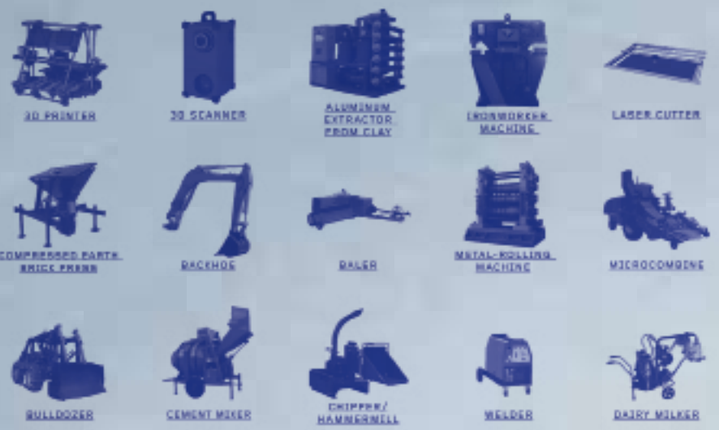
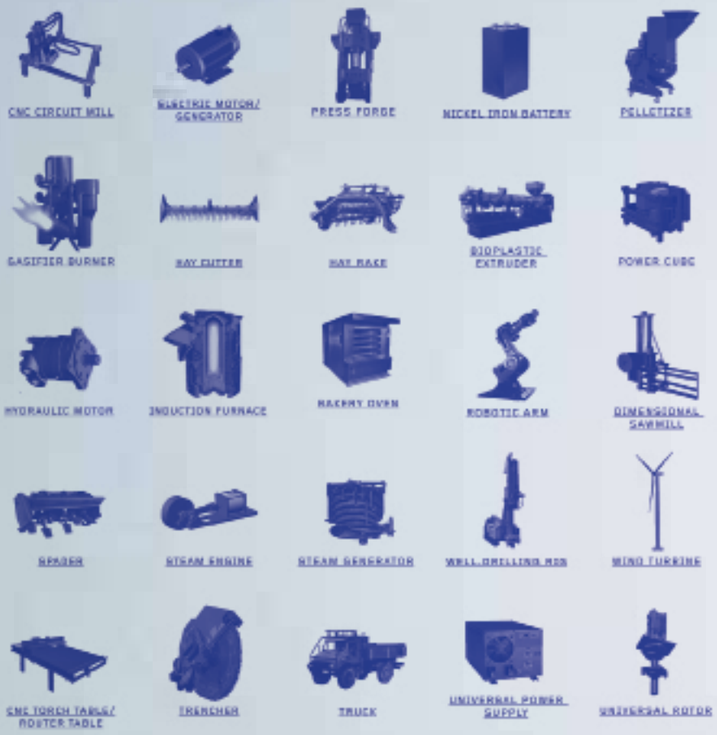




IS THIS THE NEW BLUEPRINT FOR CIVILIZATION?

MARCIN JAKUBOWSKI PLANS TO CHANGE THE WORLD BY PRODUCING A SET OF MACHINES TO CREATE A SUSTAINABLE SOCIETY. WE TRAVEL DEEP INTO RURAL MISSOURI TO MEET THE MAN BEHIND THIS UTOPIAN VISION

words **helene dancer** photography **miller mobley**

As we pick our way along a muddy path towards a ramshackle mud-brick hut with plants growing on the roof, past squawking chickens and an abandoned tent, we're not entirely sure we've come to the right place.

We've driven deep into the farmlands of Missouri to find Marcin Jakubowski, a visionary who wants to change the world, but this doesn't look too promising.

Marcin, originally from Poland, moved to the US as a child and, as prodigiously intelligent people do, finished his twenties with a PhD in fusion energy. But after achieving something beyond most people's capabilities, he then struggled with the realisation that he had no practical skills, so he took the logical decision to move to Missouri and learn how to farm.

Marcin immersed himself in the economics of agriculture and began to confront a whole set of problems he hadn't anticipated. Farming equipment was expensive and costly to repair – one broken tractor too many and our Marcin was broke, too.

"I realised that the truly appropriate, low-cost tools I needed to establish a sustainable farm and settlement just didn't exist yet," he said in a recent talk for the TED organisation, which brings the world's most innovative thinkers together at high-profile global events and online.

"I needed tools that were robust, modular, highly efficient, low-cost and made from local and recycled materials that would last a lifetime. I then realised that I would have to build them myself."

