

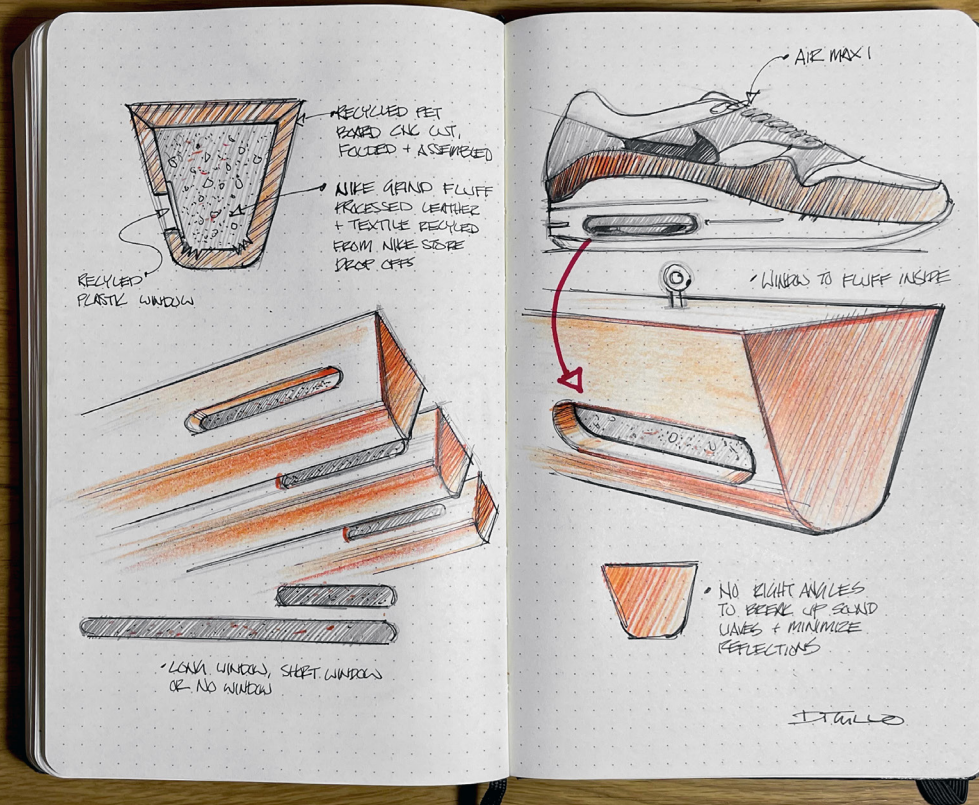
INNOVATION

SUSTAINABLE LEADERSHIP

Exploring the intersection of earth-saving design practices and the value-driven role design can play in strategic decision-making and successful business outcomes.



INNOVATION®



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Cover: Haven tables, designed by Mike & Maaike and Watson, feature inviting touchpoints like lights, hooks, and rounded shapes in an effort to facilitate a collaborative environment. See page 22.

Opposite: Sketches, by Michael DiTullo, IDSA, of the Kirei Air Baffle using Nike Grind. See page 56.

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BE A VOICE FOR CHANGE

As the developers of products and services used by billions of people around the world, industrial designers hold a crucial position: one that demands we look for ways in which our work can ignite social, cultural, and institutional change. By leveraging our resources, processes, and voice as designers, we can establish new ways of thinking and methodologies in our studios, companies, and corporate settings that, in turn, can help to ensure the ongoing health of our planet and its precious resources.

In this issue, we explore the complex intersection of earth-saving design practices and the value-driven role design plays in strategic decision-making and successful business outcomes. Now, as the once separate languages of design and sustainable business continue to converge, it is vital that we know how to enable a dialogue that helps our business counterparts succeed financially while delivering meaningful human-centered solutions to the marketplace without sacrifice.

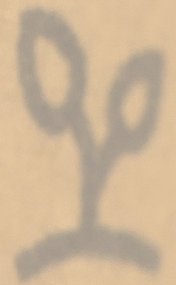
The authors in our Summer issue provide insight into successful products and projects across a wide spectrum of

industries and product categories. Whether turning ground-up Nike shoes into sound baffles or implementing circular strategies to address complex societal challenges, industrial design, when combined with sustainable practices, continues to prove itself with practical solutions and a demonstrated positive impact on people, profit, and our planet.

