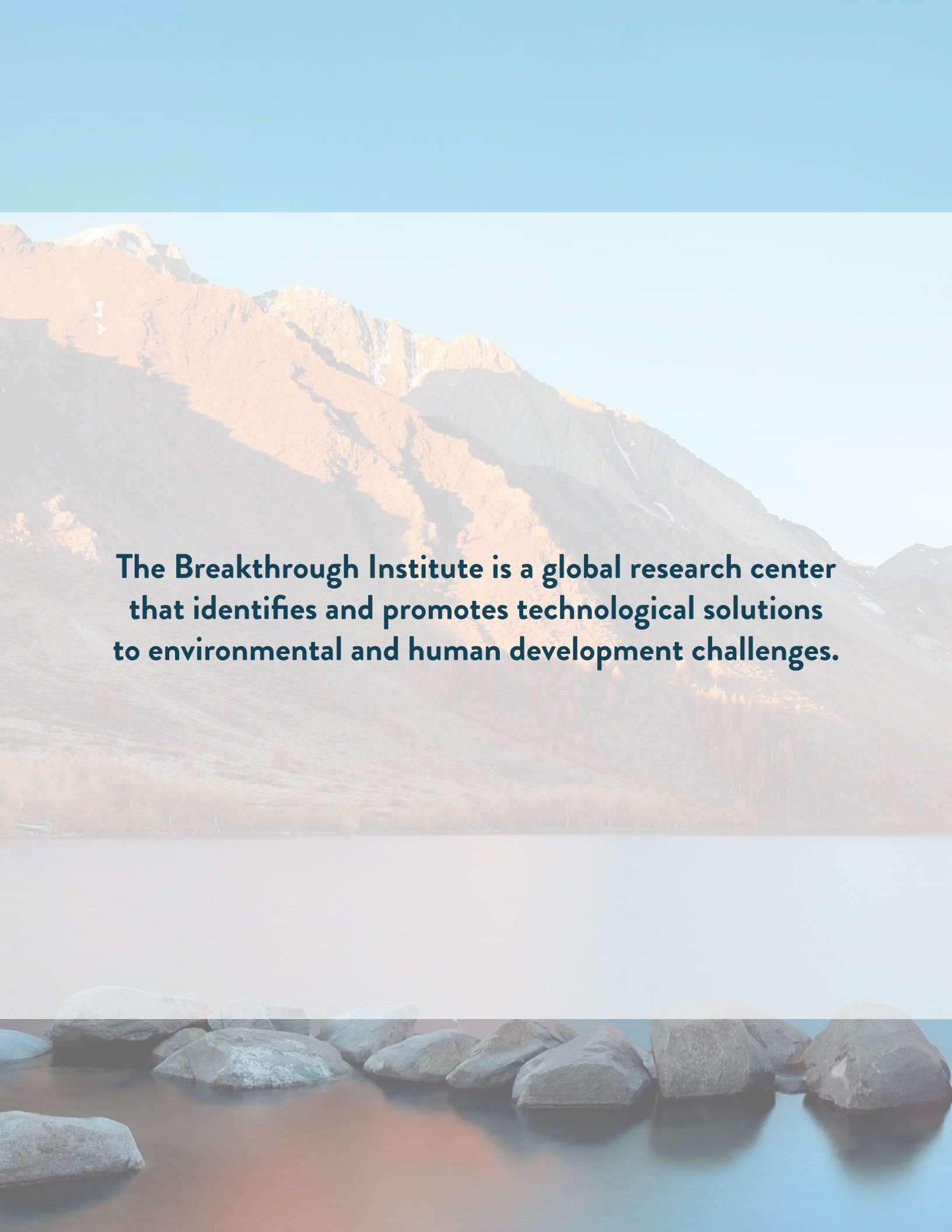


2018 IMPACT
REPORT



The Breakthrough Institute is a global research center that identifies and promotes technological solutions to environmental and human development challenges.

MESSAGE FROM THE CO-FOUNDER & EXECUTIVE DIRECTOR

The Breakthrough Institute has been active for over a decade now. From the beginning, we've worked to modernize environmental thought and action for the twenty-first century — as critics of conventional environmental ideas, as advocates for clean energy innovation, as hosts of ongoing philosophical discussions, and most recently, as the leading proponents of the school of thought that has come to be called ecomodernism.

Over that time, we have focused on what we see as the most pressing environmental issues: energy, conservation, food, and cities. We've built a growing following for ecomodern approaches to decarbonization, protecting ecosystems, modernizing agricultural practices, and accelerating the pace of human development. Not everyone agrees with us, and many of our views on creating better futures for both people and the environment remain controversial. But our work continues to shape environmental debates across the political spectrum and, we hope, create new possibilities for constructive action.

To remain vital, however, our work must continue to evolve. Breakthrough matters in the world when we get in front of environmental debates and take them to new places. In the coming years, we plan to continue to do just that: asking hard questions about the relationship between human well-being and environmental progress, convening ideologically diverse and interdisciplinary discussions among scholars, policy-makers, philanthropists, journalists, and technologists, connecting ecomodernist thinking to ongoing policy conversations, and building new partnerships that expand the international community committed to an ecologically vibrant future in which all of us live healthy, prosperous, and fulfilling lives.

Ted Nordhaus
Co-Founder & Executive Director



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OUR VISION

Breakthrough's vision is of a world that is good for both people and nature.

We believe that human prosperity and an ecologically vibrant planet are possible at the same time. Societies are already experiencing peak use of many natural resources; some previously destroyed forests are returning as we use less land to farm more food; our energy sources are becoming denser and cleaner; and pollution — including carbon emissions — is falling in most post-industrial nations.

We believe that ecological vibrancy results from human prosperity, not the other way around. Humanity has made extraordinary progress over the past several centuries. While modernization has had both positive and negative impacts, and the benefits of development have not been equally distributed, on the whole human beings live longer, freer, healthier, more prosperous, and more secure lives than our ancestors did. This progress has made contemporary environmental consciousness possible.

