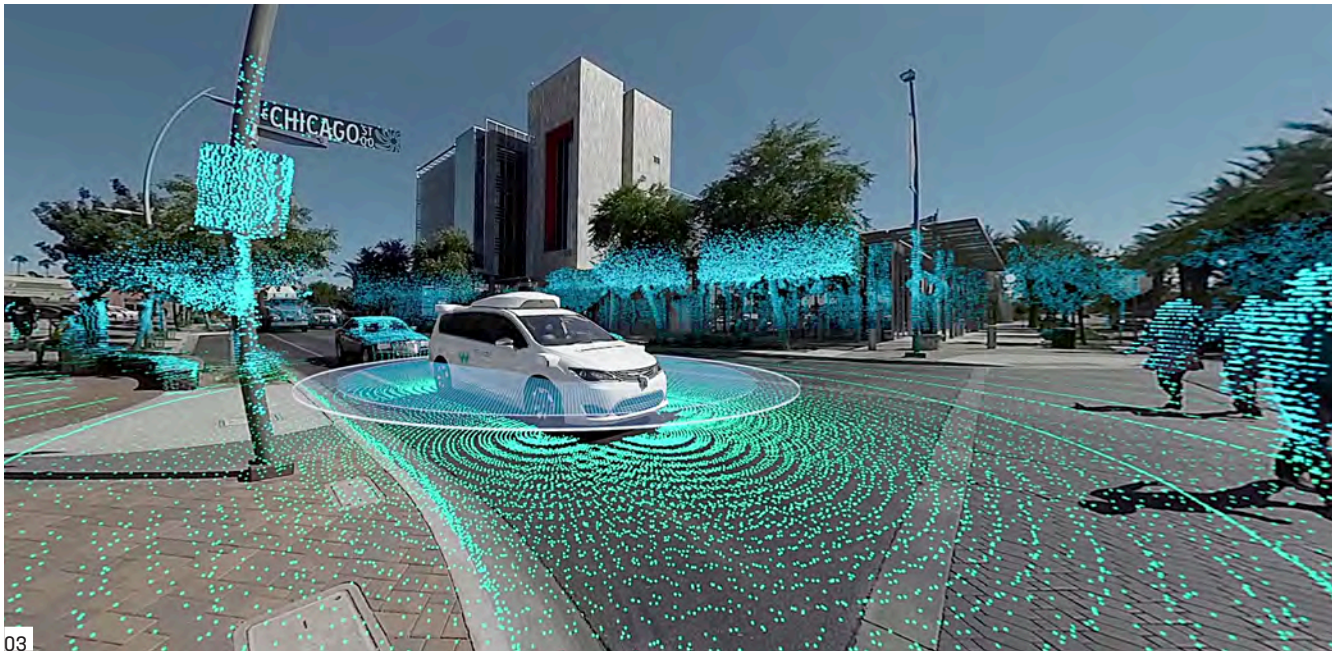
In this highly evolved virtual environment, autonomous vehicles—or any robot for that matter—are guided where to turn, stop to pick up a passenger, or come to a halt for a pedestrian to cross the street. Now imagine that you want this digital world to be smarter. Not just a 3D rendering of what you’ve done or where you’ve been, but predictive of what you might do in the future. Having captured your buying habits and movements, this data can be mined to identify, for instance, when and where you might want to buy a quart of milk, and your car programmed to remind you to do it. Adding this type of information to the autonomous vehicle’s database allows the car to make decisions based on your behavior.

This alternative reality—really a new digital reality—will be the infrastructure of the future. We will tap into it to perform all kinds of tasks. Much in the same way networked computers created the World Wide Web, this environment will power many innovations created by those who have the capabilities to tap into it. Right now, that ability lies solely with the companies who generate the data, like Waymo, Tesla, Ford, and others

experimenting with autonomous vehicles.

Companies are already using their virtual worlds to create diverse products beyond the car. Google has developed an augmented reality navigation tool for your smartphone, fueled by this digital environment (Fig. 3). Microsoft has started to use some of this data to create a product it calls 3D Soundscapes, which taps into the virtual environment to help a person with vision loss navigate through the city. The applications are almost endless. Therefore, it is essential that the public has a say in regulating this new digital infrastructure. The same way infrastructure innovations of the twentieth century, such as sewers and power lines, are now regulated by government.

How can we assert some kind of control over this new infrastructure when it is largely owned by private companies? In 2017, an international consortium of NGOs and city and transport organizations created a set of principles for governments and corporations to ensure best outcomes as mobility innovation advances. The consortium explicitly affirms data and the systems created from data as a “public good,” stating that the “physical, digital, and financial access to shared transport services are valuable public goods and need thoughtful design to ensure use is possible and affordable by all ages, genders, incomes, and abilities.” Public goods are commodities or services provided without profit for the greater good of society. The digital world created by autonomous vehicles will be a public good because our future society will need this digital reality to power civic infrastructure.



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The argument that data is a public good is controversial, as private companies have set up entire businesses to extract value from this data. Uber, for one, claims giving away its data is equivalent to giving away its business. While Uber has shared some of its data, this information is not much different from that which cities already collect. Individual trip data would be more valuable, because analysis of the minute-to-minute working of a city can go a long way toward identifying causes of congestion. Given that Uber is operating on our public infrastructure—using our roads, bridges, and tunnels—isn't it obligated to return the data collected back to the public? I believe cities should enforce data-sharing agreements when private companies use public infrastructure for profit. The same logic applies to autonomous vehicles: while the car companies create the alternative reality that makes these cars work, they are operating these vehicles on public infrastructure.

Cities still have the upper hand to negotiate better deals for working with private companies that are developing civic infrastructure. Moreover, it is imperative that city leaders use their authority, as many cities derive fifty percent of their budget from mobility-related fees—everything from parking violations to bridge tolls. Cities should leverage the popularity of these new systems by charging taxes to

subsidize autonomous vehicle use in neighborhoods that have high levels of poverty. Regulations also have to be considered to recover the cost of the using the city's infrastructure, such as charging fees for drop-off and pick-up zones, developing new taxes for empty seats in vehicles, and establishing fees for parking empty fleets. Some cities have begun to question whether autonomous buses should be run by the government or private companies. The public must put guidelines in place for autonomous vehicles now, before we relinquish all control to private companies.

Public control has already been lost in some states, most notably Virginia. The state declared it will not regulate autonomous vehicles in order to attract the business of autonomous car companies, which the government hopes will stimulate job growth and other economic benefits. Some state governments also do not want to allow cities to create their own regulations. For example, Michigan's state government passed legislation that limits Detroit's ability to make its own rules about driverless cars. In New York, Governor Cuomo and Mayor De Blasio often fight about ride-sharing regulations. City and state governments must begin working together to manage the economic trade-offs generated by new technologies.

