

ASSESSING *THE* FUTURE OF DESIGN

BY ROBERT GRACE

How will society and technology impact the way products are created?

Design has always played a vital role in the creation of products and environments, and its importance has only increased over time. But the means for achieving good design is constantly evolving, as technology advances and societal needs change.

Industry leaders increasingly recognize how design not only makes products functional and aesthetically pleasing, but when properly executed, enhances safety, improves medical outcomes and is central to achieving sustainability.

Plastics Engineering surveyed eight leading design experts to gather their thoughts on what the future holds for design and designers. The participants represent a cross section of the profession in gender, ethnicity, geography and experience. Here is what they said.

What factors do you see most affecting how products are designed and developed in the coming decade?

Dan Harden, Whipsaw Inc. We see so much change in society—sociopolitical change, climate change, economic change. These larger contextual factors will influence us as individual consumers. They will impact one's opinion about what to buy, why we consume and even what good design is. They will force designers to be more holistic and more responsible in their approach. Given that design is about creating better outcomes, design as a profession will grow in its influence as it proves to be an effective way of creating our way out of these difficult challenges.

Another major factor that will impact how products are designed is the massive increase in the use of data. Data to a designer should be viewed as objective content that can inform an insight that leads to a better solution. The designer's role is to turn all that cold data into soulful, warm products that are relevant to what people want. Going further, "generative design," where the computer helps to design, is rapidly emerging and will have a major role in the future of design.

Lorraine Justice, Professor, Rochester Institute of Technology The future I envision is that more software technology will be integrated into the entire problem/opportunity solving process. Artificial data will help to determine what is a problem or opportunity. This can include generating and scanning transcripts for embedded biases. Generative software will help to conceptualize design ideas. Virtual reality (VR) will allow the design team—and users—to evaluate the product in rotated 3D imagery with expansion properties to assess structure and material. Augmented reality (AR) will allow us to place the product in its environment for users to assess the qualities or problems of the product. We still need to touch a product and some of this can be accomplished with haptic software to assess textures and responses of an interface. These software innovations will allow the design team and company to have many more exploration and assessment points, but there is nothing like seeing a model at 100 percent.

Anson Cheung, Industrial Designer Designers are going to have to come to terms with the urgent need for more sustainable products. The fairytale of cheap and plenty and the need for constant novelty need to end for manufacturers and consumers alike. This will



Dan Harden is CEO, founder and principal designer of Whipsaw Inc., a design firm in San Francisco and San Jose, Calif., where he handles the strategic and conceptual direction of most accounts. *Fast Company* in 2014 named Harden one of its "100 Most Creative People," while ranking Whipsaw among the top five design firms in the world. An ID graduate from the University of Cincinnati, he previously served as vice president of design and president of Frogdesign before starting Whipsaw in 1999.



Lorraine Justice is an ID educator focusing on the future of design products, services and experiences in the area of design research and new technologies. She is an international keynote speaker, TED presenter and owner of the consulting firm Justice Design. She advises governments, universities, corporations and nonprofits about design strategy. Justice directed Georgia Tech's design program, served as dean of Hong Kong Polytechnic and was dean of the Rochester Institute of Technology. Justice is a fellow of the Industrial Designers Society of America (IDSA) and a professor at RIT.



Anson Cheung is a San Francisco-based industrial designer with more than 10 years of experience in designing technology products. He was formerly a partner and studio director at Bould Design, the studio responsible for iconic products such as the Nest Thermostat, Roku streaming devices and GoPro cameras. Cheung led the firm's strategic development, marketing and operations in addition to directing design programs for clients. He holds a BFA in industrial design from the Rhode Island School of Design, and served as a leader of the IDSA's Diversity, Equity and Inclusion Council from 2020 to 2022.

require designers to consider the ecosystems that their products are part of much more carefully, and perhaps embrace the coming changes such as designing for a more circular economy or for reparability. In terms of material choice, designers and material scientists will need to innovate on more sustainable materials and reduce our reliance on virgin plastics.

Nancy Perkins, Design Consultant and Educator Retail sales experiences have changed, sometimes radically, with e-commerce channels becoming more prominent for many firms. At a minimum, this affects how the features and benefits of product designs are communicated and may affect the way they are designed; for instance, is a feature obvious?