For these reasons, meeting people's material needs is both an ethical imperative and a precondition for societal concern about nature. Technological innovation, particularly in energy and agriculture, can enable us to meet human needs at the same time as we reduce our reliance on natural resources. And clean energy technologies are key in creating a high-energy planet without overheating the climate.

There is no guarantee that these trends will continue. But by embracing technology and accelerating modernization for all people, we believe that both humanity and nature can thrive for centuries to come.






OUR IMPACT

Breakthrough's work is rooted in a positive, optimistic philosophy called ecomodernism, which embraces modernity in service of leaving more room for nature and expanding human prosperity. Breakthrough advances ecomodernism in three primary ways: research, communications, and network-building. Our research is designed to illuminate pathways to “decouple” the link between human development and environmental destruction. Our digital and print initiatives promote a positive vision of our environmental future grounded in robust and long-standing human development trends. Our network-building work convenes a broad-based, ideologically diverse group of scholars, experts, and policymakers to engage in open-minded debate at two annual conferences, the Breakthrough Dialogue in Sausalito, California and Ecomodernism in northern Virginia, as well as at workshops and other events.

The following case studies offer examples of how these activities help translate our ideas into action.



ECOMODERNISM

Think tanks are known for developing policy ideas, but few have played a leadership role in developing entirely new schools of thought, as Breakthrough has done with ecomodernism.

Prior to the publication of *An Ecomodernist Manifesto*, Breakthrough had worked for over a decade alongside colleagues such as Stewart Brand, Mark Lynas, and Emma Marris to shift the discourse among opinion leaders on climate change, conservation, and other environmental issues. We and our allies were offering pragmatic new ideas about squaring environmental protection and human aspiration — ideas that were evidence-based and that defied easy ideological categorization. Yet the environmental discourse was so polarized that without a coherent philosophy and identity, the environmental left often labeled us anti-environmentalists while the right viewed us as quirky but traditional environmentalists. As a result, these important voices were too easily marginalized in environmental debates.

In April 2015, Breakthrough and eighteen co-authors set out to clarify where we stood on the great environmental challenges of our day by publishing *An Ecomodernist Manifesto*, capping a nearly year-long process of writing and editing that began at a convening of signatories we hosted prior to the 2014 Breakthrough Dialogue. In creating ecomodernism, we carved out a new space in environmental politics, providing an intellectual home to people with important new ideas about how to address environmental challenges. The impact was immediate, with over 55 responses to the manifesto published in the year following its release, including coverage in the *New York Times*, the *National Review*, *Slate*, and *USA Today*. Ecomodernism entered the pantheon as a coherent philosophy with a clear policy approach, distinct from both traditional environmentalists and their mostly right-of-center critics.

The impact was also global: 11 translations of the manifesto, ecomodernist societies established in numerous European countries, and a Dutch book on ecomodernism published in 2017. The manifesto helped spur new partnerships around conservation and land use policy, federal agriculture policy, and international energy development. But beyond new issue-specific partnerships, it has also begun to weave a coalition of people with single-issue interests into a broader movement with a coherent worldview. People who once cared only about GMOs, for instance, now understand the benefits of nuclear power. Many whose previous focus was on nuclear now also see the importance of urbanization. And so on. This aggregation of interests makes each component part that much more powerful.

Ecomodernism has also provided the language and ideas for an optimistic, future-oriented environmentalism. We see it in the writing of journalists such as Brad Plumer and Eduardo Porter at the *New York Times*, Tamar Haspel at the *Washington Post*, and Nathanael Johnson at *Grist*.

AN

 MODERNIST

MANIFESTO

One of the most recent examples of ecomodernism's influence on the discourse is Steven Pinker's best-selling book, *Enlightenment Now*, which Bill Gates has called his "new favorite book of all time." Pinker publicly identifies as an ecomodernist and his chapter on the environment is devoted to ecomodernism, which he calls a "a newer conception of environmentalism which... is grounded in Enlightenment optimism rather than Romantic declinism." Pinker's sizable public audience — over 400,000 strong on Twitter alone — and the robust public debate about his book has meant that ecomodernism is part of a major political and cultural conversation.

Ecomodernism entered the pantheon as a coherent philosophy with a clear policy approach, distinct from both traditional environmentalists and their mostly right-of-center critics.

In each of Breakthrough's research areas — from energy to conservation to food and farming — ecomodernism has helped create new opportunities and allies for the organization and has offered a powerful new identity for the large cohort of people around the world who care deeply about the environment but have been alienated by traditional environmentalism.

ADVANCED NUCLEAR POWER

When the Breakthrough Institute began working on nuclear power as a climate solution in 2011, the future of the industry looked bleak.

Breakthrough first convened the small and mostly unconnected community of environmentalists who advocated for advanced nuclear energy at the second Breakthrough Dialogue in 2012. We released one of the first assessments of advanced nuclear technologies, *How to Make Nuclear Cheap*, before a packed house of congressional staffers in 2013. The paper played a crucial role in opening the eyes of the federal policy-making community to the potential for technological innovation to transform the floundering nuclear power sector.

Browner described her conversion on nuclear power in a *Forbes* article entitled “If You’re Concerned About Climate Change, You Should Support Nuclear Power.”

Throughout 2012 and 2013, we worked closely with acclaimed environmental filmmaker Robert Stone on *Pandora’s Promise*, a documentary that chronicles the conversion stories of five prominent environmentalists who changed their minds about nuclear power. *Pandora’s Promise* was released theatrically, aired on CNN, and was accompanied by extensive media coverage. The movie also inspired four respected climate scientists — including former NASA climate scientist James Hansen — to write an open letter to large environmental NGOs, asking them to reconsider their opposition to nuclear power.

