

This project has been accused of being utopian, naive, ambitious, audacious, amateur, and arrogant. We call it optimism.

What is happening in Chicago is happening everywhere. People with a deep sense of engagement are changing the world, slowly, and for the better. *Massive Change: The Future of Global Design* is about them and about all of us. We are all designers now.

Take Chicago for example – a city with a vision and an active design agenda.

This city gave the world the skyscraper, the cell phone, and more recently some astonishing work in molecular electronics. We'd better leave that lifesaving, brain-freezing thing for cardiac patients to the experts at Argonne to explain.

Mayor Richard Daley is known for his heavy-duty green stripes. He committed the city to the Kyoto guidelines and more recently to the Clinton Anti-Global Warming Pact. His Environmental Action Agenda, the model for many cities nationwide, replaced 130 city vehicles with hybrids. Chicago air is better for it.

Since Daley became mayor, Chicago has planted 400,000 trees, created 100 school parks, built 68 miles of landscaped street medians, and transformed acres of tar into the green roof capital of North America.

Thanks to this city's forward-thinking architects and engineers, every day thousands of Chicagoans go to work in LEED-certified buildings – healthier for them and the planet. And there's Millennium Park, a 24-acre park built on an old railroad crossing, a dazzling part of which was designed by Frank O. Gehry.

Chicago ingenuity sparks worldwide replication, and its philanthropic projects, like Oprah's Angel Network, reach well beyond

the city limits, in Oprah's case to build schools in remote areas around the world.

THE POWER AND POSSIBILITY OF DESIGN

The *Massive Change* exhibition, at the Museum of Contemporary Art, Chicago, explores paradigm-shifting events, ideas, and people, investigating the capacities and ethical dilemmas of design in manufacturing, transportation, urbanism, health, living, energy, markets, materials, military, the image, and information.

From September 16 through December 31, Chicagoans and people from around the country (like the students we met in Seattle who plan to drive there to see it a second time, because Vancouver wasn't enough) will have the opportunity to judge for themselves if nature, even life itself, is falling to the power and possibility of design.

TODAY, EVERYTHING IS CITY

With nearly half of the world's population living in cities, density is becoming the global condition. *Massive Change* tells the story of people in cities, who are daring to create a new urbanism.

The population per square kilometer in Chicago is 1,511 persons. In New York it's 1,728. Tokyo 5,934; São Paulo 8,378; Cairo 25,325; Hong Kong 49,581.

Density offers hope. If people live in cities, we can open up the

surrounding space for rural land and wilderness. This means not just thinking about the design of buildings, but also thinking about the design of the city and the planet as a whole.

The newspaper you're reading, for example, is produced by people working in the new 52-story New York Times Tower in the heart of Manhattan. It ranks as one of the most sustainable, energy-efficient buildings in the country, by design, not by accident.

Inside *Massive Change*, you'll see a multimedia orgy of inspiring things that are going on around the world. If they're not happening in your town, you'll want to shout: WHY NOT! Then start your own project.

In Chicago, revitalized wetlands have more species than Yellowstone

Seriously. One of the largest wetlands in North America, the Calumet region in the southeast section of the city was polluted by steel mills that were built in the early 1900s. The new Calumet Open Space Reserve is changing all that. The revitalization program designated 3,000 acres for economic redevelopment and 4,800 acres for wetland restoration. Henry Henderson of the Chicago Environmental Fund praised the project with these comments at an opening event, "There are 2,000 plus

species in the Chicago's Calumet area ... more diversity of species than you have in Yellowstone ... We also have more manufacturing jobs here than in Yellowstone. So we want the human economy and nature's economy to work together."

SUSTAINABLE MOBILITY

When Henry Ford introduced the Model T, he became famous for offering it in any color, so long as it's black.

Today, we're seeing an explosion in automotive and energy experimentation and innovation that hasn't happened since. To repeat an idea once stated in this newspaper – green is the new black.

Cars have always fallen under the power of design, and today everyone from Illinois farmers to engineers at Mercedes Benz has joined the quest for sustainable mobility.

Car designers are working to produce the effect that we love so much – moving independently, at great speed, but without destroying the environment.

This is experimentation and trial and error at its best with innovations galore – hybrid electric cars, fuel-cell cars, cars run on vegetable oil, biofuel buses, three-wheelers, and two-wheelers like the Segway Human Transporter.

In the words of inventor Dean Kamen, "If it's not changing the world, move on."

In Chicago, the plug-in hybrid gets 78 miles a gallon

Of course, there are dozens of Chicagoans who have their mental wheels turning in the green mobility challenge. At the new Center for Transportation Research, Argonne scientists are testing ethanol, hydrogen, methanol, and wood chips to power vehicles. Their pet project is a plug-in hybrid that recently traveled 78 miles on one gallon of gas.

RENEWABLE POWER TO BURN

Across the country you'll find wind, geothermal, and solar energy initiatives cranking out the kilowatts. What was "gee whiz" just a short while ago is now DIY at Home Depot.

Hundreds of civic buildings, community centers, schools, homes, and museums are generating clean electricity from solar power. You can check out the renewable energy production of 28 photovoltaic sites in Chicago at www.chicagosolarpartnership.org.