Qin Li, fuseproject The obvious drivers pushing design to evolve are global warming, overconsumption, widespread plastic pollution and the subsequent need for sustainable solutions. Global warming is an immediate climate crisis. Forest fires, extreme flooding and melting glaciers are examples of natural disasters signaling the need for a full pivot. Sustainability is no longer a "nice-to-have" [feature]. Designs need to be grounded in sustainable solutions and armed with a holistic lens that considers end-of-life and minimizes waste. Design in the digital age also has the power to connect us across the human experience. As such, executing with intention and inclusivity can result in inclusivity through design, providing solutions that address the universal needs of many.

Surya Vanka, Authentic Design There are a few interrelated forces that will influence how products are designed in the next decade. Design's popularity and ubiquity have made it possible for more people to choose to become part of this existing profession. Every day there are new ways that anyone can learn about design without getting a formal design degree. Every day there are new design tools that are easy to learn and allow for more people to think, act and build in "designerly" ways. There will always be the formally trained expert designers, but more and more design will be done in different ways, quite likely as collective creations.

Products are increasingly becoming services, and this means that almost every future product will become a conversation. Unlike physical products, the form of a digitally powered product is continuously modified. In fact, in the future no product will ever be fully done and will never be perfect, but a continuous conversation between designer and users that leads to continuous improvements. This is a huge shift in how designers work.

Rebecca Pailes-Friedman, Interwoven Design Tech will play a big role, from the way we purchase, wear or buy things to how we interact with each other and work and play. We will see a huge shift in the way we engineer sustainable and smart materials, looking at ways to minimize the use of energy, streamlining production to cut down on waste and reduce the carbon footprint of a product. Since designers drive decisions on how a product can be made, we can bring together creativity, sustainable practices and technology to help consumers rethink how they

consume and use the products they demand.

Additionally, experiential and personalized design will be more prominent. We are already able to create, transmit, track and record massive amounts of data, generating new content in real time. The transition from digital to physical products will increase as time passes. This shift will bring more demand for customizable and personal experiences that are built around individual behaviors and preferences. If products are "me-centric" then it follows logic to say markets that focus on experiences and wearables that deliver information on your personal preferences will grow.

Ravi Sawhney, RKS Design Products and their environments are intimately connected. Product design will follow the larger trends we see in our communities and around the world. By this I mean the increasing footprint of human activities on our environment and the generational movement to harmonize these activities with our environment. At the same time, the acknowledgement and empowerment of an increasingly diverse population, including cultural and social differences, will drive a diversity of use cases and user needs.

How do you see sustainability altering the landscape for designers? Specifically, how might it affect material choice?

Qin Li We see a big challenge for consumer products with electronic insides. The shorter life span of technology means the product cycle [for such items] ends within three years, generating a lot of landfill waste and polluting rivers and oceans. Sustainability is a systems challenge and design opportunities are accessible at all touchpoints. We have to be careful with material choices. This includes exploring new materials like biobased plastic and recycled plastic, as well as metal and wood, while avoiding painting, virgin material and binding two types of materials that cannot eventually be recycled. To build a reliable product using new materials, we partner with vendors to fine-tune the character of the material and design to enable viability of use. On the other end of the spectrum, we work with engineers to capitalize on the lifespan of technologies responsible for product longevity, to make a product upgradeable and serviceable versus throwing it away. Scalable solutions within a value chain can create circular economies.

Nancy Perkins The use of sustainable materials is expected in every product category. The federal government, the world's largest purchaser of goods and services, emphasizes the use of recycled content, thereby driving product development parameters. I hope we see more impactful methods for recycling materials.

Dan Harden Sustainability has become the fourth pillar of industrial design in addition to form, function and experience. Sustainability includes solving for a product's energy efficiency over its lifecycle, reduction of part count, recyclability and smart material selection. There is abundant new

research about the harmful effects of materials like micro plastics that designers need to be aware of before they spec it. There also needs to be more R&D in discovering alternatives to plastic. New alternative materials will open all kinds of cool opportunities for designers. Material alone can sometimes carry a design, giving it extraordinary tactility, beauty and quality. Material medium can often be the first identity of a product, the same way a paint application can define a painting. Material and design should be inseparably one, but only if that material is sustainable is the design worthy enough to exist.