Breakthrough has also played a key role in building a network of researchers, advocates, and philanthropists dedicated to proactively supporting nuclear innovation for climate purposes, hosting numerous meetings of prominent individuals at the Breakthrough Dialogue, convening organizations interested in these issues to help us better align our strategies, and pulling together key philanthropic funders to support continued engagement on these issues.

The work has won over important adherents. In December 2013, Armond Cohen, founder and executive director of the Clean Air Task Force (CATF), who had been quietly supporting nuclear power for a few years, publicly came out as pro-nuclear in a nationally aired NPR story. The following spring, Carol Browner, former director of the White House Office of Energy and Climate Change Policy under President Obama, and former Environmental Protection



Agency (EPA) administrator in the Clinton administration, endorsed nuclear power. Browner described her conversion on nuclear power in a *Forbes* article entitled “If You’re Concerned About Climate Change, You Should Support Nuclear Power.” In May, the *New York Times* editorial board endorsed nuclear power, arguing that there is “no doubt that reducing carbon emissions must be an urgent priority and that nuclear energy must be part of the mix.”

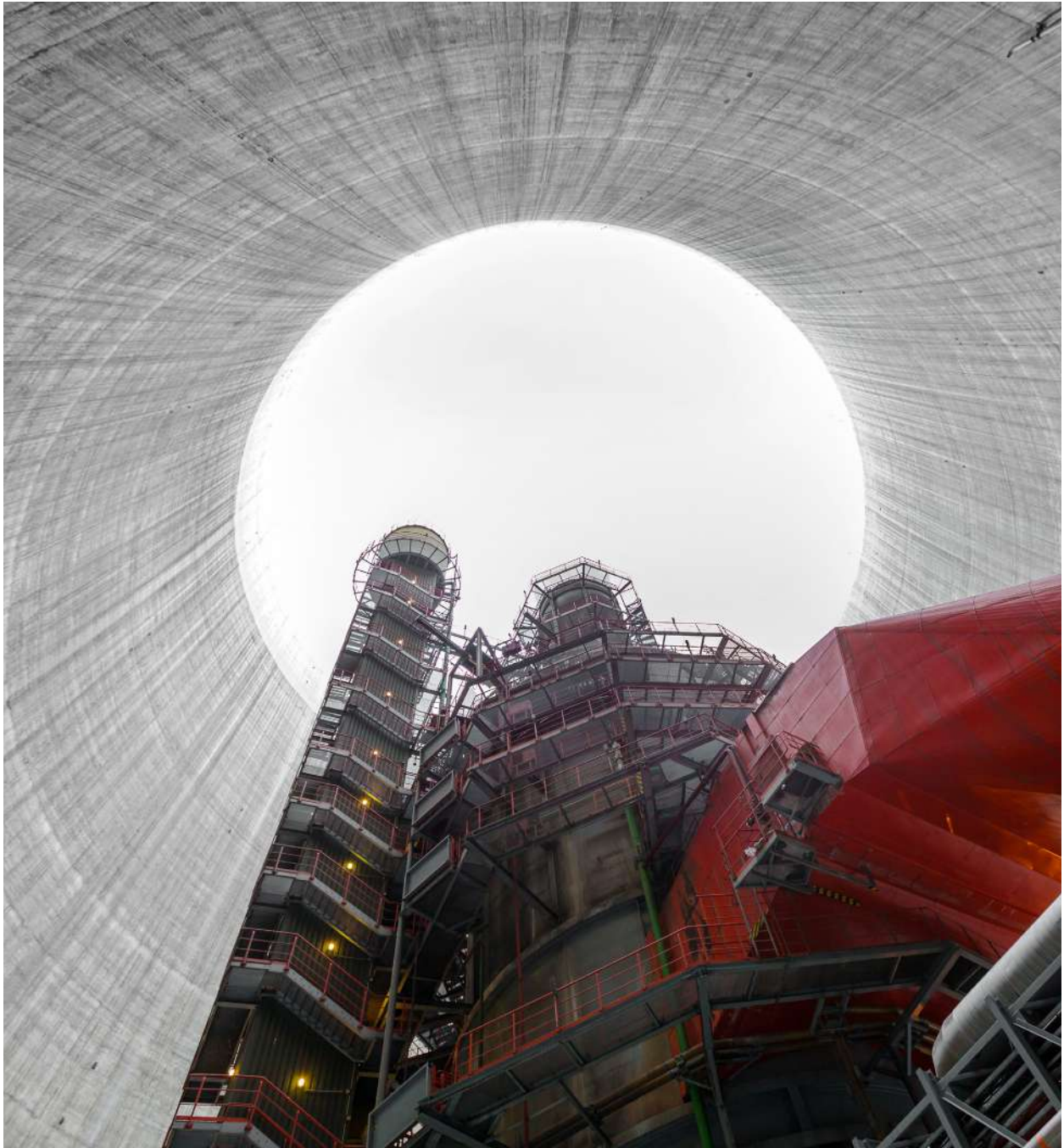
Perhaps most importantly, Breakthrough’s early work on nuclear power inspired a civil society effort coordinated by partner organizations, such as Third Way, Clean Air Task Force, and the Nuclear Innovation Alliance, to accelerate the commercialization of advanced nuclear reactors. While these efforts are still underway, they have scored some important policy wins, like the inclusion of nuclear power in the Department of Energy’s Quadrennial Energy Review, multiple White House meetings and events on nuclear, and the creation of the Gateway for Accelerated Innovation in Nuclear (GAIN) Initiative to assist advanced reactor developers through the development and licensing process. As a result of our collective work, advanced nuclear has received unusual bipartisan support, with numerous important pieces of legislation that have the sponsorship and support of Republicans (such as Senator Mike Crapo and Senator Lisa Murkowski) and Democrats (such as Senator Cory Booker and Senator Sheldon Whitehouse).

Breakthrough has also brought other new organizations into the nuclear discussion, including the Center for Global Development, with whom we partnered on “Atoms for Africa,” a report that outlines how new nuclear technologies could play a role in meeting future African energy needs. We have also partnered with the R Street Institute to begin exploring an advanced nuclear agenda that libertarians and others on the right can get behind.