Marcin set about building the Global Village Construction Set (GVCS), a selection of the 50 industrial machines he believes are needed to build and sustain a small civilization with modern comforts. These machines include tractors, brick-making machines, wind turbines and bakery ovens. They are simple to construct, easily maintained and built to last.

"I've planted 100 trees in a day. I've pressed 5,000 bricks in one day from the dirt beneath my feet and built a tractor in six days," he told the rapt TED audience. "This is only the beginning."

Eight of the prototypes are already built and Marcin aims to publish the designs, schematics and instructional videos on the internet so that anyone can access them – for free. All this will be delivered under the banner of Marcin's Open Source Ecology (OSE) movement.

The OSE now has a growing network of followers worldwide who want to help him realise his vision. Many have made pilgrimages to his Missouri-based Factor E Farm, volunteering skills that range from welding to computer programming.

As we reach the hut, we see three men sitting in soggy armchairs and drinking coffee in the morning sun. They squint at us, uncomfortable with the interruption, until a tall, lean, dark-haired man clutching a cup of coffee strides out of the doorway.

"Hi, I'm Marcin," he says, as the others leap up from their seats. "Sorry for the mess," he continues, gesturing to the makeshift corrugated iron path and outdoor sink standing at a precarious angle. "We had a flood this week and it caused lots of damage. We're so busy at the moment – there's so much to do."

His confident delivery and unwavering gaze brings a certain order to the chaos around us. We try a bit of banter to lighten the mood but quickly realise that Marcin is not a fan of small talk.

He weighs every word, making sure each utterance has a purpose. There's no room for wasted breath here on the Factor E Farm, especially when Marcin is working to hit a 2012 deadline for completion of all 50 prototypes.

Chris Fornof, a 21-year-old from Colorado, offers to show us around while Marcin finishes his coffee. We tramp across the field towards the workshop where the prototype machines are being made. It's a lean-to that's cluttered with tools hung from rough-hewn wooden columns and bits of machinery scattered across the worktops.

Chris points to the machinery, explaining their various stages of production. His voice squeaks with enthusiasm as he reaches a laptop computer, a dismantled hard drive and a piece of sheet metal – the makings of a 3D printer "that's like something out of *Star Trek*!" in its capacity to 'print' 3D designs out of metal.

He takes us outside to admire the GVCS prototype tractor – an impressive-looking vehicle that looks a little Mad Max in its stripped-down, modular glory.

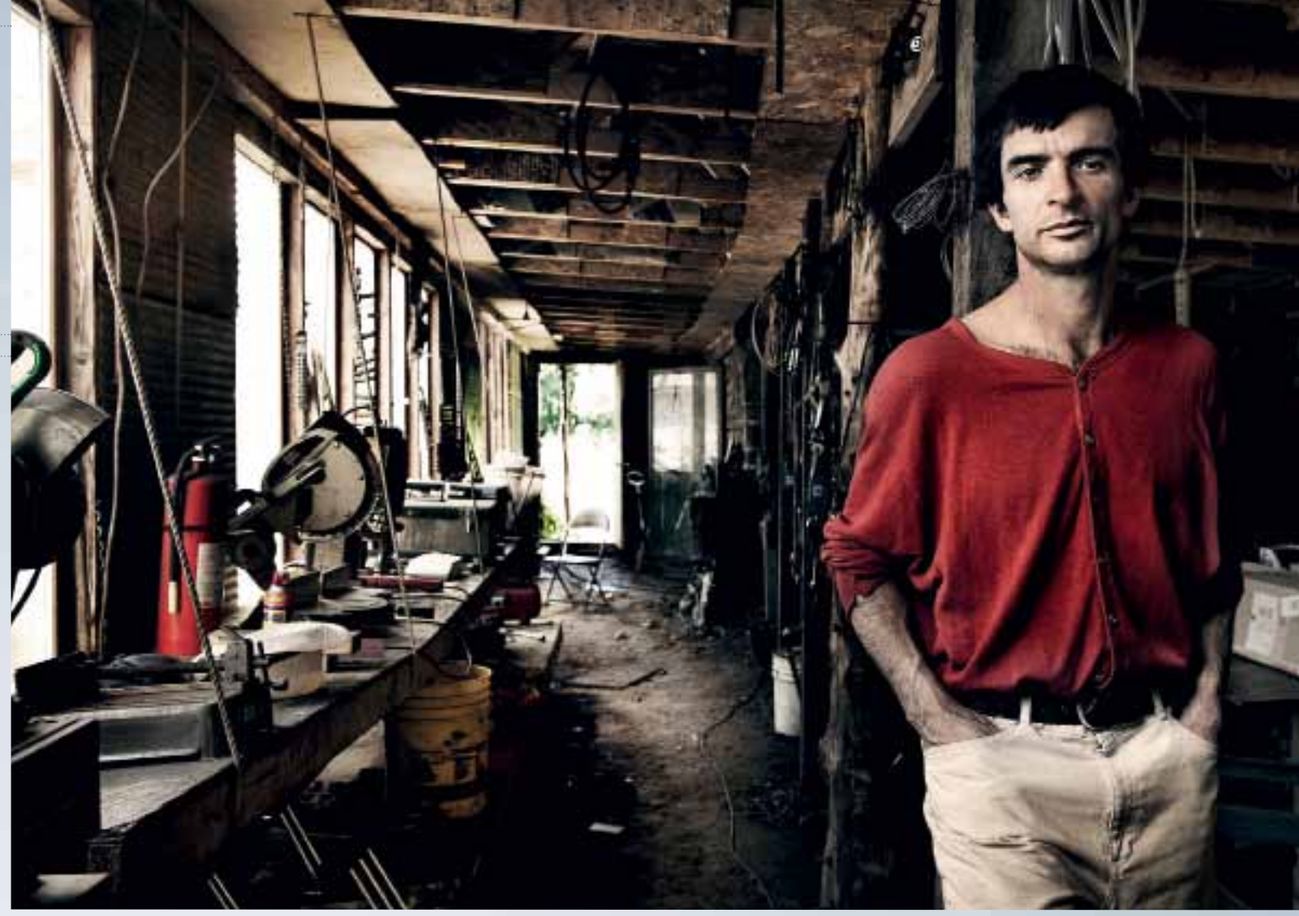
The tractor runs off power cubes that will form part of all 50 machines. These are self-contained energy units comprising an engine coupled to a hydraulic pump that can be easily transferred from one device to the next.