As we stand at the precipice of this exciting digital revolution, urban

planners must take control of this new digital infrastructure and make sure it is available to all people. There are still many critical questions to answer to ensure the services derived from data are equitable so that everyone can benefit from the exciting new future of the digital city.

The Road Ahead: Reimagining Mobility is on view through March 31, 2019.

Sarah Williams is the Director of Civic Data Design Lab and Associate Professor of Urban Planning and Technology at MIT.

01 Car companies Bosch and Daimler offer a future vision of the city with autonomous vehicles.

02 Augmented reality might come before autonomous vehicles—the virtual infrastructure already exists, demonstrated by WayRay's holographic AR head-up display.

03 Three-dimensional environment created as a Waymo car moves through the city.

The Road Ahead: Reimagining Mobility is made possible in part by support from the Ehrenkranz Fund, Barbara and Morton Mandel Design Gallery Endowment Fund, Lily Auchincloss Foundation, Inc., and the August Heckscher Exhibition Fund.

DESIGN FOR TRANSFORMING CITIES

By *Paul McConnell*

A little over a century ago, mass-produced automobiles began crowding the streets of American cities. Engineers, urban planners, and civic decision makers were captivated by the innovation. They were also incentivized and encouraged to help the car succeed. The needs of citizens, communities, existing mass-transit systems, and the environment were all but ignored. An emerging technology of its day that quickly scaled up before cities could adapt, cars revolutionized personal transportation and created new economies. They also caused confusion, congestion, and an increase in fatalities. It took cities decades of experimentation to enact safeguards, such as traffic signals, better street signage, and emissions regulations. To this day, cities continue to struggle to keep people safe from cars. A century later, this once-new technology still presents challenges for seamless integration.

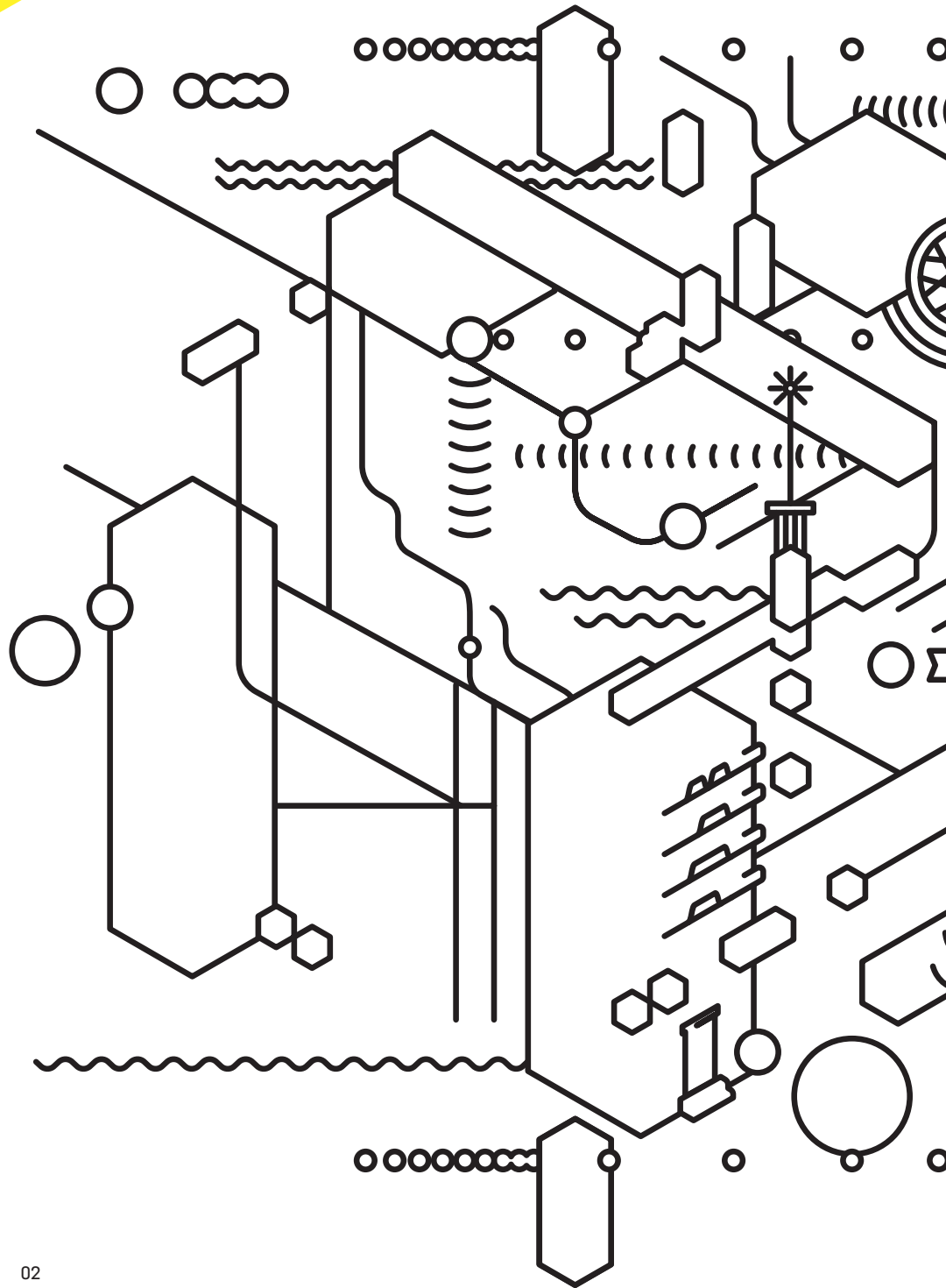


We are now on the cusp of another mobility revolution. This time, it's a wave of digital technology innovations transforming cities. The convergence of high-speed connectivity, cheap hardware, intuitive software, and personal devices has influenced every aspect of civic life. This includes how people live, work, shop, and move through our urban spaces. While change is expected in cities, this rapid transition is overwhelming many residents and the policymakers tasked with understanding the civic impact of the emerging digital landscape.

I've contributed to this change as a design lead focusing on technology-enabled products in cities. My work has helped shape civic products such as Link—the largest free municipal wi-fi kiosk network in cities across the United States and the United Kingdom—as well as numerous mobility products for transit authorities in New York City, Chicago, and Los Angeles. It's an advantageous moment for designers, whose skill sets are in demand in both the private and public sectors. The design process—rooted in understanding human needs, addressing business constraints, and making technology user friendly—is ideal for helping cities make sense of changing human behaviors, leveraging new technologies, and experimenting with new ways of solving civic challenges. Designers, armed with these tools, would do well to go beyond the studio and immerse themselves in the everyday realities of living in our magnificent, ever-evolving metropolises.