In an article published in January 2018, the leading green publication *Grist* even weighed in, writing that, “The world probably can’t solve climate change without nuclear power.”

Breakthrough has continued to support such efforts through high-quality research and scholarship. In 2016 we released “Historical Construction Costs of Global Nuclear Power Reactors,” a peer-reviewed paper in *Energy Policy* that demonstrates that the widely held view that nuclear power is doomed due to intrinsic negative learning curves is false. And in 2017 we published “How to Make Nuclear Innovative,” which offers a framework for transforming the floundering nuclear sector in the United States into an innovative, entrepreneurial, and competitive technology sector.

In sum, Breakthrough has helped lead a seachange in opinion about nuclear energy. Even major environmental groups have become less hostile to nuclear power. In an article published in January 2018, the leading green publication *Grist* weighed in, writing that “The world probably can’t solve climate change without nuclear power.” While much work remains to be done before nuclear is able to meet this charge, Breakthrough’s work has proved essential to policy-makers, scholars, and advocates in understanding the importance of nuclear for climate and developing a policy and regulatory agenda to support nuclear innovation.



BY LINUS BLOMQVIST, TED NORDHAUS, AND MICHAEL SHELLENBERGER

BY LINUS BLOMQVIST, TED NORDHAUS, AND MICHAEL SHELLENBERGER

NATURE UNBOUND: DECOUPLING FOR CONSERVATION

Since its inception, the Breakthrough Institute has promoted pragmatic and technological solutions to environmental challenges. This approach stands in contrast to many long-established conservation groups that have sought to address environmental concerns primarily through legislation that walls off nature from human activity.

In the fall of 2011, Breakthrough published its second *Breakthrough Journal* featuring the provocative article “Conservation in the Anthropocene,” which proposed that conservation must acknowledge that the fates of nature and people are deeply intertwined, and offered new strategies for promoting the health and prosperity of both. Written by Peter Kareiva, chief scientist for The Nature Conservancy (TNC), Robert Lalasz, communications director for TNC, and Michelle Marvier, an ecologist at Santa Clara University, the article is the most widely viewed publication in Breakthrough’s history. Its challenge to the traditional idea of nature as a fragile entity to be saved and protected from humanity generated wide criticism and pushback from traditional environmental groups.

An open letter to TNC’s president, Mark Tercek, from Michael Soulé and E.O. Wilson, two of the most famous conservation scientists in the world, characterized the article as “wrongheaded, counterproductive, and ethically dubious.” Open warfare within the conservation community prompted *Nature* to publish a 2014 opinion piece by Heather Tallis, lead scientist for TNC, and Jane Lubchenco, former head of the National Oceanic and Atmospheric Administration under Obama, calling for unity among conservationists on both sides of the emerging debate.

Then, in late 2015, Breakthrough released its landmark conservation report, “Nature Unbound: Decoupling for Conservation.” The paper offered an innovative conceptual framework, backed by decades of empirical evidence, whereby human development and economic growth could drive declining impact on the environment through seemingly straightforward but often overlooked practices; this would allow people to grow more food using less land, water, and fertilizer, thereby freeing up land to return to its natural state.

It was, in the truest sense of the word, a paradigm-shifting framework, and it has managed to bridge the gap between traditional conservationists and the new conservation movement. Mainstream news outlets, like *Scientific American*, *The Guardian*, *Wired UK*, and *Project Syndicate*, referenced “decoupling for conservation” in their publications. The “Nature Unbound” report is heavily cited in several articles in peer-reviewed journals, like *BioScience*, *Science Direct*, and *SAGE Journals*. Its authors have led panel discussions at the American Geophysical Union Conference, a well-respected conventional environmental organization with almost 70,000 members in 144 countries; they have participated in debates hosted by the American Association of Geographers (AAG), an organization with a history of successful partnerships with government agencies and private industry; and several leading academic institutions have incorporated this framework into their syllabi.

By 2016, Breakthrough Senior Fellow Barry Brook secured a significant grant from the Australian Research Council, which led to a multi-million dollar research partnership with the Dynamics of Eco-Evolutionary Patterns (DEEP) Lab at the University of Tasmania on a major series of research papers forecasting human impact on nature and identifying opportunities to decouple human wellbeing from environmental impact. More collaborative efforts were organized with engagement from previously skeptical traditional conservation groups such as RESOLVE, Nature Needs Half, and the Rainforest Alliance, and ongoing work generated interest from prominent philanthropic institutions such as the Rockefeller Foundation, the Leonardo DiCaprio Foundation, and Vulcan, and from major tech companies like Google.



BREAKTHROUGH DIALOGUE

The Breakthrough Dialogue began as a convening of Breakthrough's staff, Senior Fellows, and Breakthrough Generation Fellows and alumni. It has evolved into the premier global gathering for those who believe that technology is key to solving environmental and human development challenges. It has also established a proven and replicable methodology for bringing together diverse groups of stakeholders to constructively wrestle with complex issues.

From its inception, the Breakthrough Dialogue has distinguished itself from other professional conferences by bringing together a multidisciplinary group of leading thinkers. Our annual invite-only Dialogue at Cavallo Point in Sausalito, CA has grown to nearly 200 participants from around the world. But it is still small enough to actively foster dialogue and relationship building. In addition to the Senior Fellows, Breakthrough Generation Fellows, and friends who joined us at the first Dialogue in 2011, we now welcome leading scholars, journalists, philanthropists, advocates, and investors. Recent participants have included Stewart Brand, Calestous Juma, Emma Marris, Yascha Mounk, Steven Pinker, Paul Romer, and Vaclav Smil.