Some of the men we encountered earlier are now drilling nearby and we watch them as they prepare storage boxes for bolts. Chris tells us there's been so much interest in the project that people now need to send a written proposal of what skills they can bring to the table if they want to visit.

The drilling intensifies as Marcin enters the building. With that steadfast gaze, he clocks his people hard at work. Chris beams at him and then leaves to clean out the composting toilets.

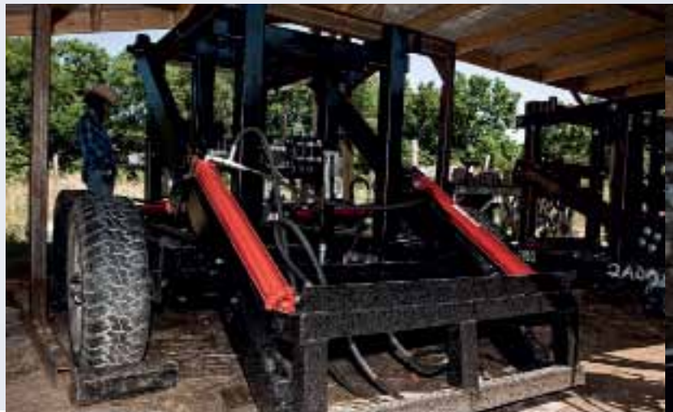
"There's incredible commitment from people who come here," says Marcin. "They're willing to live as pioneers in these rough conditions. Because we're keeping clean in terms of our vision and motivations, keeping it honest and for the common good, we're getting this support."

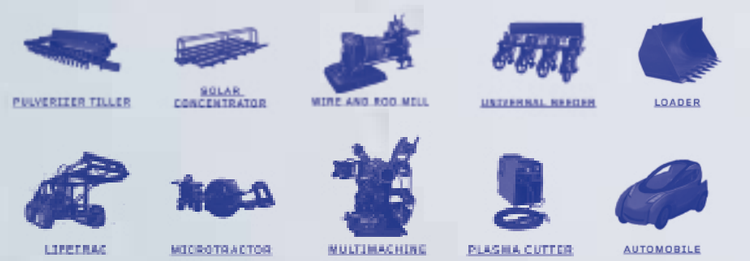
Louis 'Thad' Getterman, a Texan farmer and computer programmer in a Stetson, brings us some chairs and we sit down in the workshop to talk. Marcin looks like he'd be more comfortable directing the work going on behind us, but he switches



Clockwise from top: Marcin Jakubowski, the enigmatic founder of Open Source Ecology, in the workshop; a cluttered workbench on which many designs are conceived and built; the second prototype of LifeTrac, one of the 50 machines in the Global Village Construction Set

'WE WANT TO CREATE THE ABILITY TO HAVE TRULY FREE ENTERPRISE OR OPEN-SOURCE PRODUCTION'





3D PRINTER
This machine allows a design to be rendered as a three-dimensional object. Based on an existing printer, the RepRap, Marcin and his team's machine is being tested to see if it can print to sheet metal. Currently the printer creates objects in plastic.