UNDERSTAND HOW PEOPLE ARE CHANGING HOW THEY INTERACT WITH THE WORLD

Good civic design considers human abilities and how our behavior changes and adapts in response to the environment. The street experience was designed with an assumption that people would have their heads forward and eyes looking up. But in recent years, we've developed new habits. We stare down at our devices and are almost constantly distracted. We use our devices to connect us to somewhere else while we become less aware of where we actually are.



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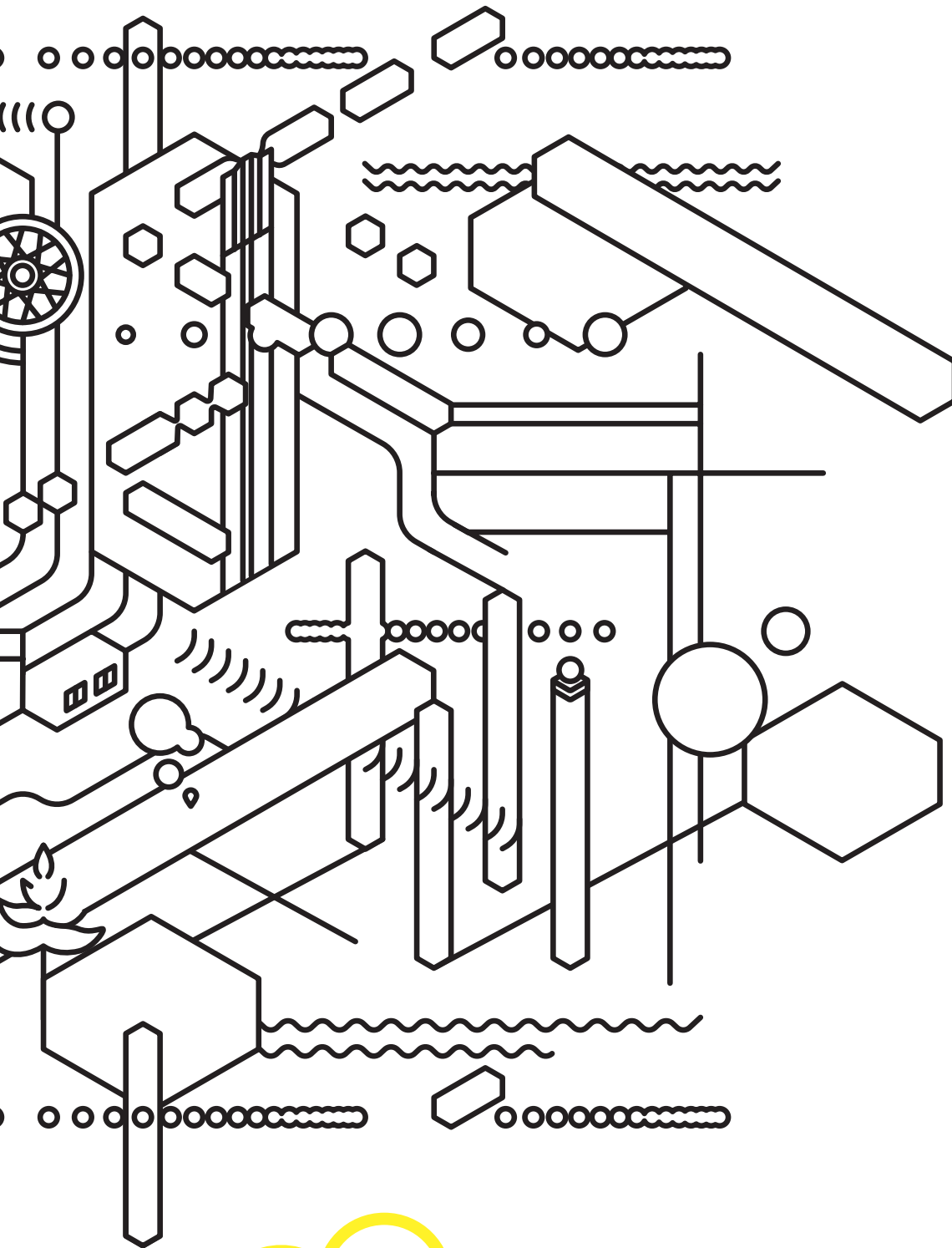
Through observational research and user interviews, you can better understand a person's relationship with physical spaces and the new technologies that are influencing our interactions. From here you can conceptualize usability improvements and share them with potential clients or organizations who are trying to reimagine cities.

UNDERSTAND CHANGING TECHNOLOGY

Digital technology is mostly unseen,

making it harder for average citizens to understand or envision its impact. There's a constant need to understand how technology is changing and explain the value or risks to different audiences.

While understanding the basics of computer science can only help, you don't need to be a programmer. You can start by building relationships with people who work across the technology spectrum. Try to understand what excites technologists and the current trends to investigate. Get inspired to tell better



stories by studying how others are explaining concepts. Make note of publications or portfolio case studies that explain future ideas in simple terms. Saving interesting artifacts—storyboards, workshop kits, or concept videos—will help inspire you when you need to shape your own concepts. Technologists often struggle to explain the user value of their products in easy-to-understand stories. This is where design comes in. Great designers not only generate purposeful new ideas but convey them in a way that the audience can understand.

LEARN THROUGH MAKING

Often, you need to move beyond a visionary idea or story and make something in order to get relevant feedback. In the civic sphere, adopting rapid prototyping to test new solutions has yielded powerful results. In 2008, NYC's Department of Transportation (DOT) attempted a new approach for expanding its City Plaza Program, which aims to ensure that all New Yorkers live within a ten-minute walk of a quality open space. In Times Square, an area crowded with tourists and traffic congestion, the

DOT tested the impact of converting a busy street to a public seating area. The DOT rerouted cars and, with minimal cost, set up temporary signage and folding chairs. The results exceeded expectations as tourists and locals quickly filled the space. The data gathered gave civic leaders the confidence to install more permanent place-making elements and scale the program across the city. The success of civic prototyping has led to a rise in civic hackathons and design challenges across the country. Like New York's Big Apps competition, an annual event that "challenges designers, developers, academics, entrepreneurs, and New Yorkers at large to apply their know-how to improve New York City." These events are a great way to understand key civic issues, demonstrate your design skills, and network to find open jobs in a growing sector.