The Dialogue has deepened our relationships with key scholars and journalists such as Ruth DeFries, Nathanael Johnson, Charles Mann, Joyashree Roy, and Reihan Salam, introduced us to new potential areas of research, such as energy for development and urbanization, and provided opportunities to convene people on adjacent topics like federal farm policy, nuclear innovation policy, and ecoregional planning. The Dialogue also offers Breakthrough a chance to maintain our connection to former Breakthrough Generation Fellows, all of whom are invited to attend the Dialogue, and many of whom have participated as Dialogue speakers.

As a field-building event that convenes the key players within ecomodernism, the Dialogue has also had significant impact beyond Breakthrough itself. Some of our key allies have built new funding and board relationships. Numerous scholarly partnerships have emerged, including a forthcoming book by Jonathan Symons and Rasmus Karlsson on ecomodern citizenship and a paper on ideological diversity in environmental studies curriculum by Jacqueline Ho and Eric Kennedy. Ideological adversaries, who have directly fought each other on issues ranging from conservation to same-sex marriage, have built relationships and come to better understand one another at the Dialogue.





In addition to the direct impacts of the Breakthrough Dialogue, the events have given rise to a new methodology for bringing people together on a set of complex challenges. This methodology centers around four key concepts:

1. Create the conditions for participants to build and strengthen relationships. It can take a remarkably short amount of time for people to build new relationships and to establish trust, even across deep divides. But it takes the right set of conditions to do so: a welcoming, inspiring space, an agenda that allows attendees — including speakers — to actually spend time together, particularly in between and after formal event sessions, and plenty of food, drink, and other such comforts.

2. Seek a diversity of disciplines and perspectives. What differentiates the Breakthrough Dialogue from standard professional conferences is that we actively seek out people with different disciplinary expertise, and we give a respectful platform to those with whom we disagree. This enables the Dialogue to serve an honest brokering function: even though Breakthrough has a set of beliefs about the world, we are able to create a container in which those beliefs can be challenged. We ask participants to bring a spirit of openness to new ideas and perspectives, and we encourage them to share half-baked or ill-formed ideas that can help break through stuck debates. Only by exploring issues from new and different angles and allowing our assumptions to be questioned can we make progress in solving the world's most complex challenges.

3. Embrace paradox. The Breakthrough Dialogue not only welcomes divergent perspectives, but builds those conflicts into the programming. That means asking hard questions of ourselves before we ask hard questions of those we disagree with. For example, our 2018 plenary session, “Bigger Cities, Bigger Problems,” focused not only on the many environmental and social benefits of urbanization — benefits that are core to ecomodernism — but also on the very real challenges of mass urbanization and the creation of unwieldy mega-cities. In other words, we both make the case for cities and also ask whether they might be too much of a good thing. Rather than attempting to resolve such conflicts through our programming, we embrace them — providing space for multiples sides of an argument, but also recognizing that the lack of easy answers makes it unproductive to try to rush to solutions.

4. Seek to achieve disagreement. At the Breakthrough Dialogue we encourage people not just to find areas of agreement — as important as they are — but also to achieve disagreement. That is, through civility and active listening, genuine disagreements can be disentangled from misunderstandings. This requires participants actively working to understand other people’s points of views and values, rather than relying on misplaced assumptions or standard tropes.

Breakthrough has replicated this methodology in its own events, including Ecomodernism (our new east coast Dialogue), a multi-day convening on Lessons from the Shale Gas Revolution that we hosted in 2015, and numerous shorter gatherings, including the Power of Progress, ecoregional planning meetings, and a workshop we co-hosted with R Street on new ideas for energy policy and investments that can appeal to conservatives. Breakthrough also uses components of the Dialogue methodology online by giving voice to divergent views, such as critiques of the *Ecomodernist Manifesto* and critical responses to *Breakthrough Journal* articles. The Breakthrough Dialogues podcast is our latest effort to bring this methodology into new forums. The methodology is now used outside of Breakthrough as well, including gatherings of conservatives and liberals aimed at overcoming political polarization and the erosion of democratic ideas.



DRIVING THE CONVERSATION

Our theory of change hinges on giving people new ways to think about the environment. Breakthrough continues to influence high-level media conversations over food, energy, and conservation.