Exemplifying sustainable design leadership takes much more than a splashy marketing campaign or putting a recycling logo on the back of a package. Rather, it requires a comprehensive and persistent commitment to address every detail of how a business operates and produces its goods and services in order to truly make the type of lasting change our planet needs. Decades of poor decisions and consumer apathy have created a situation that needs to be addressed with more urgency than ever. Action must be taken today if we have any hope of creating paths forward to a more sustainable professional practice.

We hope this issue inspires you on your journey to design for positive impact—for today and the future.

—INNOVATION Editorial Team



BIO

PLASTIC FREE

COMPOSTABLE

RECYCLED

DEGRADABLE



WILL CIRCULARITY BE ENOUGH TO SAVE US FROM ENVIRONMENTAL COLLAPSE?

The COVID-19 pandemic has unsettled society in unexpected ways, making sustainability—the goal of humans living in balance with nature—look more distant than ever. The comments and discussions at the 2021 IDSA Sustainability Deep Dive were great indicators of the co-existing passion and anxiety felt by participants, highlighting the need for sustainability to be the focus of any plan for the future. Both presenters and participants cited circularity as the most promising pathway to sustainability, almost akin to a magic bullet that would save us all.

Since 2014, the European Union has been pursuing industrial strategies to move to a sustainable, low-carbon, resource-efficient, and competitive economy that would see the economy evolve from a linear model into a circular one. I have chosen to not tiptoe around the topic, selecting plastics, a material class with a huge ecological footprint, to see how they fit within the narrative of circular economies. According to the findings published by Livia Cabernard and colleagues in “Growing Environmental Footprint of Plastics Driven by Coal Combustion” in *Nature*, plastics, which are derived from oil and natural gas, are one of

the most visible examples of environmental pollution from extraction, formulation, and production all the way through to consumption and disposal. These materials are completely synthetic, and their unique structures make them immune to the natural decomposition and regenerative processes that would allow them to be a part of the natural nutrient flow that sustains life on Earth.

In this essay, I will present arguments on why circular practices based only on recycling—whether it be through design or the economy—will not lead to sustainability and must be coupled with reductions in consumption.

What Is a Circular Economy?

According to the Ellen MacArthur Foundation, the circular economy begins with the question of what it will take to transform our throwaway economy into one where waste is eliminated, resources are circulated, and nature is regenerated. It is an economic system based on decoupling economic activity from the consumption of resources. Driven by design and transitioning to renewable energy and materials, the principles of a circular economy

can be summarized as eliminating waste and pollution, circulating products and materials at their highest value, and regenerating nature. The circular economy is an ambitious concept that sets its sights on providing tools to tackle climate change and biodiversity loss while ensuring prosperity, growth, jobs, and resilience, all while still cutting greenhouse gas emissions, waste, and pollution.

Critics say that this vision of the circular economy misses the key point that endless economic growth is not possible on a finite planet. Researchers point to findings that indicate that human activity has exceeded the limits of the nine processes that regulate the stability and resilience of Earth systems. This concept has been visualized by a team of 28 scientists at the Stockholm Resilience Centre and clearly indicates that without reductions in the consumption level of affluent countries, we can never achieve any of the goals set out by the circular economy. There is no plan in the current definitions of the circular economy that points to reducing consumption levels anywhere. Instead, the dominant idea seems to be about moving toward an unlimited form of circular consumption.

Economic growth is calculated as the percentage of changes in the gross domestic product (GDP). GDP measures the value of the final goods and services produced and is the most popular indicator of a nation's overall economic health. But as economist Peter Victor argues in his seminal book, *Managing without Growth*, in reality, GDP measures the throughput of material and energy through the economy. Victor, along with fellow economists Richard Easterlin and Mathias Binswanger, has noted that economic growth does not necessarily increase well-being since often environmental externalities (unintended consequences) and other adverse social effects of economic growth may be rising faster than personal incomes, so they outweigh the benefits of increased private consumption. Changes in GDP are calculated based on the last reporting, so, essentially, by closing the loop of material flow, circularity is proposing a GDP of zero in which the economy remains the same size.

