

climate tech

for a Sustainable Planet

Quarterly review
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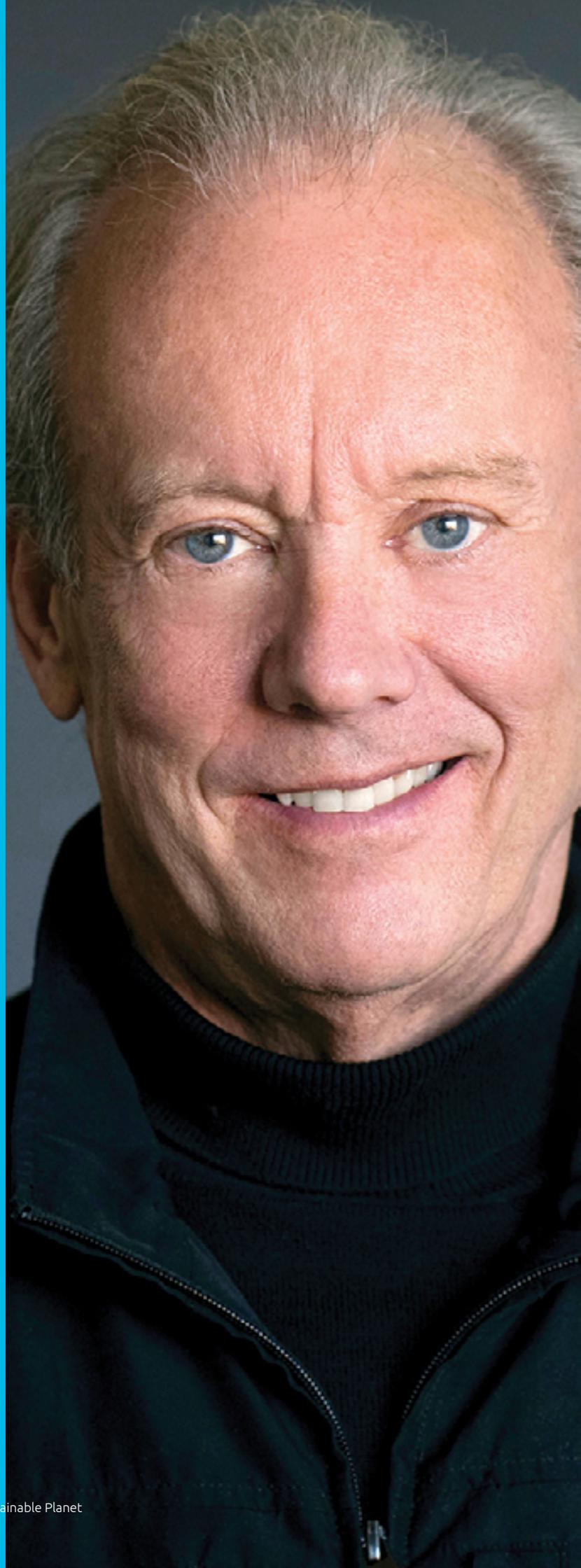
Executive conversations with...



**WILLIAM
MCDONOUGH**

Designer, Architect,
Innovator, Author

Cradle to Cradle



DESIGNING A WORLD IN SYMBIOSIS WITH NATURE



The Cradle to Cradle Products Innovation Institute is a non-profit organization created to bring about a large scale transformation in the way we make things. The Institute's mission is to lead, inspire and enable all stakeholders across the global economy to create and use innovative products and materials that positively impact people and planet. The Cradle to Cradle Certified® Products Program is administered by the Institute and the product standard is recognized by the world's leading retailers, including Amazon, Home Depot, Walgreens and Walmart.

William McDonough is a globally recognized leader in sustainable design and development. He is a green architect, designer, and author. He is Chief Executive of McDonough Innovation, the founding partner of William McDonough + Partners, co-founder of MBDC, and co-author, with Michael Braungart, of Cradle to Cradle: Remaking the Way We Make Things (2002) and The Upcycle: Beyond Sustainability – Designing for Abundance (2013). The Capgemini Research Institute spoke to William about his work, the role of design, and how carbon can be beneficial to humankind.