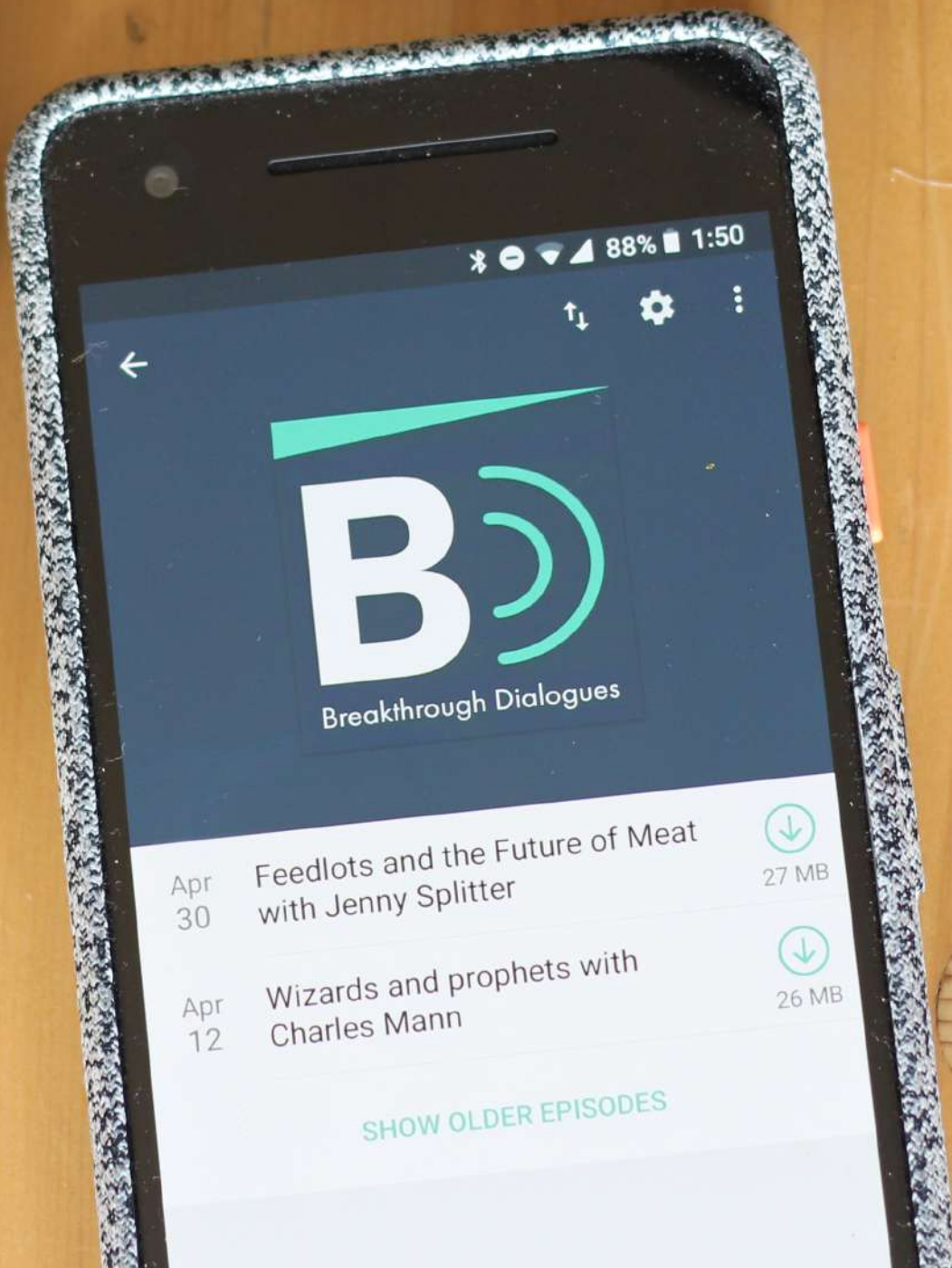
Our newest area of work, in food and farming, is already touching national debates about the future of food. In 2017, *USA Today* published Ted Nordhaus' defense of fake meat against environmental organizations like Friends of the Earth, whose opposition stems from a general opposition to genetically modified and other synthetic foods. That debate continues today in publications like *Grist*, *Bloomberg*, and the *Los Angeles Times*. Breakthrough's work on grass-finished vs. grain-finished beef featured in *Mongabay*, our Sustainable Gastronomy dinner series featured in *Grist* and *Mother Jones*, and our aquaculture analysis featured in *Project Syndicate* have also steered food debates in the media.

Our energy and climate research remains influential as well. Shortly after the 2016 election, the *New York Times*' Eduardo Porter published a piece titled "Earth Isn't Doomed Yet. The Climate Could Survive Trump Policies." This piece was based on analysis by Ted Nordhaus and our energy director Jessica Lovering, who examined the historic impact of climate policies on national and international emissions trends. Since then, Breakthrough has continued to engage this ongoing debate over climate policy and politics. In 2018, Ted Nordhaus argued in *Foreign Affairs* for moving past the two-degree understanding of climate change. In *Greentech Media*, our analyst Jameson McBride made the case that protecting US nuclear power is not worth a tacit policy alliance with coal, while our communications director Alex Trembath pressed for an end to the tribalism that pervades energy debates.

Breakthrough's work on decoupling for conservation also continues to drive the conversation about pragmatic, optimistic environmental approaches. *Wired Magazine* recently picked up pro-city arguments from *An Ecomodernist Manifesto*, while also quoting the arguments of our conservation director Linus Blomqvist for intensive agriculture as a core land-sparing approach.

These ideas filter up. This year on Earth Day, the *New York Times* published an op-ed titled, "Despairing on Earth Day? Read This." The piece made the case for optimism on global environmental problems, based largely on a new paper in *BioScience*, which in turn was based on the "breakthrough" environmentalism espoused by the Breakthrough Institute (among many others) and the pro-city, pro-technology environmentalism of the Manifesto and other texts.





Breakthrough Dialogues

Apr 30 Feedlots and the Future of Meat
with Jenny Splitter



27 MB

Apr 12 Wizards and prophets with
Charles Mann



26 MB

SHOW OLDER EPISODES

EXPANDING OUR IMPACT

BREAKTHROUGH JOURNAL

The *Breakthrough Journal* was introduced in 2011 in order to modernize environmental thought for the 21st century, challenging conventional wisdom in service of crafting a relevant and powerful new ecological politics. Over the years that followed, it evolved into a testing ground for ecomodernist ideas and a platform for the emerging school of thought to take shape. To this end, the *Breakthrough Journal* publishes long-form essays, commentaries, reviews, poems, and cartoons that set out to unsettle the many unexamined assumptions upon which contemporary environmental thought and action have been predicated and to reimagine what it means to build and inhabit a good Anthropocene.

The eight issues of the *Breakthrough Journal* reach an influential audience of journalists, scholars, and advocates, as well as an engaged lay audience. Contributors have included Bruno Latour, Charles Mann, Steven Pinker, Emma Marris, Fred Block, Calestous Juma, Rachel Laudan, Mark Sagoff, and Michael Lind. It has fielded lively debates on a wide array of topics, from “new conservation” to feminism and environmentalism, and taken up themes ranging from “wicked problems” to “the Good Anthropocene.”

BREAKTHROUGH DIALOGUES PODCAST

The annual Breakthrough Dialogue is widely recognized as one of the most interesting, effective things that Breakthrough does. Because of its impact and popularity, we have expanded the number of events we host each year, but even so, our events will only be able to reach so many people. So we started a podcast in April 2017, called Breakthrough Dialogues, to continue the important conversations and debates year-round and make them available to a much wider audience.

In the Breakthrough Dialogues, our staff sits down with leading thinkers to discuss technological innovation and modernization as key solutions to environmental problems. The podcast is another part of our effort to reframe environmental debates in pragmatic new ways and to defuse long-standing tensions between the many tribes within environmental discourse.

