

Sam McMillan



## Design for the Next Century

Saul Griffith takes on the design challenge of our age

**W**e know the problems. Climate change is real. Ice caps are melting. China and India are coming online, and their populations are going to want to drive cars, eat meat and buy flat panel TVs. To power those TVs, China is commissioning a coal-burning power plant every two weeks. Finite resources are being depleted at an ever-faster clip, and landfills are filling up with the cast-off crapadoodle of a consumption-crazed society. Meanwhile designers are walking around wearing T-shirts that say: "Design Will Save the World."

And that drives Saul Griffith nuts, because saving the world will take more than weating a cool T-shirt. He should know.

Engineer, inventor, MacArthur Fellow, Saul Griffith holds multiple degrees in materials science and mechanical engineering. He completed his PhD in Programmable Assembly and Self-Replicating machines at MIT. Griffith is not only an inventor, with patents awarded and pending in textiles, optics, nanotechnology and energy production, he's an entrepreneur, having co-founded Makani Power, an energy company working on ways to harness high-altitude wind energy, and Low Cost Eyeglasses, a company that aims to use desktop printing technology to produce prescription lenses for people in developing countries. In his spare time Griffith, is a writer of children's books and co-creator of Howtoons, a comic book Web site that teaches kids how to build cool things out of household objects.

When he's not running various companies, Griffith is a featured speaker at events like TED and Compostmodern, where the first thing he tells his audience of T-shirt-wearing designers is, "We're planet fuckers."

Gulp. Yes, he means you. Bike-riding, Prius-driving, hemp-wearing, vegan-eating, laptop-toting you. And me. And for

that matter, himself. If you live in North America or Europe, chances are good you are part of the problem. So, how can designers become part of the solution?

### Designers must become energy literate

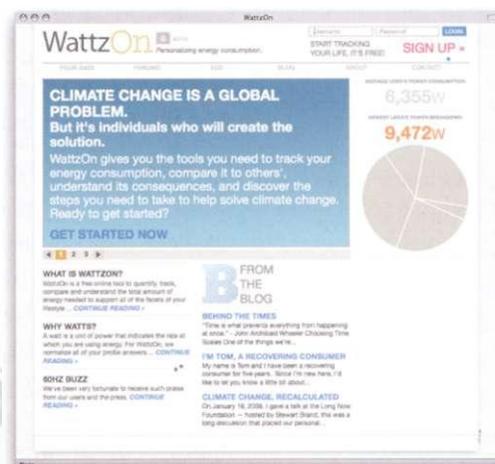
Designers must get a qualitative understanding of energy and energy use," Griffith says. "Energy use is part of everything they design. Get conversant with learning how much energy is used in the course of an average global lifestyle, and look at

the metrics of consumption." If doing that means learning a little bit of physics, so be it. "Take Physics 101," Griffith cajoles. "Overcome your fear.

To get to a sustainable planet, you have to get to the numbers," Griffith continues. "The key issue of our age is climate change." The culprit is carbon. "What we know about climate and carbon dioxide is pretty comprehensive. Pre-industrial society lived in a world of approximately 283 parts per million (PPM) of carbon dioxide in the atmosphere. Today we are at 390 PPM. At 400 PPM we reach a danger level that all but guarantees we can say goodbye

to polar bears and coral reefs. Scientists working on climate change suggest 350 PPM may be a sustainable number. But to get there will take us 50 or 100 years, provided we make some hard decisions now."

The numbers are important because climate scientists know that carbon equals temperature. The more carbon in the atmosphere, the hotter the planet. "Deciding on the temperature of the planet we want to live on is a design choice and it's an engineering choice," Griffith says, and it's one with enormous consequences. Let's say the temperature of the planet rises two degrees. Doesn't sound too bad, until Griffith explains, "At 2 degrees we lose 10 percent of our species; at