CEB PRESS
The Compressed Earth Block Press takes soil and squeezes it hard to make solid blocks, which can be used for building. The blocks are strong and provide a high degree of heat and sound insulation. The machine can make up to 16 blocks per minute.

TRACTOR
This is a versatile, four-wheel drive, hydraulically driven, skid-steering tractor and loader. The design is modular, so the tractor can be added to or disassembled easily, which means any problems with its performance can be fixed without difficulty.

into interview mode. Like a news presenter, his words come out in neat sound bites.

"The responsibility to change the world is potentially huge here. I've always thought about good solutions for making a better world. Life could be easy and great for everybody, but when we look around we see a lot of destruction going on."

Sharing is at the heart of Marcin's vision. It's perhaps a concept that has an uneasy relationship with a capitalist society, but he believes it has a place.

"We're trying to reinvent the ability to have truly free enterprise or open-source production. Distributive economics means there should be enough for everybody."

So how did he select the 50 machines? "That's something we're asked a lot," he replies. "First we went through a selection of metrics, simply asking: What are the most important things everybody uses?

"Like to eat, you use a tractor; drive a car and you use manufacturing robots and milling machines to produce it. You'll also need fuel for the car, so we've included fuel equivalents and have tried to select the most ecologically friendly way to do it."

By building and testing the set, he'll know what improvements need to be made. The open-source approach also means the designs are mutable. "It allows anybody to download, modify and use the designs as they want to," Marcin explains, "whether it's a big corporation or a small player.

"They don't have to reinvent the wheel and they can actually start making improvements on what exists already."

Our conversation is interrupted by a renegade rooster that flies into the workshop and settles, squawking, on a power cube. Thad shoos the bird away and returns to his laptop, typing furiously with his Stetson pulled down low.

Once Marcin is satisfied that order has been restored, he turns back to our conversation. "We didn't have the internet here at first because the regular routers don't have the range, so we put together a chicken-wire structure behind the router as a focusing antenna. It's totally gutterpunk but works very well.

"You think you may need to use advanced techniques but you can do a lot of things effectively in different ways. That's been a recurring experience here – that so many things are possible."

Marcin's thesis at university was on improving the efficiency of solar cells; this work led him to fusion physics, where he fell in love with the idea of building a sun on Earth to generate power. But the affair ended when he came up against radioactivity issues, so he returned to ruminating on ways to trap the energy that already comes to Earth.

For this reason, Marcin picks the GVCS's solar concentrator electric system as his favourite machine. "The entire structure of civilization depends on access to energy if you want to have a so-called modern standard of living," he says. "Access to clean energy is a huge issue."

Unfortunately his Amish neighbours aren't as enthusiastic about the initiative because of the steam-engine element to the design – they prefer to rely on horse-drawn power – but Marcin is confident many others will be.

In fact, spurred by the talk Marcin gave for the TED organisation, reception to the kit has been overwhelmingly positive. The only doubters he's encountered are some environmentalists put off by the fact that it means building more machines.

"Most people don't appreciate that you can have high-power equipment that's also an appropriate design for a lifetime, designed for true human service as opposed to commercial interests," says Marcin. "If we create our products in a way that serves both nature and humans, we can achieve this goal."

We sit in silence for a moment, his proclamation hanging heavy in the humid Missouri air. He looks up, the sunshine casting his face in a golden glow.

"For anybody who chooses to provide full commitment to something, it's all within their powers. It's about whether you see the vision and have the motivation, and if it makes sense. If there's sense behind it, you can do it."

TED is a non-profit organisation that brings together people from three worlds: technology, entertainment and design. Since its launch in 1984, TED's scope has become ever broader. Along with two annual conferences in the UK and US, TED now includes the award-winning TEDTalks video site and a fellowship programme. *www.ted.com*

MORE DETAILS
Visit *opensourceecology.org* to find out more about the project
WATCH THE VIDEO
To see a short film of *Onelife*'s trip to the Factor E Farm, either: **SCAN HERE** (How? See page 11) or visit *bit.ly/onelife_films*