The podcast airs every other Monday and is hosted by our communications director, Alex Trembath, and managing editor of the *Journal*, Emma Brush. Each episode is about 30 minutes long and features guests who offer innovative solutions and new ways to think about environmental challenges. Guests have included Charles Mann, Jenny Splitter, Jonathan Symons, Tisha Schuller, and Julio Friedmann.

CONVENINGS AND EVENTS

Network building is one of the principal ways that Breakthrough makes change in the world. Through our Dialogue, workshops, and other events, we sharpen and amplify our ideas and build new partnerships. In addition to our east and west coast Dialogue, we host several new events every year to amplify the power of our ideas, to change the way people think about energy and the environment, and to create new policies and new coalitions working toward real progress in the world. These include the Sustainable Gastronomy dinner series built around a new vision of sustainable eating, the Power of Progress summit focused on the role of optimism in solving big problems, and the Shale Gas Workshop that brought together leading academic researchers and technologists to extract lessons for energy innovation practice and policy.

BREAKTHROUGH FELLOWSHIPS

Our fellowships are designed to extend Breakthrough's network to innovative thinkers, young and old, and offer them support for their work and a platform for their ideas.

The Breakthrough Generation Fellowship, which invites 5-10 young scholars to join Breakthrough's research staff for the summer, has attracted over 100 fellows since its inception in 2008. Generation Fellows have gone on to study and work at MIT, University of California-Berkeley, Stanford, the Bill and Melinda Gates Foundation, the UK Department of Energy and Climate Change, the African Union, the Energy Innovation Reform Project, the Information Technology and Innovation Foundation, the US Department of Energy, and other leading academic and policy institutions.

Breakthrough Senior Fellows are chosen from among the world's leading academics and thought leaders in the fields of energy, environment, technology, human development, and sociology. They are nonresident affiliated experts who collaborate with Breakthrough's research staff on projects, participate in our events, and promote our work. After a decade we have attracted over 60 Senior Fellows from think tanks and academic institutions all over the world, in an effort to internationalize our work and leverage an expansive global network.

Senior Fellows include environmental scientists Erle Ellis, Ruth DeFries, Barry Brook, and Michelle Marvier; political scientists Roger Pielke, Jr. and Daniel Sarewitz; international development experts John Asafu-Adjaye, Joyashree Roy, and Samir Saran; and other thought leaders in environmental paradigm shifts, including Stewart Brand, Steven Pinker, Maureen Ogle, Jayson Lusk, and Mark Sagoff.



OUR TEAM

Breakthrough has expanded its staff to 15 over the last several years, hiring experienced researchers and skilled communications, development, events, and operations professionals. We have also worked diligently to diversify and internationalize our staff and network. Most of the key decisions that will determine what the future will look like for people and the environment will be made outside of the United States and Europe. Everything we do, then, must be relevant to the billions of people around the world who are still struggling to achieve modern living standards.



CO-FOUNDER



Ted Nordhaus is a leading global thinker on energy, environment, climate, human development, and politics. He is the co-founder and executive director of the Breakthrough Institute and a co-author of *An Ecomodernist Manifesto*. He was among the first to emphasize the imperative to “make clean energy cheap” in the *Harvard Law and Policy Review*. He received *TIME Magazine*’s 2008 Heroes of the Environment Award. Over the last decade, he has helped lead a paradigm shift in climate, energy, and environmental policy.

PROGRAM DIRECTORS



Jessica Lovering leads Breakthrough’s energy program. She is a co-author of *How to Make Nuclear Innovative*, as well as many analyses on nuclear energy policy, and is a frequently sought-after energy expert. Her work has appeared in *Foreign Affairs*, *Bloomberg*, *Axios*, *Forbes*, *Vox*, and more.



Linus Blomqvist leads Breakthrough’s conservation and food and farming programs. His work has been featured in numerous publications including *WIRED Magazine*, *Scientific American*, *Project Syndicate*, and *The Guardian*. Linus is also coauthor of “*Nature Unbound*”.



Alex Trembath leads Breakthrough’s communications program. He also directs the Breakthrough Generation Fellowship and hosts Breakthrough’s podcast. Alex’s work has been featured in the *New York Times*, the *Washington Post*, *Foreign Affairs*, the *Wall Street Journal*, and many other publications.



Hafeezah Abdullah leads Breakthrough’s events and development programs. She has more than a decade of experience in event management and fundraising strategy for nonprofits and political campaigns, working nationwide and internationally to address some of the most pressing issues of our time.



Grace Choi leads Breakthrough’s operations program. She has worked in the nonprofit and corporate sectors advising executives and fortune 500 leaders on how to make better business decisions.

BOARD OF DIRECTORS



Rachel Pritzker is the chair of the board of the Breakthrough Institute. She is president and founder of the Pritzker Innovation Fund, which supports the development and advancement of paradigm-shifting ideas to address the world's most wicked problems. She is a board member and co-chair of the clean energy program at Third Way. Rachel also serves on the board of the Center for Global Development and is a co-author of *An Ecomodernist Manifesto*.



Stewart Brand is co-founder of Revive & Restore, The Long Now Foundation, The WELL, and Global Business Network. He is also the founder and editor of the *Whole Earth Catalog* magazine. His books include *Whole Earth Discipline*, *The Clock of the Long Now*, *How Buildings Learn*, and *The Media Lab*. He was trained in ecology at Stanford and served as an infantry officer in the US Army.



Bill Budinger is a founder of Rodel, Inc., where he served for 33 years as chairman and chief executive officer. Bill is an inventor and holds more than three dozen patents. Bill is also a founder of the Rodel Foundations, which seek to advance K-12 public education.



Reihan Salam is the executive editor of *National Review* and a National Review Institute policy fellow. He is a contributing editor at *The Atlantic* and *National Affairs*, a member of the board of the Breakthrough Institute, and an adviser to the Niskanen Center. With Ross Douthat, Salam is the co-author of *Grand New Party: How Republicans Can Win the Working Class and Save the American Dream*.