As the technology innovator and investor Marc Andreessen has said, "time and again, people adapt in unpredictable ways to get the most out of new technology. Creative people tinker to figure out the most interesting applications, others build on those, and entire industries are reshaped." Embracing new methods helps us to learn, create, test, and quickly get the best ideas to the people.

The Road Ahead: Reimagining Mobility is on view through March 31, 2019.

Paul McConnell is Head of Design at Intersection, Co.

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Illustration of the layers of a city by Woody Nitibhon, a design lead at Intersection.

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Abstract flow of data across the civic street grid by Michael Freimuth, founder and creative lead at Franklyn Design.

The Road Ahead: Reimagining Mobility is made possible in part by support from the Ehrenkranz Fund, Barbara and Morton Mandel Design Gallery Endowment Fund, Lily Auchincloss Foundation, Inc., and the August Heckscher Exhibition Fund.

FACE VALUES

By **R. Luke DuBois**

Representing the United States at the 2018 London Design Biennale for the second time, Cooper Hewitt presented *Face Values*, an immersive installation exploring the pervasive but often hidden role of facial-detection technology in contemporary society. Curated by Ellen Lupton, senior curator of contemporary design, the installation featured original work by designers R. Luke DuBois, Zachary Lieberman, and Jessica Helfand displayed within a digital environment designed by Matter Architecture Practice. *Face Values* won the Biennale Medal for most inspiring interpretation of the exhibition's theme of emotional states.

The design brief given to the forty participating countries, cities, and territories asked for spaces that drew attention to the ways in which design impacts human emotion. The design team assembled by Cooper Hewitt decided to turn that prompt on its head, asking: How can human emotion be used to impact design?

We are attuned to recognize the ways in which specific facial expressions can reveal our emotions. Some of these telltale signs are reasonably universal—laughter, for example, does similar things to people's faces worldwide, as does disgust. However, many emotions impact our faces in culturally specific ways. In the United States, we read a smile that uses only your mouth, and not your eyes, as insincere. But in many other parts of the world, a wide grin is considered impolite. Familiarity gives us the best insights—loved ones read our faces like an open book, using facial cues to recognize sadness and anger faster and more accurately than acquaintances or coworkers ever could.

Over the last ten years, advances in computing have given rise to a variety of software that performs different kinds of facial recognition on digital images, videos, or live camera feeds. These systems claim to accomplish tasks or provide some sort of insight that the computer can give more rapidly, accurately, or inexpensively than a human. Some of these tasks are menial. A setting on your digital camera tells you



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THE FACE IS THE MIRROR OF THE MIND, AND EYES WITHOUT SPEAKING CONFESS THE SECRETS OF THE HEART.

—ST. JEROME



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when someone blinked in a photo. Auto-tagging identifies your friends in photos you post on social media. Other uses are downright innovative. A computer vision algorithm detects a person's heart rate using ordinary webcams. A computer service purports to infer "deception," partially through looking at facial cues in videos.

The more informed we are about these systems, however, the less we like them. Blink detection requires the computer to successfully disambiguate between eyes that are open and closed, a system that a Japanese camera manufacturer notably failed to deliver on with a product that consistently tagged Asian faces as "blinking" because of the shape of their eyes. Reading between the lines on social media auto-tagging, it might occur to you that if Facebook knows you were at your friend's birthday party last Friday, so does the government. If you look carefully at the literature proposing and evaluating

video-based heart-rate monitoring, you'll notice that the systems fail on patients with dark skin color, a fact often passed over as something that requires "further study." And as any armchair historian of lie detector technology knows, machines that use simple heuristics to detect truthfulness exhibit as much bias and predilection for false positives as humans.

Many (if not most) of these contemporary technologies leverage *machine learning*, a rapidly growing body of computing techniques that most people conflate with artificial intelligence. AI, a research discipline that encompasses machine learning, is also used by laypersons as a term to describe machines doing things that we, as a culture, consider in that moment to be "human" activities, not "computer" activities. This is a moving target, so an average American in the early 1990s could very well have described things like GPS navigation systems as

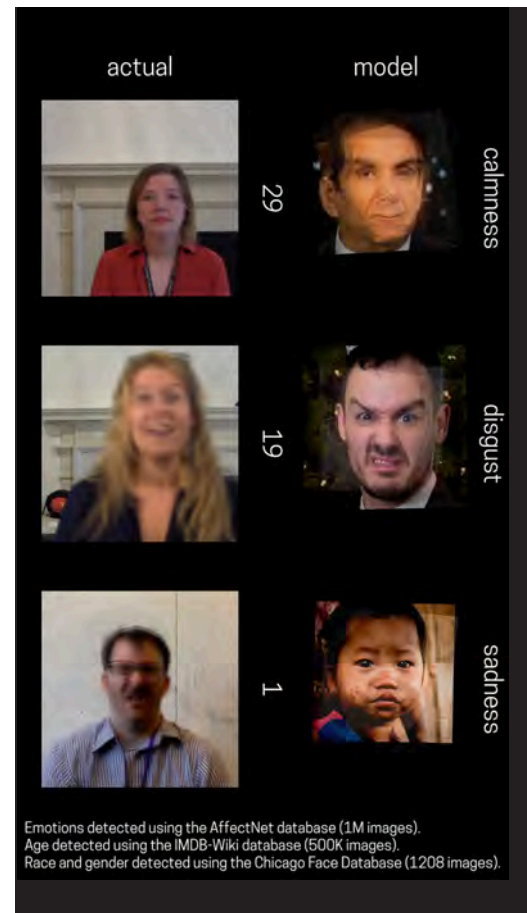
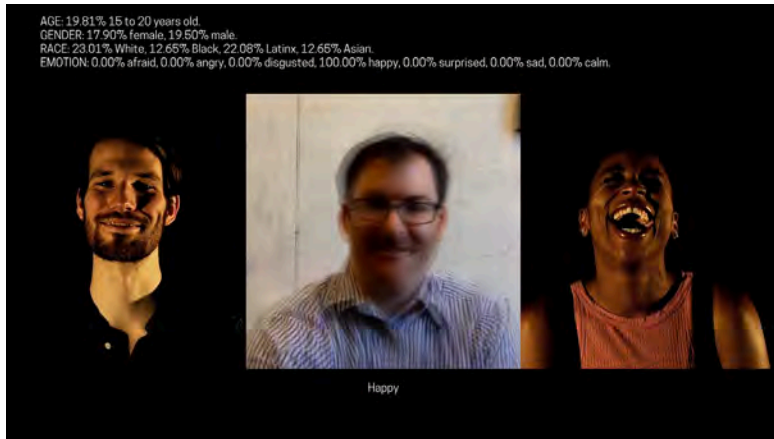
"artificial intelligence," even if, from a computer scientist's perspective, this product does not use AI in a formal way.