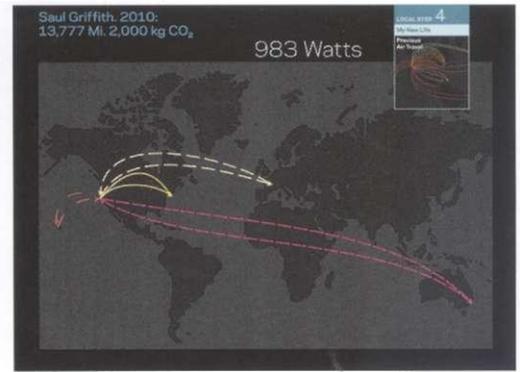
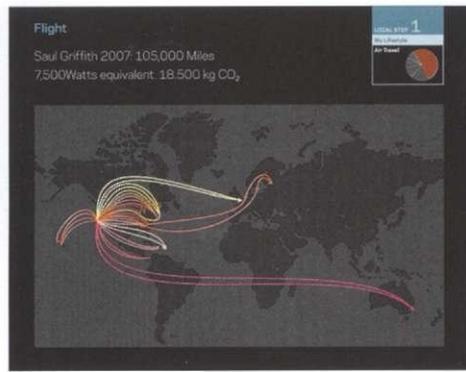


WattzOn.com: Saul collaborated with Kirk von Rohr to establish a new way of thinking about energy and the online tools used to understand personal energy consumption.

2.5 degrees we lose 15 to 40 percent of the species; at 3 degrees 1 to 4 billion people face water shortages, and we can anticipate border wars; and at 4.5 degrees London, New York, San Francisco are lost to sea-level changes."

**Climate change is a design problem**

"Where we set the bar for our temperature has major consequences. We can make the decisions to turn down the world's thermostat," Griffith says. "But it takes an honest approach and a discussion about what it means to have a good life as a human." There's a reason Griffith is spending so much time speaking to the design community about this issue: "The environmental question writ large is an aesthetic question in search of a design solution," Griffith explains. "If you make it an aesthetic problem, you can engage a larger portion of humanity. The good news for designers is, absolutely everything needs to be done. The bad news? They are not equipped to do the job.



Saul's Flying: The first route map shows all the flights Saul took in 2007. Saul's reevaluated flight plan (right) in 2010 only allows for one yearly flight to New York, and flights to Australia, Hawaii or Europe every few years.

"Designers are the problem today," Griffith believes, "because they keep pumping out crap. And advertisers keep telling us we want it." However, he also believes that once designers become energy literate, they will be able to make profound contributions by redesigning products and services that provide the same value while conserving ten times as much energy.

"How do you use less energy, and how do you make it cleaner?," he asks. "This is the design question for the next century.

Making a twenty percent difference in reducing energy consumption isn't good enough. You can't win the greenwashing campaign. You can't do this iteratively. You have to be astoundingly better. You have to make ten times the impact.

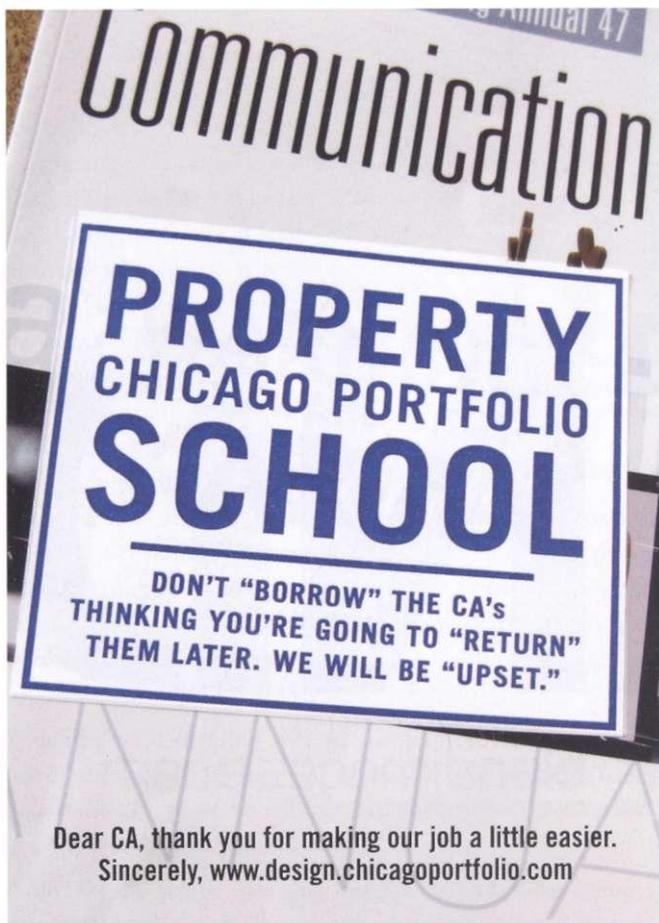
"Once you have the numbers, you know what your next 25 years worth of work will be like. That's your contribution to the world. Designers could be giving us great objects and helping us live with less energy."