Ray Rothrock is partner emeritus of the venture firm Venrock. Once a nuclear engineer, Ray is now an investment expert in the fields of energy, information technology infrastructure, and cybersecurity. He was a co-executive producer of the documentary film *Pandora's Promise*. Presently he is an investor at FiftySix Investments and CEO of RedSeal, a cybersecurity analytics company.



Tom Riley is the head of finance for the Seattle Sounders FC, a franchise of Major League Soccer. Prior to that, he ran his own management and financial consulting firm which was focused on early stage startups in Seattle. In 2000, Tom was elected the volunteer president of the board of the Seattle Audubon Society, Washington state's largest and oldest environmental group.



Tisha Schuller is principal and founder of Adamantine Energy, which works to create and engage pragmatic solutions for energy's thorniest challenges for private clients, from Fortune 500 energy companies to non-profit environmental organizations. Tisha serves as Strategic Advisor to Stanford University's Natural Gas Initiative and is a nonresident Fellow at the Center on Global Energy Policy at Columbia University. She is a member of the National Petroleum Council, an advisory board to the Secretary of Energy. Tisha's book, *Accidentally Adamant*, was published in April 2018.



Matt Winkler is a biologist and has founded three biotechnology companies. He is currently chairman of Asuragen, a molecular diagnostics product company focused on cancer and neurodevelopmental diseases. Matt is the author of more than 30 publications and has 19 issued patents. He has been active in pro-GMO issues since 2000.



Ross Koningstein has worked on Google's RE<C program and on their data center efficiency, and has an interest in economically disruptive clean energy. He was previously Google's first director of engineering and one of the inventors of Google's CPC AdWords.

For years, I've greatly admired the Breakthrough Institute for its intellectual independence and its innovative and ambitious approaches to the central challenges facing humanity. It is an honor to serve on its board.

- Reihan Salam



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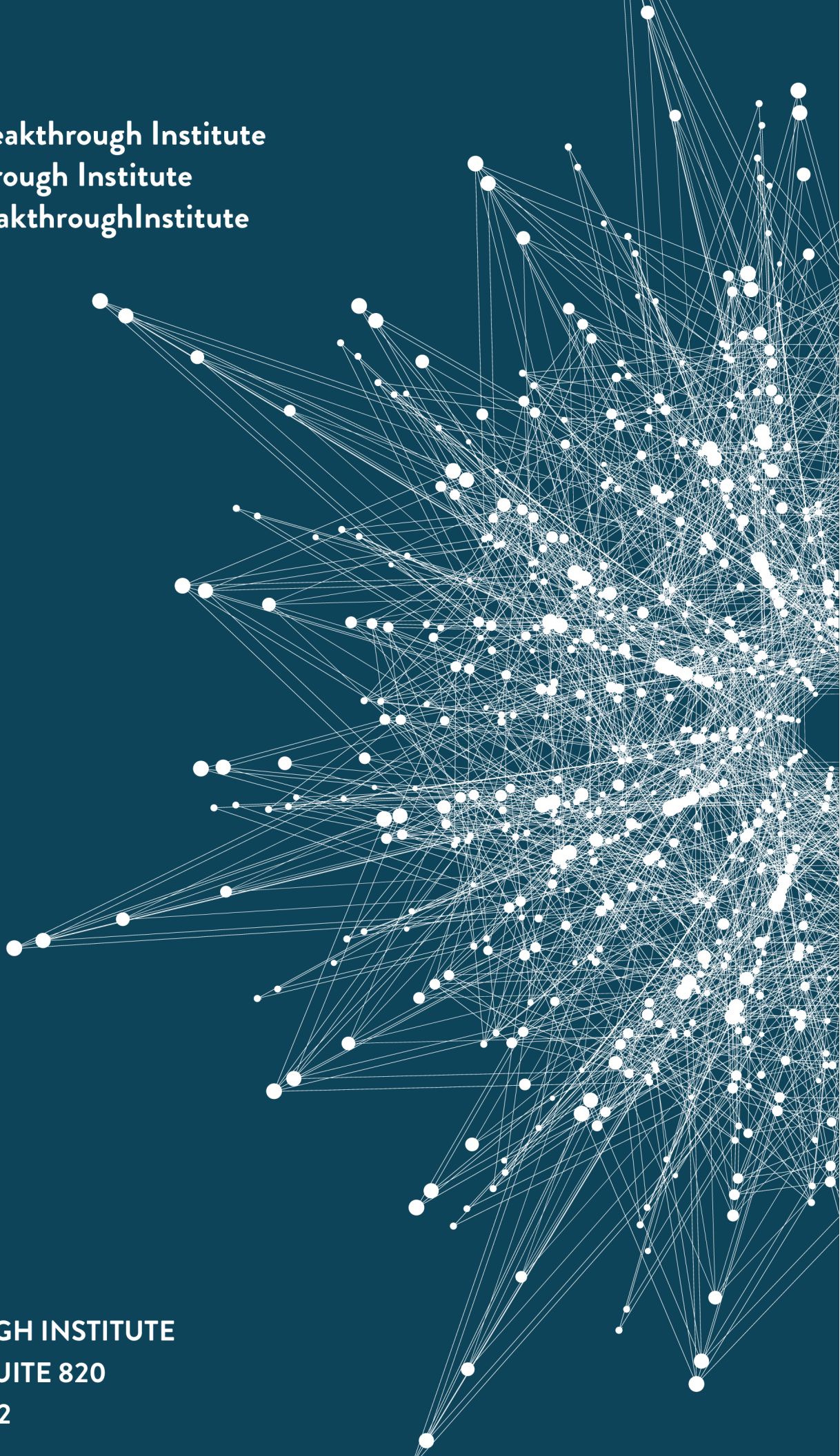
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