HOW CAN WE GO BEYOND “SUSTAINABLE” TO SHARED ABUNDANCE BY DESIGN?

You hold many unofficial titles: “Hero of the Planet,” “Father of the Circular Economy,” “Mr. Sustainability,” and so on. How do you see yourself?

I see myself as a designer working across many scales and contexts and I believe design is the first signal of human intention. I celebrate culture and commerce as powerful engines of both stability and change. For me, growing up in Japan and Hong Kong with summers in the Puget Sound, I always wanted to share the amazing things I saw with others. I always found beauty in nature – a smooth round rock or pebble on the beach, a leaf, a flower, a tree. Nature had a hard time being ugly, while human artifice had a rough time being beautiful – crushed sharp gravel, clear-cut forests, concrete and steel. I love working on designing the future we want for our children and their children, and trying to work in accord with the laws of nature. I’m not alone; there are many who think this way. We seek to design in a way that is true to nature and true to ourselves. It is difficult to summarize my occupation or characterize my work, but, essentially, I want to turn work into play while playing by nature’s rules – the laws of nature.



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You suggest that the term “sustainability” is often insufficient to encapsulate what we should be aiming to achieve as a global society. Why is that?

The first globally referenced definition of sustainability (Brundtland Commission, 1972) had to do with meeting the current generation’s needs while allowing future generations to meet their own needs. It’s an evocative term derived from ancient wisdom and has inspired thousands of current policies and business programs. But sometimes the term loses much of its positive meaning when it is seen as minimal maintenance or even when it leads to

people focused only on the economics of being efficiently less bad, trying to not do something – for example, looking for net-zero. Sustainability is a nice, accessible term but is often awkwardly defined in so many situations because, like politics, all sustainability is best recognized on a local level, even when it may be responding to perturbations caused by global behaviors, like climate change and supply chain disruptions. It can be most vividly described in detail by its effects on local ecosystems and the stories of people in a place. That’s part of the issue, and that is why I focus on developing principled design tools that work anywhere at any scale and can be used by everyone to consider and execute net-positive activities. These tools include books, Cradle to Cradle and The Upcycle, the circular economy and, now the circular carbon economy. We can continue to build on sustainability only if we build with it in mind and deed. I prefer to think of sustainability closer to its original description but with the potential for growth – intergenerational stewardship and growth of a living planet. Even as we reduce our fugitive carbon in the atmosphere, we want to be increasing our use and reuse of materials and energy. We have come to realize that what we thought was an energy problem is a materials problem since we use carbon as both a material and a fuel. We can return much of the carbon in the air to the biosphere as living carbon (nature-based solutions) or earth-bound as durable carbon. We need a positively defined system of use and reuse of growth cycles that goes beyond sustainability toward abundance that we can share.



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IN NATURE, WASTE = FOOD

You say that nature doesn't have a design problem – people do. Can you elaborate?

In nature, waste from one system can provide nourishment to another. Nature does not have resources, rather it has sources. One of the fundamental values of human activity is that we can turn nature's sources into resources that we use over and over again, reducing our need for our extraction or destruction of natural sources. For me, this is not simply taking the existing take-make-waste linear economy and twisting it into a circle; it is actually a continuously resourceful activity within a regenerative biosphere (which are natural living systems) and circular technosphere which are objects of human intention, purpose, and use.

When it is not unbalanced by human interference, nature finds itself in symbiosis: everything is in a mutually beneficial relationship with everything else. I want to quote Thomas Jefferson: "The earth belongs to the living." We can see ourselves as stewards safeguarding nature from one generation to the next. Furthermore, the recent language surrounding the circular economy is slightly problematic because terms reflecting undoing such as "decoupling economic growth from resource use" and "decarbonizing" do not accurately reflect the positive relationship that can exist between humans and nature. For example, we can focus on re-carbonizing things like soil and living things while turning natural sources into resources available for continuous use and reuse.