Machine learning, generally speaking, works through a process of learning and recognition, in a manner deliberately modeled after human cognition. For example, humans learn to recognize cats by seeing lots of cats (in real life or in media) and learning to extrapolate the core features of what makes a cat—whiskers, eyes with slit pupils, tails, etc. We also learn to recognize cats by comparing cats against other things we see and learning to distinguish among them. A cat is not a dog, nor is it a lampshade. Computers "learn" or, more accurately, are trained, through a similar process. They receive a little help from human supervisors, who point out the features to pay attention to in order to recognize, say, types of objects in a picture.

But imagine the following. What if, when we were young, the only cats we saw had gray fur? Later on in life, when encountering an orange tabby cat for the first time, would we recognize it as a cat? Or would we say it was a tiger, or a lion, which looks closer in some ways to a tabby cat than a gray cat? Our dilemma here is that our understanding of a phenomenon had *bias*. Data sets used to train machine learning systems have bias as well, sometimes to extraordinary degrees, depending on who curated the training data and what their goals were. This actual and potential bias is one of the things that makes machine learning difficult to use even in the most controlled situations. When deployed in society, it can be deeply problematic.



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For the *Face Values* exhibition, I developed an interactive artwork that asks a computer to detect human emotion to explore these questions. Titled the Expression Portrait, the piece takes the form of an interactive photo booth, similar to the kind you'd find in an amusement park. There's a chair, a screen, a loudspeaker, a video camera, and a big red button. When you press the button, on-screen imagery and a voice from the loudspeaker encourage you to take a seat and position yourself in front of the video camera for your "emotional self-portrait." The computer picks a random emotion from seven possibilities of fear, anger, calmness, disgust, happiness, sadness, and surprise, and asks you to act that way for thirty seconds. During this time, a pair of videos shows actors mimicking those emotions, while the loudspeaker defines the emotion and music plays that's meant to evoke the particular feeling.

At the end of the thirty seconds, the computer shows you an average image, akin to a time-lapse photograph of your face. It then tells you how well you did at your task, giving you the computer's estimate of your dominant

emotion, as well as its best guess as to your age, race, and gender. It then tells you that in the United States, data like this is collected all the time without your consent. To bring that point home, a second screen shows a running slideshow of recent portraits taken with the machine.

The installation analyzes your face using a machine learning algorithm trained on a number of public data sets of video and images developed in the last five years at universities and regularly used in machine learning systems to recognize emotion, age, race, and gender. For emotion, I considered two large data sets: the Ryerson Audio-Visual Database of Speech and Song (RAVDSS) and AffectNet, developed at the University of Denver. For age estimation, I used the IMDB-WIKI database developed at the Swiss Federal Institute of Technology in Zurich (ETH-Zurich). For race and gender, I used the Chicago Face Database developed at the University of Chicago.

As nearly everyone who interacted with the piece pointed out, it was often wrong. In the context of the installation, it was kind of funny and lighthearted.

But in the context of how these technologies are used in society, it's very troubling.

The Ryerson emotion data set uses video files of twenty-four young, mostly white drama students at that institution "overacting" the required emotions. The actors in the "fear" videos look literally terrified. The "sadness" videos involve tears. The "anger" videos have lots of scrunched-up faces, and so on. On the opposite side of the spectrum, the AffectNet researchers sourced over one million still images of faces discovered by searching for emotion keywords on Google, Bing, and other search engines. The bias factor here is the bias factor of the search engine, which discovers images from celebrity Instagram feeds, movie posters, and stock photography far more regularly than they ever find examples of "regular" people displaying emotions. The upshot of this in the installation was that people really had to overreact to the emotional prompt for the computer to recognize it. An open mouth was almost a prerequisite to show surprise, for example, and trying to look sufficiently angry for the machine



05

to notice was, in itself, infuriating.

The IMDB-WIKI database, by a similar token, uses the photos of celebrities and notable persons to create a data set that correlates faces with human age. This is a pretty ingenious way of curating a data set, as the database creators could reasonably assume that both IMDB and Wikipedia have correct birthdays for the people in question. The problem here, when used against ordinary people (with ordinary lighting and ordinary makeup), is that the data set skews people older. Biennale visitors in London in their twenties were shocked to find that the computer thought they were in their fifties. I had to remind them that the computer wasn't comparing them to average people at all, but to celebrities like Julia Roberts and George Clooney.

The race and gender data set, collected by professionally photographing 158 representative Chicagoans in controlled conditions, poses an alternate dilemma. It classifies its subjects according to a binary and cisgender understanding of humanity, assuming that we are either male or female, and also adheres to a culturally specific definition of race: white, black, Latinx, or Asian, which falls apart in our modern, global, multiracial world.

Londoners of South Asian descent found themselves recognized as Latinx by the system, while visitors who had freckles—a perfectly common trait among people from pretty much anywhere on the planet—were almost always classified by the computer as white, even as they laughed and told me afterwards that their parents were from Jamaica, Ghana, or Bhutan.

Unfortunately, while the installation was intended to be fun, this is no laughing matter. As my colleagues Dr. Kate Crawford and Meredith Whittaker, the codirectors of the AI Now Institute at NYU, point out, artificial intelligence is the core ethical and social concern for human society's relationship with technology in the twenty-first century. In her excellent, visually annotated essay "The Anatomy of an AI System," Dr. Crawford walks readers through what goes into these technologies, using the Amazon Echo—voice recognition software—as an example. The takeaway is incredibly troubling, and these devices and services are rapidly becoming ubiquitous.

So I ask all of you to do me a favor. The next time a device or a piece of software comes along promising to make your life easier by recognizing you in some way, don't take it at face value.

R. Luke DuBois explores temporal, verbal, and visual structures through music, art, and technology. He is the director of the Brooklyn Experimental Media Center at the NYU Tandon School of Engineering, where he and his students explore the implications of new technologies for individuals and society. His work expands the limits of portraiture in the digital age by linking human identity to data and social networks.

01
View of R. Luke DuBois's installation for *Face Values* at the London Design Biennale.

02
Visitor taking her portrait using R. Luke DuBois's *Face Values* installation.

03
R. Luke DuBois and a visitor at the London Design Biennale.

04
Screen captures of R. Luke DuBois's *Face Values* installation. The left side shows typical prompts for fear and happiness; the right side shows the composite screen.