**Design for the long haul: Heirloom Design**

One solution is to design objects that require less energy, last longer and are so aesthetically pleasing we want to keep them around longer. Which means, ultimately, we will need less stuff with which to replace them. It's a movement Griffith has called Heirloom Design.

"We need beautiful objects that last longer," he says. Griffith knows this kind of talk can start to sound pretentious, so he frames it as an engineering problem. "Designers need to think about this in terms of embodied energy," he explains, "that is, how much energy is used to make a product. Take a dinner table. An oak table weighing 250 pounds lasts 100 years. Expressed in joules (the energy required to make one pound of material), we can calculate the amount of energy required to make that table. Instead of buying that oak table designed to last 100 years, we have a culture that produces a cheap 250-pound table that will last 5 years. Over 100 years, those tables will consume 200 times as much embodied energy as the more expensive oak table. When designers are equipped with the math to really understand embodied energy, they can make better choices and understand the impact of their design decisions.

"We are living in the age of consequence," Griffith continues. "We can measure and track the consequence of anything we





WattzOn.com uses a visualization of everyday objects or experiences to represent unfathomable quantities. Carbon Parts Per Million is a hard thing to wrap your mind around. Watts is an easier unit to understand, since everyone has turned on a light bulb. In turn, this helps to build a more intuitive way to discuss energy consumption.

do. So imagine we design in the world where we can measure the impact of our designs. You have to know the impact or you'll embarrass yourself.

"We'll need a new understanding around making objects that are cared for and loved," Griffith says. The fact that designers crave beautiful, well-made objects is actually a good thing as far as he is concerned. Heirloom Design is not about doing without. "We want to encourage people to find things that are perfect and will last the rest of our lives. It just requires a new way to pay for things. The same way we mortgage a house, we should be able to pay a mortgage for the designs we like. Along with a new service industry that understands Heirloom Design, design innovation might just be designing a new, affordable way of financing our ownership of heirloom objects."

### Designing a Sustainable Society: Learn to live like an islander

Griffith has this bit of advice for designers who want to make a difference in the decades ahead. "Look for good cultural practices," he says. "If I were a designer and I wanted to design for the next century, I wouldn't look at modernist Europe for my model. I'd look at Polynesia and Japan for my inspiration. The Japanese and Polynesian cultures have a lot to teach us. Instead of paper towels in Japan, you carry your own personal towel. Instead of plastic bags that we throw in the trash, you carry your lunch in reusable metal bento boxes. We need to develop an island mentality. Those cultures developed around the realities of natural constraints.

"Polynesians have a concept they call *mana*" Griffith goes on, "which can be translated as the authority and respect possessed by an elder. "Anything old, ripped and repaired acquires mana, and over time more value. In a modern culture, the mana that comes from beautifully made and cared for things needs to become our badge of honor."

Ultimately Griffith explains that the fundamental question for humanity is one of design. "Designers have a choice if they want to be relevant. They can solve the problem. They

can learn the numbers. They can get literate about energy and sustainability. And they can learn to measure the end result."

For better or worse, the results of our attempts to dial back the temperature of Earth won't be seen for 50 to 100 years. If you get it right, your grandchildren will thank you. For old times sake, they might even get out that T-shirt you used to wear. You know, the one that said, "Design Will Save The World."

*Author's note: All images art directed and designed by Kirk von Rohr ([kirkvonrohr.com](http://kirkvonrohr.com)).*