Ravi Sawhney We need to think from a materials standpoint, how are we going to keep the industrial revolution going? While the talk now is about supply chain issues, the fact is that even when they resolve themselves, we will have to be more conscious of our consumption. Product design needs to include the entire product lifecycle from sourcing to consumption to disposal. In each of these, we will have to be increasingly mindful of the environmental impact of our decisions; consumers/users increasingly expect this. We will have to think strategically about how our designs integrate into this new reality.

It's clear that our current consumption of natural resources is unsustainable. As product designers, we need to be on the lookout for new materials that are sustainable from a mass product standpoint. As a hardware and software firm, we [at RKS] have a unique perspective on how designing them together can make products more sustainable. We have an incredible opportunity to use Internet of Things, data, AI and analytics to make products more responsive to their environments.

Rebecca Pailes-Friedman Good design aims to make products easier, more comfortable and safer to use. It also involves decisions about materials and projected lifespan. There is always a balance between the materials, manufacturing processes, freight, packaging and lifespan of a product. Balancing these factors in a life cycle assessment (LCA) is the best tool available to designers to understand the impact of the products they are designing. It's not just about the materials but the entire life cycle.

Single-use products—especially in healthcare—are the norm for hygiene purposes, but the amount of waste created is an enormous strain downstream. One way to address this is to use renewable materials. For example, Procter & Gamble, the largest consumer of packaged goods in the world, expressed their aim of using 100 percent renewable materials with zero consumer and manufacturing waste. Every step like this helps achieve sustainability goals.

How do you see the XR (eXtended Reality) world affecting how products are designed, created and tested?

Ravi Sawhney We are already seeing XR become a

powerful tool set in the design world, and we use it ourselves. XR is becoming an important tool to de-risk products earlier on in the process. Seeing XR can help align stakeholders earlier in the product design and development process, which helps clarify directionality for later-stage prototypes and designs. One way we use XR is to visualize how products will look and feel in the intended environment. I say “feel” because XR can create some type of connection to a product, but it doesn't replace physical prototypes for physical products. Good product design is emotional, and our senses are the most powerful transmitters of emotion. Having something in your hand that you feel, smell and weigh is irreplaceable.

Rebecca Pailes-Friedman The XR world is revolutionizing the way product designers prototype the user experience. Combined with the use of wearables with embedded haptics in an AR environment, designers have the ability to build entire frameworks and test their ideas without building physical models. User experience (UX) and user interface (UI) can be mocked up and tested in an iteration loop that allows for major overhauls and minor changes on the fly with A/B testing scenarios at a scale that ordinary prototyping would take months to achieve. AR makes it possible to test multiple ideas and approaches in relevant contexts in early stages of ideation, prototyping and product development before physical prototypes emerge. XR has reduced the time spent on revisions in product design.

The metaverse will grow into a thriving economy, providing opportunities for designers to create digital and physical work. AR and VR will redefine the boundaries between real and digital items. Even now, 3D computer-aided design modeling and renders of items approach “real” for clients to envision products before manufacturing. As these products move into the metaverse, their physical being becomes almost irrelevant—but our shared human experience of the physical object in our hands or interacting with our bodies will remain a lived experience.

Dan Harden When you think about it, design is an extraordinary feat of the human brain where energy, in the form of thoughts, notions and dreams are transformed into matter. That transformation is my favorite part of the design process. It's when an idea gets externalized. In other words, it takes shape on a sheet of paper right in front of you, it goes into CAD, or it's mocked up in 3D. XR is just another tool to help you externalize your ideas. When you get farther into your design process you need to understand every nuance about a solution including its scale, its walk-around experience, its environment of use. For that, XR is great. It's also a fast and effective way to test and socialize your solution to other stakeholders because it bridges the imagination gap, making concepts instantly clear and obvious.

Qin Li XR is helping to extend our capabilities and close the gap between visualization and an immersive experience. When we designed the “de Youngsters” exhibit for the Fine Arts Museums of San Francisco, we dropped the design into VR so we



Nancy Perkins is an ID consultant and certified design patent expert witness based in Bellefonte, Pa. She holds 27 patents and has designed products in diverse categories, ranging from industrial equipment to marine and consumer products. An IDSA fellow, she was in 2015 voted one of IDSA's 50 Notable Members. In 1992, she co-founded IDSA's Women's Section and currently serves on its Women in Design Advisory Council. Perkins has taught materials and processes at Carnegie Mellon University and the Illinois Institute of Technology and studio courses at the University of Illinois, Chicago. She received a BFA in industrial design from the University of Illinois, Urbana-Champaign.