05
View of R. Luke DuBois's installation for *Face Values* at the London Design Biennale.

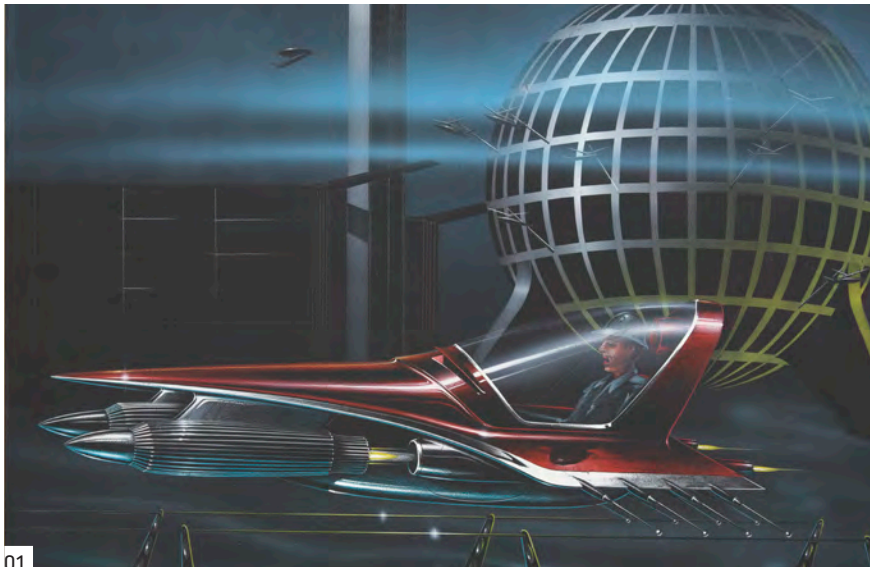
Cooper Hewitt, Smithsonian Design Museum's installation at the London Design Biennale is made possible by the Secretary/Under Secretaries of the Smithsonian and the Smithsonian National Board.

GIVE US SOMETHING NEW!

STYLING THE MID-CENTURY AUTOMOBILE

By *Caitlin Condell and Julie Pastor*

Drawings from the golden age of American automobile manufacturing show the process of packaging the future to sell fantasy and luxury to mass consumers.



01

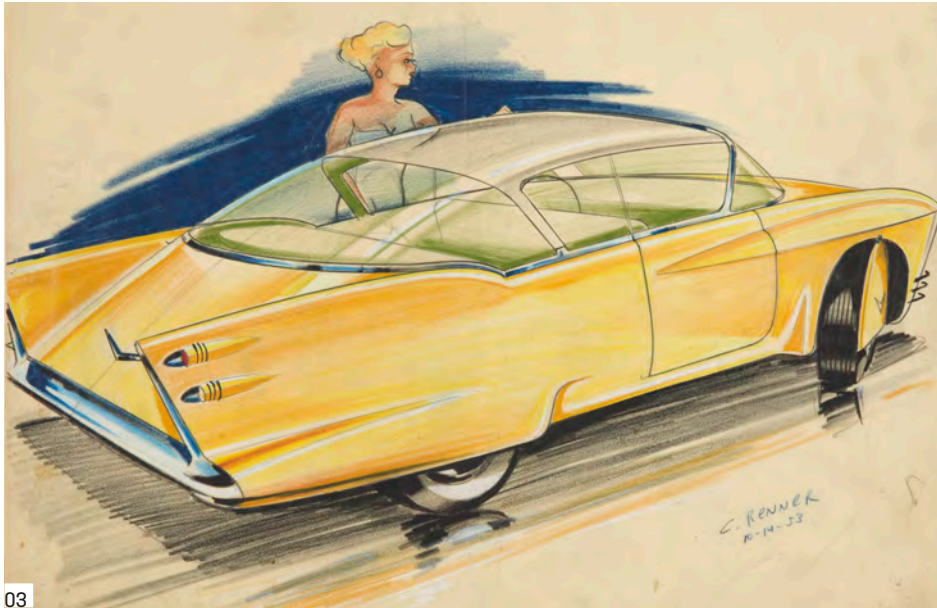


02

Mid-century American automotive styling embraced an attitude of excess. While the clean lines of modernism yielded sleek and minimal forms in architecture, furniture, and tableware, automotive designers added alluring accessories to generations of American automobiles. Large wraparound windshields, chrome accents, heavy fins, and bullet-shaped bumpers persuaded consumers to purchase new vehicles based on comfort and attraction. The development and innovation of automotive styling allowed major companies to release new vehicle models without dramatically changing their engineering, making design essential in appealing to new and returning customers. These highly decorated automobiles symbolized abundance, and appealed to consumer desire for luxury in the prosperity of postwar American life.

Founded in 1908, General Motors (GM)—one of America's largest automotive companies—was the first to have its own styling studio. The Art and Colour Section, later known as the Styling Section, was founded in 1927 and led by designer Harley Earl until his retirement in 1959. Earl understood the allure of the future, and his pioneering approach to automotive styling transformed the industry. "The Stylist," Earl said, "is never content with what is or what has been—why he lives always in the future, dealing with what will be."

The Styling Section at GM brought together designers, model makers, and



03

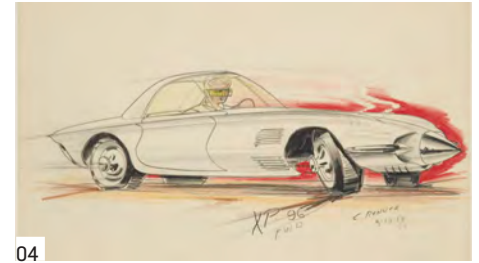
metalworkers to create countless concept cars for Chevrolet, Oldsmobile, Buick, and Cadillac. By the mid-1950s, the division employed more than 1,100 people. In the booming economy of postwar America, GM capitalized on consumers' desire to own the future. It captivated audiences with futuristic dream cars at the GM Motorama, a popular traveling roadshow exhibition of General Motors concept cars that ran from 1949 to 1961. The dream cars never went into production, but they tantalized consumers with possibility. Meanwhile, on the showroom floors of dealerships around the country, GM packaged fantasy in its production model vehicles with more subdued, mass-consumer versions of dream-car style. By changing features slightly from one production release to the next, GM kept the attention of its consumer audience. GM also preserved a careful hierarchy within its family of marques through its vehicle designs, with less exaggerated designs appealing to entry-level Chevrolet customers and opulent chrome decoration appealing to the latest luxury Cadillac buyers. This encouraged buyers to aspire to trade up when they traded in.