GLOBAL INFORMATION CHANGES THE WAY WE SEE THE WORLD

Futurist Stewart Brand, author of *The Clock of the Long Now* and creator of the *Whole Earth Catalog*, said this about the iconic image of Earth from space: "[It was] motivating for a lot of people, because it gave

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A project by Bruce Mau Design and the Institute without Boundaries
Museum of Contemporary Art, Chicago
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the sense that Earth is an island, surrounded by a lot of inhospitable space. And it's so graphic, this little blue, white, green, and brown jewel-like icon amongst a quite featureless black vacuum. Islands know about limitations. Bucky [Buckminster Fuller] led me to this notion. He said people still think the earth is flat because they act as if its resources are infinite. But that photograph showed otherwise. This is all we've got and we've got to make it work. There's no backup."

MAKING THE INVISIBLE VISIBLE

So much of life occurs outside the range of visible light making it invisible to the naked eye.

Through scientific tools and methods we have reached far beyond this narrow slice of the electromagnetic spectrum to colonize its full range, from radio waves and infrared to x-rays, gamma radiation, and cosmic rays.

Massive Change images reveal numerous worlds of unimaginable complexity and beauty – from impossibly small objects to the human body, the surface of the Earth, and the depths of the universe. One image, the Hubble Ultra Deep Field, is made of 13-billion-year-old energy.

A MATERIALS REVOLUTION

It used to be that materials were something to which design was applied. Now designers are designing the material itself.

Today, we're seeing the development of synthetic materials that are mimicking nature's intelligence like fiber stronger than spider silk and adhesives with a grip stronger than a geckos.

Self-healing plastic

What does a rhinoceros horn have to do with airplane wings? It turns out that it's a fair amount.

At the University of Illinois, Scott White studies self-repairing plastics. He is an associate professor in aeronautical and astronautical engineering and takes his design inspiration from the rhino horn.

According to White, this self-healing plastic can be used anywhere synthetic polymer is used now, from microchips to the wings on a full-size aircraft. Coming soon, rhinos on a plane.

BANISH MANUFACTURING WASTE

The idea of the endless cycle of design and production promises a shift away from our wasteful manufacturing processes. The goal is to generate no waste at all.

Earth-friendly chairs

A collaborative project between Herman Miller and MBDC, the Mirra chair is made with a minimal number of parts for easy disassembly and recycling. It is 96% recyclable, and its foam-free design and biodegradable upholstery make it one of the most earth-friendly office chairs.

Perpetual SUV

Cars in an art gallery! Lots of them. The Ford Model U concept car is designed for disassembly – think very green. Ford built it using biological nutrients like plastics made from corn that will biodegrade at the end of their useful life and technical nutrients that can be infinitely recycled without losing their structural integrity or creating toxins.

MILITARY IN THE MAINSTREAM

Unless you're Damien Hirst, there's no room for shock and awe in today's art gallery. So don't expect to cozy up to a bunker buster; one of those cute, little, missile-equipped predator drones; or myriad other innovations derived from military R & D. Hate it or love it, we couldn't leave out all the gadgets in daily life that have been spun off from military ingenuity for our use in the civilian sector.

When the U.S. military decided to "take back the night," they succeeded, of course, and now we too can see in the dark, ask our cars where in the world we are and get a reliable answer, or fix a boo-boo with spray-on bandages.

Sometimes things work in the reverse. The imaginings of moviemakers and toy designers are being reinvented for use on the battlefield. We don't want to throw away the baby with the bathwater here, so let's just say if you're a fan of the Sharper Image stores, this is a toy story par excellence.

DESIGNING EVOLUTION

When Franklin, Crick, Watson, and Wilkins discovered the secret of life, the structure of DNA, they paved the way for all genetic discoveries of the last 50 years and likely for the next 100 years.

In *The Third Wave*, Alvin Toffler said: "Second wave thinkers conceive of the human species as the culmination of a long evolutionary process. Third wave thinkers must now face the fact that we are about to become the designers of evolution."

Can we really grow our own livers, noses, ears, and nerves?

Apparently, tissue engineers Robert Langer from the Massachusetts Institute of Technology and Jay Vacanti from Harvard Medical School have done it.

This tissue-engineering duo has successfully synthesized new biodegradable polymer systems that have supported the growth of organs and body parts. They grew a nose just for the *Massive Change* show.

Today, the world is grappling with new problems, understanding them, describing them, and designing new ways of dealing with these challenges.

The effort is global. People around the world are working on the design of new solutions in energy, movement, manufacturing, and even the design of life itself. Contrary to the prevailing wind of gloom and doom – acknowledging the uncertainty of ultimate victory – we are radically successful. People today are wealthier, healthier, and better educated, with greater access to knowledge. Design's effects – the ability to control the lives we live – are more widely

distributed with greater participation, than at any time in human history. That's why we're optimistic.

There is no certainty of success in our global effort, but one thing is certain: going backwards would be devastating – especially for the most vulnerable. Our proposal instead, and the thesis of *Massive Change*, is that we design our future, to go forward, boldly: making big cities that work; driving cars on corn; growing ears and noses on polymer scaffolds; giving micro loans to spawn economies; using renewable, energy-producing, bird-friendly, wind turbines, spider silk stronger than steel, and stunning simulations in space; and documenting images of unimaginable complexity and beauty.

Come to the MCA, Chicago, and make up your mind about whether optimism makes sense.

Bruce Mau Design and the Institute without Boundaries

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Sponsored by 

Join the project: www.massivechange.com

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The *Massive Change* exhibition and tour is a project by Bruce Mau Design and the Institute without Boundaries, commissioned and organized by the Vancouver Art Gallery.