Since the current rate of consumption is exceeding the bio-capacity (the regenerative capacity) of our planet, regenerating nature, another key goal of the circular economy, will require that we reduce our consumption of resources to a level that allows nature to

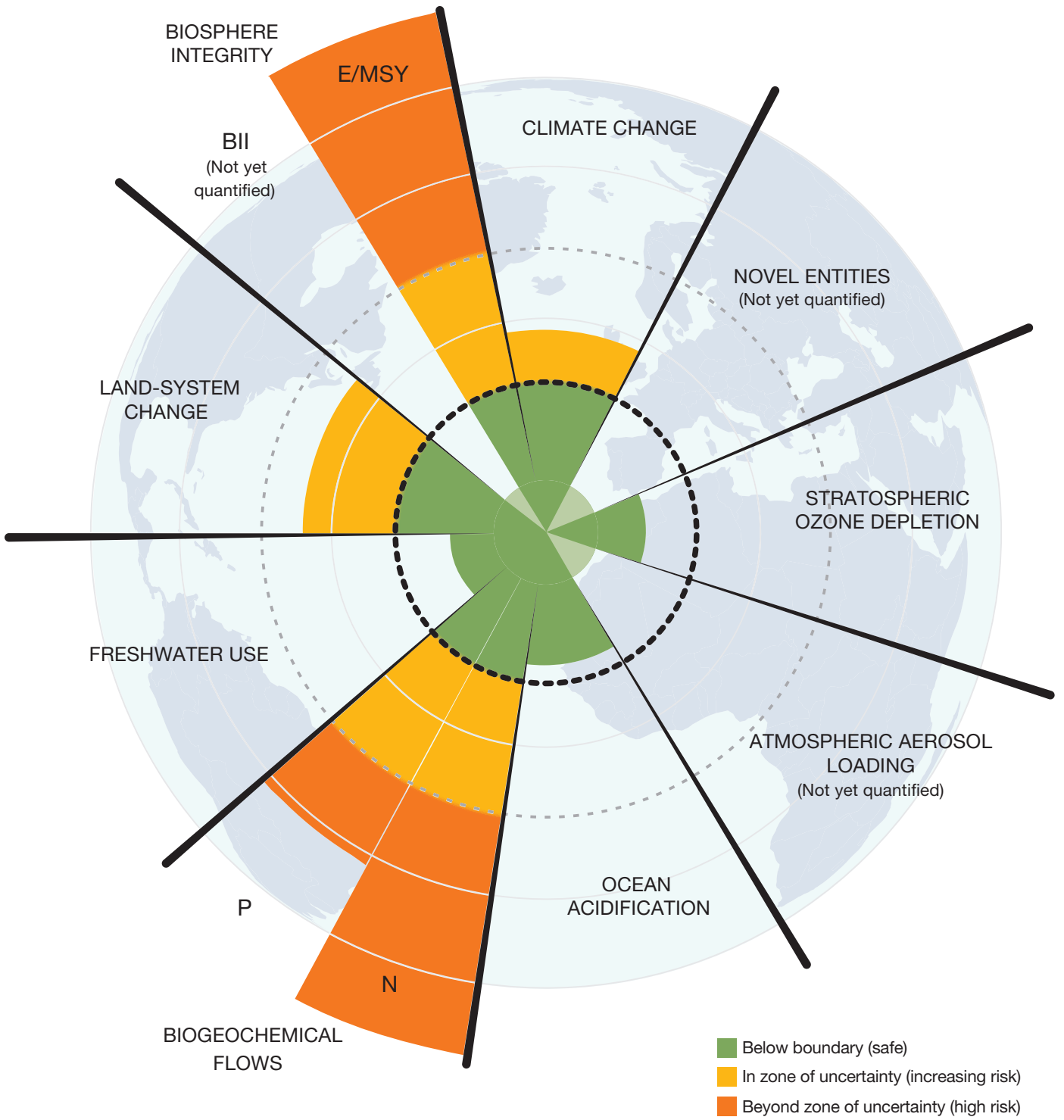
regenerate, which would be even lower than the 0% GDP mentioned previously.

Recycling Resources Back into the Technical Stream

One of the key tenets of the circular economy is recycling, which itself is not a new concept since humans, who have long been faced with the challenges of acquiring resources, have always tried to maximize the use and lifespan of products and only recycled them as a last resort. "Throw-away living" is a term first published in a positive context in *Life* magazine in 1955, heralding a shift from the thrifty lifestyles of the past toward a new carefree style of living. With the advent of industrialization, new energy sources, and ease of extraction, economies driven by the quest for profit maximization have favored the ease of continued extraction of virgin resources over recycling.

Internal documents have uncovered that even from the earliest days of the plastics recycling program in 1974, oil and gas executives understood that recycling plastics was not economically feasible, but they embarked on advertising campaigns to persuade the public otherwise. In a 2020 investigation that aired on National Public Radio titled "How Big Oil Mised the Public into Believing Plastic Would Be Recycled," Laura Sullivan provides compelling evidence about the ploy to make billions of dollars selling the world new plastic. Recycling results in downcycling, with the plastic degrading along the way even if you begin with homogenous batches of cleaned plastics. Since most plastics are custom formulated with specialized additives to enhance performance, most plastic components become too complex to recycle.