Earl was known to exhort his designers often with the cry "Give us something new!" He believed that stylists were pioneers in aesthetics, and while he maintained a brash and domineering managerial style and emphasized the importance of teamwork, he nevertheless championed individualism in his styling studio. Whether designers were refining a previous idea for an element of an

automobile or exploring a new vision of a dream car, designs for concept cars always began on paper. According to the 1938 GM publication *Modes and Motors*, "An average of 1,500 separate sketches are prepared in the process of arriving at one finished design."

Automotive design was a highly collaborative process, and different designers were often assigned to various components of a single vehicle. One designer might create the roofline of a car while another designed the hood. After designers completed early sketches for a vehicle concept, model makers rendered the car design three-dimensionally in clay. Yet even after model making began, drawing remained an important part of the design process. Designers often drew more colorful and complete illustrations from these models, which they produced for presentations or advertising art. Still other drawings in the Styling Section took on a larger format. Automotive designers used black tape to create full-scale mockups of vehicles on studio walls, and each GM studio had an area with moving walls where large drawings could be mounted and examined from various angles. So many drawings were produced at every stage of the design process that most surviving concept car designs are difficult to relate to particular production models.

Individual designers in the Styling Section at GM were rarely credited, but their distinct aesthetics and innovative contributions are often apparent in their design drawings, some of which are now in Cooper Hewitt's collection. Pete Wozena,



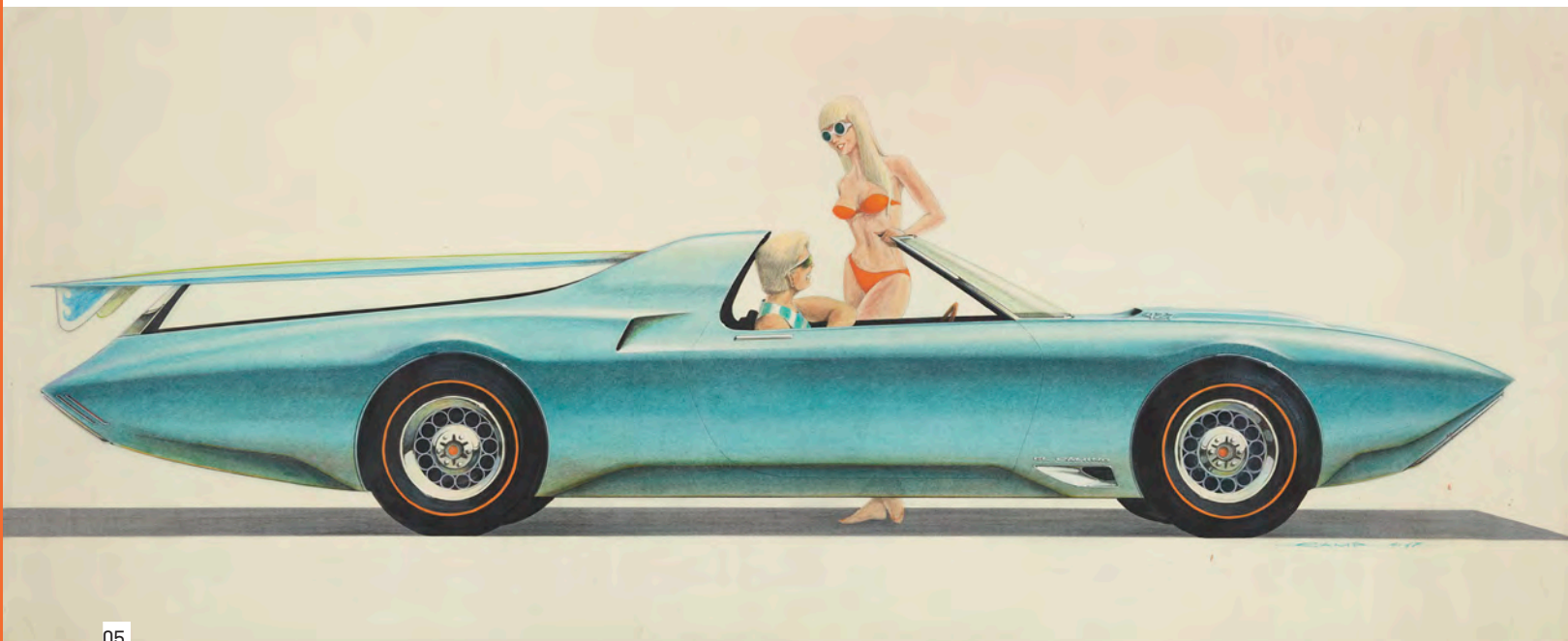
04

Carl Renner, and George Camp all spent their careers at GM, but their drawings reveal strikingly different approaches.

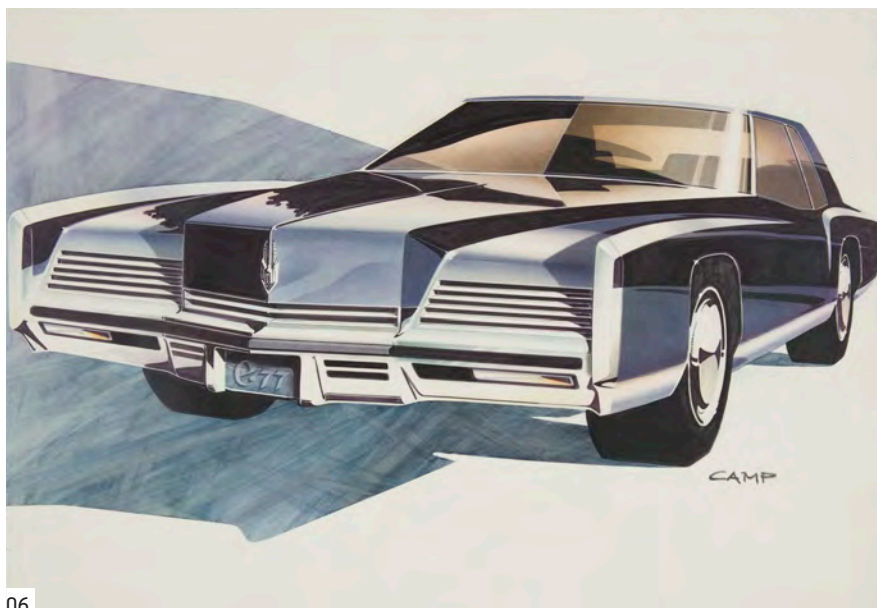
In the 1950s, Pete Wozena was known for outlandish designs that often emulated aircraft. In a 1955 concept drawing (Fig. 1), Wozena imagines a cherry red car with rocket-shaped front bumpers and firing rear jets, all finished in chrome. While Wozena's futuristic concept is conveyed through a highly finished presentation drawing, most of Wozena's surviving drawings are concept art executed to work out ideas, as in his 1956 roofline (Fig. 2). Wozena frequently experimented with this distinguishing feature of an automobile's silhouette in an attempt to provide riders with panoramic views. Wozena would ultimately design the popular roofline of 1964–72 Vista-Cruiser Buick and Oldsmobile station wagons.