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WE CAN SEE OURSELVES AS STEWARDS SAFEGUARDING NATURE FROM ONE GENERATION TO THE NEXT.

You describe climate change as a “design failure”; can you elaborate on that?

Climate change is the result of breakdowns in the carbon cycles, which we have caused; it is a design failure. If design is the first signal of human intention, did we intend to do this? Emerson in the 1830s referred to nature as unchangeable essence – the mountains, oceans, leaves, and air. These things are all seen as too big to imagine destroying. As we see modern-day damage to ecosystems at every scale, we find ourselves needing to regulate the human activities that are overwhelming and destructive to the commons. Whenever we see a need for regulation, we see a sign of design failure. Our intentions were flawed.

I am not against regulation. Society needs to regulate its own behavior in order to keep our world habitable. But what we need from regulations is a level playing field that provides society with a clear set of rules. If people are not playing by the rules, it makes it harder for everyone to work and live. Executives can ask the right questions to find innovative solutions. They can focus on the right intentions and build cost-effective solutions around them. We did this with Ford Motor Company and their River Rouge facility. In order to meet the Clean Water Act requirements, instead of building chemical treatment plants and massive piping systems, we designed and engineered the world's largest green roof and integrated water purifying landscapes that saved Ford as much as \$35 million in CAPEX over conventional systems. With cars coming out of factories with a 5% margin, this is equivalent to an order of \$700 million worth of cars. Regulation can be useful in keeping our world clean and safe, but we need to be mindful of why it is necessary in the first place.

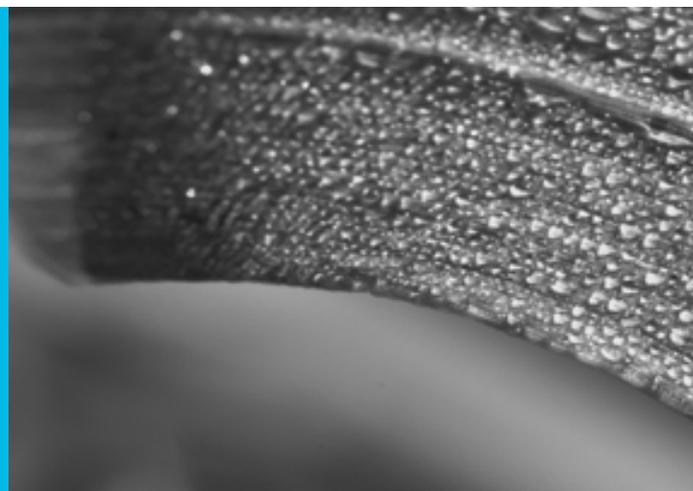
WORDS DRIVE ACTION

You have said that “carbon is an innocent element” and that “not all carbons are equal.” Could you help us understand your perception of carbon?

Anthropogenic greenhouse gasses in the atmosphere make airborne carbon a material in the wrong place, at the wrong dose, and for the wrong duration. This is a description of a toxin. Imagine lead and mercury in drinking water – they are toxic to humans. It is we who have made carbon problematic. In the right place, carbon is both a resource and a tool. It is also a source of life. Carbon dioxide is the currency of photosynthesis, a source of Earth’s capacity for living things and regeneration. Earth-bound carbon is one of the guarantors of terrestrial and marine ecosystems and food and water security. Carbon atoms are the building blocks of life. We are carbon and it is us who make carbon toxic.

The world’s current carbon strategy promotes a goal of reaching net-zero carbon emissions. There are terms such as “low-carbon,” “zero-carbon,” “negative carbon,” and even a “war on carbon.” The design world needs to adopt values-based language that reflects the desire to live in a safe, healthy, and just world. In this new paradigm, by building urban food systems and cultivating closed-loop flows of carbon nutrients, carbon can be recognized as a critical asset, rather than a toxin, and the life-giving carbon cycle can become a model for human design.