As vice president of design at fuseproject, QIN Li leads the firm's industrial design, digital design, environments, brand and design operations team. She takes a holistic and multidisciplinary approach to team building and engaging disciplines. In her 18 years at San Francisco-based fuseproject, she has helped Fortune 500 companies, startups, nonprofits, and entrepreneurs shepherd designs to market in several categories, including AI and robotics, health and wellness, wearable tech, consumer electronics, furniture, packaging and soft goods, among others. Her work has been honored with global recognition and awards, including from IDSA, TIME magazine and Interior Design magazine. Li is the recipient of the 2020 Distinguished Alumni Award from the Academy of Art University.



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could experience the space and look at the planning, proportions and user experience. It helped us skip rounds of prototyping, shorten design cycles and refine in a much more efficient way.

Will the recent experience of remote working permanently change how some brands and design firms collaborate on products?

Surya Vanka Absolutely. Remote working catalyzed by the pandemic is accelerating a shift that was under way in the design industry for over two decades. Remote work will fundamentally shift how design is done when it is not bound by physical space in at least three ways.

The first shift is in the way we gain empathy: Design depends on gaining a deep understanding of the needs, wants and dreams of the people we design for. In traditional processes, this is achieved through sporadic interactions with users, predominately at the start of a project, gaining knowledge through user research and abstracting that understanding into user models, typically called personas. This is a reductive model that's complex. An opportunity of remote work is for designers to co-locate, even embed into the lives of users in richer and continuous ways.

The next shift is to truly integrate collective design methods where designers work continuously, not simply with other designers or cross-functional teams within an organization, but with stakeholders and end customers, unleashing their creativity, not simply the creativity of designers. Design Sprint and Design Swarm techniques have been used as adjunct processes but will inevitably become the way mainstream design is conducted.

And finally, the way designers work will shift with the companies of the future that are not defined vertically as car manufacturers or software companies or computer hardware makers, but as companies creating horizontal offerings such as mobility experiences. This shift requires nimble designers who collaborate effortlessly within and outside company firewalls and multiple locations.

Dan Harden Remote working has already changed how people work, and I think it's permanent. With video, interactions with your client are easier and more frequent, which is a good thing. XR will make it even easier to remotely convey your content to your customer. However, the act of design itself is a social endeavor that is better in person. Walk by someone's monitor and you suddenly get an idea. State a viewpoint and others spontaneously chime in to build on it. Doodle a sketch in the hall, refer to physical samples, run to the shop to make it. That usually doesn't happen at home. Designers and design firms still need studios to do their best work. Furthermore, design is often about subtlety and discernment, which is much easier to detect in your collaborators in person.

Anson Cheung The pandemic has forced open the door on remote work, even in more physically dependent fields like product development. When I was at Bould Design, we worked for almost two years as a virtual studio, meeting only to review prototypes. While it took some adjusting to, it was workable and led to some positive organizational developments and efficiency gains. Aside from that, there were significant personal benefits to the added flexibility of working from home.

Nancy Perkins It is much easier to have a group meeting online without the time and expense of travel. Many firms find that the benefits of recovering commuting time to an office is an advantage and does not sacrifice productivity. This will be balanced with some in-person meetings since those have advantages also. The needs for office space will change and likely impact the markets that serve commercial interiors. Online meetings also make it possible to live and work most anywhere instead of being near the client.

Ravi Sawhney The swift switch to remote working has had its challenges. There's no replacement for face-to-face collaboration. On the other hand, we've learned to streamline and optimize our teamwork in a way that makes meetings more efficient and effective while facilitating people's desires to work remotely from home, on the road or pretty much anywhere. As our team continues to become more global, diverse and no longer centrally located, we're growing into an ever-more amazing blend of people, cultures and talents, and we don't expect that to change.