Wozena employed an extraordinarily detailed drawing style, notable for its precision, but some stylists approached the designing of concept cars with a softer, more atmospheric feel. One such designer was Carl Renner, who left his career as an animator for Walt Disney Studios to enroll in the Detroit Institute of Automobile Styling (DIAS), a special school operated by Harley Earl and designer Richard Arbib. From 1946 to 1953, Renner was assigned to Chevrolet Studios, which was the largest-selling car brand among all of General Motors' automobile groups. Renner's design influence in Chevrolet Studios helped transform the brand to a styling leader in the early 1950s. Renner frequently used elongated lines to communicate speed and dynamism, as seen in his concept drawings for a predecessor to the 1953 Chevrolet Bel Air (Fig. 3) and an advanced Corvette project from 1958 known as XP-96 (Fig. 4).

Bill Mitchell took over as the lead of GM's Styling Section after Earl's retirement in 1959 with an interest in creating more aerodynamic forms that shaped many GM vehicles of the 1960s. George Camp joined GM in 1963 after earning his degree in



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industrial design from ArtCenter College of Design and became a key stylist for the Chevrolet El Camino project the following year. Camp adapted his styling to the changing trends in automotive design, and his drafting aesthetic evolved as well. His El Camino rendering (Fig. 5), likely a presentation drawing, features soft details rendered in colored pencil. In contrast, his dramatic concept drawing for an Oldsmobile (Fig. 6) emphasizes the square musculature of the vehicle through a dramatically rendered shadow.

Through their styling innovations, Wozena, Renner, and Camp all played a part in transforming the look of the American automobile in the postwar era.

In doing so, they helped shape trends and tastes that extended well beyond the world of transportation, influencing design in the workplace and the home. But it is through their drawings that we can appreciate their individual approaches to design, which reveal not only their contributions to automotive styling, but their arresting individual approaches to draftsmanship.

Caitlin Condell is Associate Curator & Head of Drawings, Prints, and Graphic Design and Julie Pastor is a Curatorial Assistant at Cooper Hewitt, Smithsonian Design Museum.

01

Drawing, Concept Car, 1955; Designed by Pete Wozena (American, 1918–2006) for General Motors (Detroit, Michigan, USA); Color pencil, brush and gouache on paper; 483 × 635 mm (19 × 25 in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2018-18-8

02

Drawing, Roofline Concept, 1956; Designed by Pete Wozena (American, 1918–2006) for General Motors (Detroit, Michigan, USA); Color pencil, brush and gouache on paper; 356 × 432 mm (14 × 17 in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2017-18-7

03

Drawing, Concept Car, 1953; Designed by Carl Renner (American, b. Germany, 1923–2001) for General Motors (Detroit, Michigan, USA); Color pencil, graphite on paper; 330 × 419 mm (13 × 16 ½ in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2017-18-6

04

Drawing, Concept Car with Pointed Bullet Front, 1958; Designed by Carl Renner (American, b. Germany, 1923–2001) for General Motors (Detroit, Michigan, USA); Color pencil, graphite on paper; 356 × 432 mm (14 × 17 in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2017-18-2

05

Drawing, El Camino Concept, 1967; Designed by George Camp (American, active mid-20th century) for General Motors (Detroit, Michigan, USA); Color pencil, marker on paper; 533 × 1473 mm (21 × 58 in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2017-18-1

06

Drawing, Oldsmobile Concept, ca. 1974; Designed by George Camp (American, active mid-20th century) for General Motors (Detroit, Michigan, USA); Marker, color pencil, airbrush, and ink on paper; 521 × 673 mm (20 ½ × 26 ½ in.); Museum purchase through gift of Paul Herzan and from General Acquisitions Endowment Fund, 2017-18-12

OPENING SPRING 2019

NATURE—COOPER HEWITT DESIGN TRIENNIAL

CO-ORGANIZED WITH CUBE DESIGN MUSEUM



01



02

May 10, 2019–January 20, 2020

In collaboration with Cube design museum in the Netherlands, Cooper Hewitt is organizing *Nature*, an exhibition that seeks to inspire ideas, collaboration, and dialogue to address the most significant environmental and humanitarian issues of our time. *Nature* will feature projects from designers who are collaborating with biologists, engineers, farmers, environmentalists, and nature itself to design a more harmonious and regenerative future. Opening at both institutions simultaneously in May 2019, *Nature* will present 60+ projects across various design disciplines, including architecture, urbanism, product design, landscape design, fashion, and communication design, that enhance and reimagine our relationship to the natural world.

01
Warka Water Tower, Dorze, Ethiopia, 2015–ongoing; Arturo Vittori (Italian, b. 1971), *Architecture and Vision* (Bomarzo, Italy), Warka Water Inc. (Petaluma, California, USA); Bamboo, polyester mesh, polyester cable, hemp rope; Dimensions variable

02
Bamboo Theatre, 2015–ongoing; Designed by Xu Tiantian (Chinese, b. 1975), *DnA_Design and Architecture* (Beijing, China); Bamboo, 800 x 2000 cm (315 x 787.4 in.)

Nature—Cooper Hewitt Design Triennial is made possible in part by support from the August Heckscher Exhibition Fund, Esme Usdan Exhibition Endowment Fund, and the New York State Council on the Arts with the support of Governor Andrew M. Cuomo and the New York State Legislature.

Scholten & Baijings for Maharam Pattern Collection

The Pattern Collection by Scholten & Baijings features a modern grid textile-inspired graphic, reminiscent of a working loom, building color density with parallel and perpendicular lines. The graphic is a reinterpretation of The Grid textile created by Scholten & Baijings in collaboration with Maharam. The firm's work is exhibited in *Scholten & Baijings: Lessons from the Studio* in Cooper Hewitt's Process Lab.



01 PATTERN TRAY LARGE GLACIER
\$135.00 / MEMBER \$121.50

03 PATTERN PORCELAIN CUP
\$33.00 / MEMBER \$29.70

05 PATTERN PORCELAIN PLATE
\$58.00 / MEMBER \$52.20

02 PATTERN PORCELAIN MUG
\$53.00 / MEMBER \$47.70

04 PATTERN PORCELAIN SMALL PLATE
\$48.00 / MEMBER \$43.20

Process Lab is made possible by major support from Alice Gottesman.