On March 2, 2022, the United Nations Environment Assembly voted to create a legally binding global plastics pollution treaty by 2024. While all parties initially claimed victory, there seem to be very different views on how this treaty should be outlined. The petrochemical industry has already indicated that it will not support caps on production and instead wants to focus on recycling and waste management approaches. This could be a major hurdle. Studies, as John Geddie and Joe Brock report in "Analysis: Big Oil's Plastic Boom Threatens U.N.'s 'Historic Pollution Pact'" in Reuters, indicate that less than 10% of plastics are recycled as new production is so plentiful.



An illustration of planetary boundaries showing that climate change, biodiversity loss, land use, and the nutrient cycles for nitrogen and phosphorus have exceeded safe operating limits, taking our planetary systems into unprecedented territory. Designed by Azote for the Stockholm Resilience Centre, based on analysis in Persson et al 2022 and Steffen et al 2015.

This seems to eliminate the possibility that the oil and gas industry would be held accountable or be forced to cut production of plastics until they finally live up to the unsubstantiated fairy-tale claims of the recyclability of existing stocks. This would be a critical first step in moving toward circularity, but until that time, we need to treat plastics as what they are: a nonrecyclable, nonrenewable resource that we are wasting on frivolous consumption rather than saving for future generations.

Regulating Material to Protect the Public

You may be wondering if besides my unwavering optimism I have any other reason to believe that the plastics industry can be forced to take ownership of the glut of plastic pollution that exists and implement real recycling solutions. In the past, there have been many cases where collective good has caused governments to regulate the types of material that can be used in society. One such example is the removal of lead from the solder in the electronics industry.

Tin-lead solder is a metal alloy that is melted and used to bond electronic components. The health and environmental risks of exposure to high levels of lead are known to cause anemia, weakness, and kidney and brain damage. Despite overwhelming reason to remove it from use as the industry standard, it was hard to imagine a future of making electronic components without lead in the solder. As of July 2006, European Union guidelines banned the use of lead solders, leading to the creation of several other production methods, including laser spot welding. This allows producers to meet the European guidelines on electrical and electronic equipment waste and enables the reduction of hazardous substances.

The way CFC and BPA were phased out of production offers two additional examples of how industry was able to pivot from established materials to innovate and create new, less toxic substitutes. While these examples point to the benefits of regulation to protect the health of the public, can this type of environmental regulation benefit industry?

In 1992, economist Michael Porter hypothesized that strict environmental regulation can induce efficiency and stimulate innovation for polluting industries, leading to increased productivity. This hypothesis has been extensively studied and become the subject of much debate, specifically around ways polluting industries can reduce greenhouse gas emissions. In 2017, George Van Leeuwen and Pierre Mohnen published a comprehensive study titled “Revisiting the Porter Hypothesis: An Empirical Analysis of Green Innovation for the Netherlands” in the *Economics of Innovation and New Technology*. It examined the effect of

environmental regulation on green investment leading to innovation and productive efficiency. This study used data from three separate surveys conducted on thousands of Dutch firms over six years. This research concluded that it was possible to have a win-win situation for environmental protection, as well as growth for industry, as long as the conditions were stringent and comprehensive.

Final thoughts

Kris De Decker (2018), creator and author of the Low-Tech Magazine blog, has extensively studied resource consumption and concludes that more responsible resource use is a great start but not sufficient for circularity as 71% of all resources (including the plastics I have used as an example) cannot be recycled or reused. Currently, 44% of resources are used as energy sources and 27% are permanently used in buildings, structures, and products with long life cycles. Without a reduction in consumption, circularity will remain a soothing swan song as we hurtle toward environmental collapse.

We can see that the move to sustainable futures is not just about materials and their manufactured life cycles but about a holistic approach to how humans live and interact with the world. This approach necessitates the ability to look beyond the lens of centering humans as the focus of profit-driven economic activity and to consider how we can lessen our impact on the world. I draw upon the progressive concepts of Tony Fry, who in his book *Design as Politics* sheds the mask of neutrality in design to argue that design is a political act. Designers acting as a service industry are directly responsible for eliminating future pathways for sustainability, a process he names “de-futuring.”

The first step in meaningful action is recognizing that industrial designers can accomplish so much more than designing products for industries focused on the continued reckless extraction of resources. Using our collective talents and creativity, we can begin the difficult journey of transitioning from sustainability to regenerative practices by reducing consumption, lowering carbon footprints, and focusing on social well-being

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