Rebecca Pailles-Friedman Emerging from this period of remote work the design economy across all industries will be energized by an outpouring of post-pandemic creativity. The hybrid work style has introduced new ways of collaborating, changing the creative process and forming new behaviors. There are advantages to working in person, but virtual tools for collaborative work are game changers. In our practice, we found that remote work sessions helped us broaden our ability to collaborate more often with clients, who often are in other cities, sometimes across many locations. We can work more easily in team settings, across time zones.

Barriers to collaboration that may have existed before are now easier to cross. There is much less resistance to jumping on a video call to hash out a problem or running through a virtual design review than there was pre-pandemic. These remote working platforms also allowed us to attend more conferences and other professional development opportunities. In years prior, it would have required a greater time and capital investment to attend; now these opportunities have enriched the team and led to some nice opportunities. That said, there are things that are still best done in person, like prototyping, materials development, and selection and color.

Do you see differences in students and emerging design talent today versus a decade ago?



Surya Vanka is a Seattle-based transdisciplinary designer who has worked at the leading edge of physical and digital experiences. In 2014 he founded Authentic Design, and before that worked for more than 16 years at Microsoft Corp., where his last role was director of user experience. He is a tenured professor of design at the University of Illinois, Urbana-Champaign, and a fellow at the prestigious Center for Advanced Study. He created the Design Swarms method, a lightweight design technique used in business, nonprofit and education worldwide. He is past president of the Seattle Design Festival and consultant to Amazon, Autodesk, Google, Microsoft and T-Mobile. Vanka authored two books on design and has taught design around the world. He earned his MFA in design from the Ohio State University, Columbus.



Rebecca Pailles-Friedman is founder and principal of New York-based Interwoven Design, an interdisciplinary design consulting practice, as well as co-founder and industrial design lead of SEArch+, Space Exploration Architecture. A pioneering researcher in design methodologies and smart materials, she is an expert in human interaction, wearable products and smart textiles. Her latest work includes the Apex Exosuit by HeroWear, a SPARK Platinum Design Award winner. An ID professor at Pratt Institute in New York, she also is the author of "Smart Textiles for Designers: Inventing the Future of Fabrics." Pailles-Friedman has more than 25 years of corporate design experience in residential interior design, medical, wearable and consumer product design and has served as design director for Fila, Champion and Nike.



Ravi Sawhney is founder and CEO of RKS Design of Thousand Oaks, Calif. He is a serial entrepreneur, business leader, author, lecturer and thought leader on design and innovation, as well as an expert witness in the field. He founded RKS Guitars and worked with Rock'n'Roll Hall of Famer Dave Mason to create the world's first sustainable electric guitar. An IDSA fellow, he founded LoanGifting, a technology platform that uses crowdsourcing to help students pay down their loans through gifts and employer contributions. Sawhney is also the inventor of the Psycho-Aesthetics design methodology, which Harvard Business Press explored as a business school case study.

Ravi Sawhney Students today are part anthropologists, sociologists, business strategists, innovators, and designers of products and software. They're not quite superhuman, but they are of incredible calibers and ready to change the world.

Nancy Perkins Of the portfolios I've reviewed, there is generally a more comprehensive understanding of manufacturing parameters. This gives recent graduates a better chance of being given more responsibility immediately or to start their own enterprises. It's exciting to see.

Lorraine Justice Designers today are much more inclusive of a broad range of cultures and do the research needed to understand those cultures. Designers today would not take on a project without doing the proper design research for the project. In the past, it was much easier for the "designer as rock star" to design without research, as their designs were more expressive or artistic in nature.

Qin Li Students now are much more multiskilled than a decade ago. Design these days is never linear and [one must] solve problems in a holistic way that involves physical and digital solutions. I see a lot of industrial design schools teaching students with a brand and user experience design mindset while collaborating with other departments on projects. I see this young generation of talent doubling down on protecting our environment and holding steadfast an equitable, accessible and inclusive design culture, both of which are long overdue and critical.

Dan Harden Millennials and Gen Z are the first generations to be brought up with physical and digital design as part of their everyday experience. They've been surrounded by it since birth, so they don't view design as a temporary enjoyment, but rather as a normal way of life. Since design is now ubiquitous in our society with digital, physical and communication design fully integrated, they experience design as brand, and brand is most important to them. Their interest in brand and digital shows up in every portfolio. The technicalities of design, like how something is actually made, doesn't interest them as much probably because production has become so outsourced and commoditized. Conversely, I expect this generation of young designers to take digitally enhanced experiences to new and exciting levels.