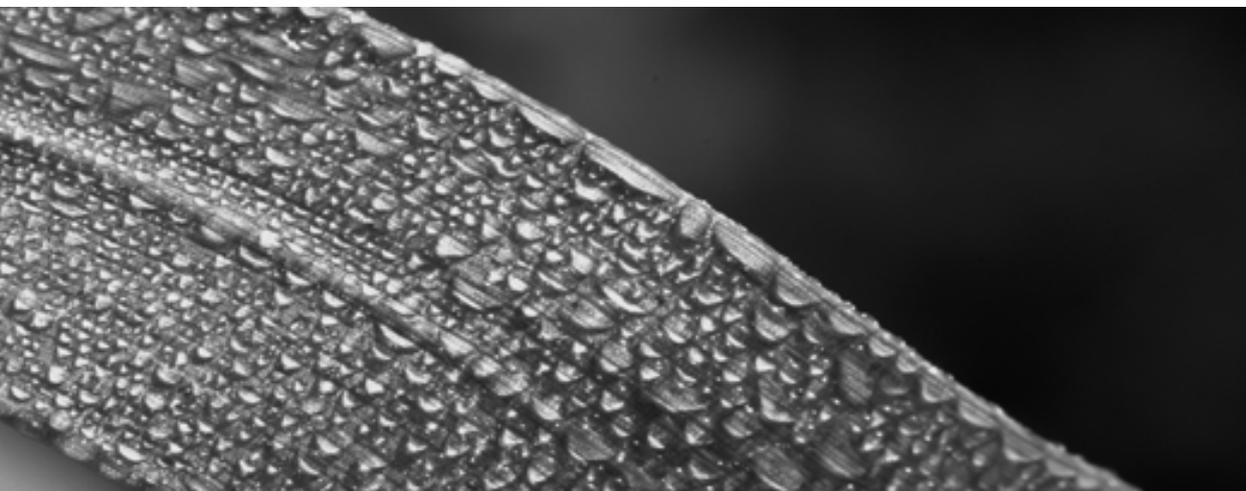
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The point I wanted to make here is that we have started to refer to carbon as the enemy, but carbon is not our enemy. It is our friend. We are carbon. Carbon moves through all living things in an endless cycle that makes life possible. It's an innocent element in all of this. I think we need a new language around carbon.

The term “Triple Top Line” was coined in the book Cradle to Cradle to describe the rich opportunities for revenue and growth inherent in sustainable design. Can you expand on that?

The Triple Bottom Line, referenced often since the Earth Summit in 1992, has been about balancing traditional economic goals with social and environmental concerns and has become a measure of corporate performance. One realizes, however, that a business strategy focused solely on the bottom line does not expose opportunities to innovate and create new forms of value in the design process. This new design perspective actually creates Triple Top Line growth: products and processes that protect nature and society while generating revenue and economic growth. Designing for the Triple Top Line involves giving commerce the tools to develop systems and products that generate economic prosperity while combining with social benefit and ecological intelligence.



Executive Conversations

Are there any new innovations that you are excited about when it comes to sustainability?

Too many to mention here, but I would love to focus on the idea of conceptually separating the terms “hydro” and “carbon” in the word hydrocarbon because I’m very excited about the idea of a technology that can use hydrogen as a clean fuel and carbon as a durable good that does not go fugitive in the atmosphere or require sequestering in the geosphere. On the carbon side, I’m very excited about our ability to use natural gas to produce graphene. I’m also very excited about graphene as a material because of its elegance, strength, and conductivity. In 50 years’ time, I hope to see a shift towards hydrogen-powered energy and renewable energy combined with battery and high-temperature thermal storage for industrial heating uses. And in the middle of it all, durable and living carbon once again is an integral – rather than feared or fugitive – element supporting our global life support system.





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