Anson Cheung Over the last decade, it seems that the quality bar for students and emerging designers has been raised higher and higher. The best graduating students today have portfolios and skills that are significantly better than when I graduated in 2011. I suspect this is because they have access to more educational resources and exposure to the best quality design work through the internet. When I was at school, we compared portfolios among our classmates. Now, it seems like they have the whole internet to compete with, and that can be a big driving factor to learn and grow.

From what I know about Gen Z, they care a lot more about a company's values, purpose and sustainability than previous generations. I suspect and hope that this will drive the development of more brands and

products that are mission-driven to create a better world, as that's where Gen Z will be looking to spend their dollars. Gen Z are also squarely digital natives, so they'll have a comfort level around and an expectation of technology products that ... will accelerate the integration of technology into our everyday lives.

Rebecca Pailles-Friedman Gen Z tends to perform better and embrace social learning environments more. They are hands-on and direct. They want to be a part of the learning process themselves rather than sitting through a lecture. They are also business-savvy. Part of this is because they have more access to information earlier compared with previous generations.

For Gen Z, clear and direct communication is key. Authenticity is critical. It's about "democratizing" design, moving away from a one-size-fits-all approach to designing and developing products and services that serve a fuller spectrum of outlooks, sizes, needs and cultures. Designs need to be easy to use and understand. They look for stability, familiarity and comfort. They value convenience, and their values matter. A brand matters if it aligns with their world view. And diversity and inclusivity are key.

Do you expect the design profession to become more diverse in gender, ethnicity and geography in coming years? What impact might that have?

Qin Li The hope is always for more diversity. Not only for the sake of equity and inclusivity but for the business value built into thinking from an inclusive vantage point. Diverse thinking translates directly into solutions built for a broader group of people. Our studio is made up of 19 nationalities. Our backgrounds come to the surface and inform the way we design. At fuseproject, we established mentorship programs like our fused initiative, which focuses on providing career guidance and mentoring opportunities for BIPOC (Black, Indigenous and people of color) students.

Lorraine Justice It is growing in that direction now. For instance, some of our design classes [at RIT] have 50 percent or more women, whereas in the past we had mostly males in our design classes. Ethnically, we have many more students coming from China, Korea, India and Japan. Ten years ago, we had more people from Europe coming for master's and PhD degrees, but that has subsided.

Anson Cheung I think we have seen more diversity of all kinds in the design profession, which is sorely needed. A more diverse set of perspectives leads to better, more inclusive products for everyone. However, it seems that this trend is much more visible in the digital design disciplines, perhaps since digital design education is more easily democratized through the internet. The physical barrier of having to attend a four-year degree program to do industrial design or engineering might be preventing that same

level of democratization from happening in those fields.

Ravi Sawhney The design profession has lagged on diversity and inclusion. We were once a self-perpetuated, white male-dominated profession. Today, contemporary and relevant design leadership make diversity foundational. We look at individuals based on who they are and what they can do. When we look at designers this way, the profession is becoming more diverse by necessity. Design must reflect the cultural, ethnic and gender diversity in the world we live in, and so must designers and design teams.

Surya Vanka We have to face the fact that the design profession is not diverse, not representative or equitable today. The higher up in design organizations you go, you see less representation of women, female-identified and non-binary designers. It is the same story with people with disabilities. Design is taught in relatively few institutions, only in a few countries and in a few languages. It starts at awareness and education. Many students of color have never met a designer or creative professional. Change only happens when there's candid conversation, and I am heartened that the lack of diversity is a central conversation in the discipline today.

I think that empathy is the superpower of design, it is how we understand the needs and wants of our users. I am optimistic that we can use this same lens to look at our profession, our colleagues and who is being excluded from being part of design today. I see change driven by a handful of committed groups, including one, Diversity By Design, that I am proud to be part of.

Nancy Perkins Every year, we see award winners and speakers at conferences who are much more diverse than in previous decades, which has been fabulous to witness. However, that progress has been the result of workplace and healthcare policies that make it more feasible for women to combine family responsibilities and careers. With changes to reproductive rights, or with spotty healthcare rights nationwide, we will see the destruction of that progress for women.

Dan Harden When I started my design career in the 1980s, ID was an insular profession. All the good firms were in New York or Europe, they were run by white men and 90 percent male. Thankfully, this has changed. Design is everywhere now due to democratized information and an explosive interest in design by the public that sees it as a positive cultural endeavor. Design proved to be a formidable economic engine, too, by business, which helped to fuel its ascent.

Design has grown to include new fields of research like UX, strategy, process design, material design, sustainability design and service design. Design is no longer just about objects, it's also about experience, life, the planet and crafting change thereof. All this expansion has made the field of design much more inclusive, opening doors for many more people. Design will benefit hugely from a more diverse workforce.

Rebecca Pailes-Friedman The design industry ... is not reflective of the current population. It is critical that it not only becomes more diverse but more inclusive. Expanding representation is very important in making the design industry more diverse, however, it is not the only step. It is equally important to make sure that the design industry is welcoming and inclusive of all designers and/or future designers. Finding new ways of recruitment and hiring, enabling mentorship opportunities, developing a pipeline and investing in diversity, equity and inclusion programs are steps the industry has to take to make sure the diversity is sustainable.

I'm active in the Industrial Designers Society of America on the Women in Design committee, and our vision is to enable women in the industrial design community to grow stronger, ultimately reaching parity for gender identities within industrial design. We look to achieve this by expanded mentor networks, working to track and reflect on diversity in design across the U.S. and supporting the growing network of Women in Design chapters. Movements like this are critical

Do you have a bold prediction about the future of design?

Nancy Perkins A profession that values everyone's ideas and viewpoints, that enables rather than restricts, that collaborates for the common good of people everywhere, is something we can do, if we so choose.

Rebecca Pailes-Friedman With the pandemic, there are certain abstract commodities that people are elevating more than material possessions. These values are going to shape and change what design needs to achieve in the future. One of these commodities is time. Time seems to have been compressed and sped up. We have lost our sense of normal time passing. Time has become precious and scarce, and people are looking for physical or virtual products that are going to save them time and help them cherish and enjoy their time.

Look especially for products to emerge that help people spend more of this commodity on themselves. Design is going to be shaped by this commodity more in the future. This can range from the product itself to the user interface of the product. Or to just not having too many products to distract from the simple pleasures of life.

Dan Harden Since design at its core is about creating positive change that adds meaning and purpose to everything, it will become a more important business factor than marketing or sales combined.

Lorraine Justice If the planet issues continue at the pace they are currently, I believe countries may start to vet which products are made that impact their economy. In other words, in the future, you might need a permit to produce a new product that uses up fresh resources.

Surya Vanka I think there is a shift under way [in how] design will be practiced. This is the shift to Design 4.0. We can think of Design 1.0 as design used for creating products and communications, and what design is known for: the creation of elegant, innovative, ergonomic solutions that are well suited to mass manufacture. Design 2.0 is an expansion to include experiences and services, which includes narrative and digital aspects. Design 3.0 is what we see all around today in this golden age, where design has become a means for organizational transformation and business success. What is emerging is Design 4.0, design for social and planetary transformation with equity and well-being of all at the center.

Ravi Sawhney We will see more large and significant companies create company-wide goals around design and make these goals strategic priorities. We will see more designers elevated to executive roles in countries, companies and nonprofits. Design has slowly become one of the most powerful tools of successful organizations, and it is the only way we are going to solve some of the greatest problems for the species of our time—climate change, poverty, and water and food security.

Anson Cheung I think a key design challenge of the coming decade will be how we integrate physical and digital experiences. Digital design has reached a high level of refinement very quickly since the mass adoption of touchscreen phones, but most physical products that have digital interfaces—cameras and cars come to mind—have terrible interaction between the two. This is likely because of how segregated the digital and physical disciplines have become. I think the future of design belongs to those who can fluidly work between atoms and pixels.

Qin Li I don't want to predict the future, but I can make a commitment. I will push a lot harder for sustainability. I will design to enable technology in a way that integrates with human life and won't override the authentic human experience. I will focus on design impact that serves to improve the quality of life. As a designer, I believe we create our futures, and I am personally committed to doing my part toward a better future for us and our environment. ■