STATE OF THE ARTS: IS VANCOUVER A CULTURAL DEAD ZONE?

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TERRY LYONS IS PART OF A NEW BREED OF CORPORATE DIRECTORS STEERING B.C.'S BIGGEST COMPANIES. MEET THE POWER BROKERS BEHIND VANCOUVER'S BOARDROOM DOORS

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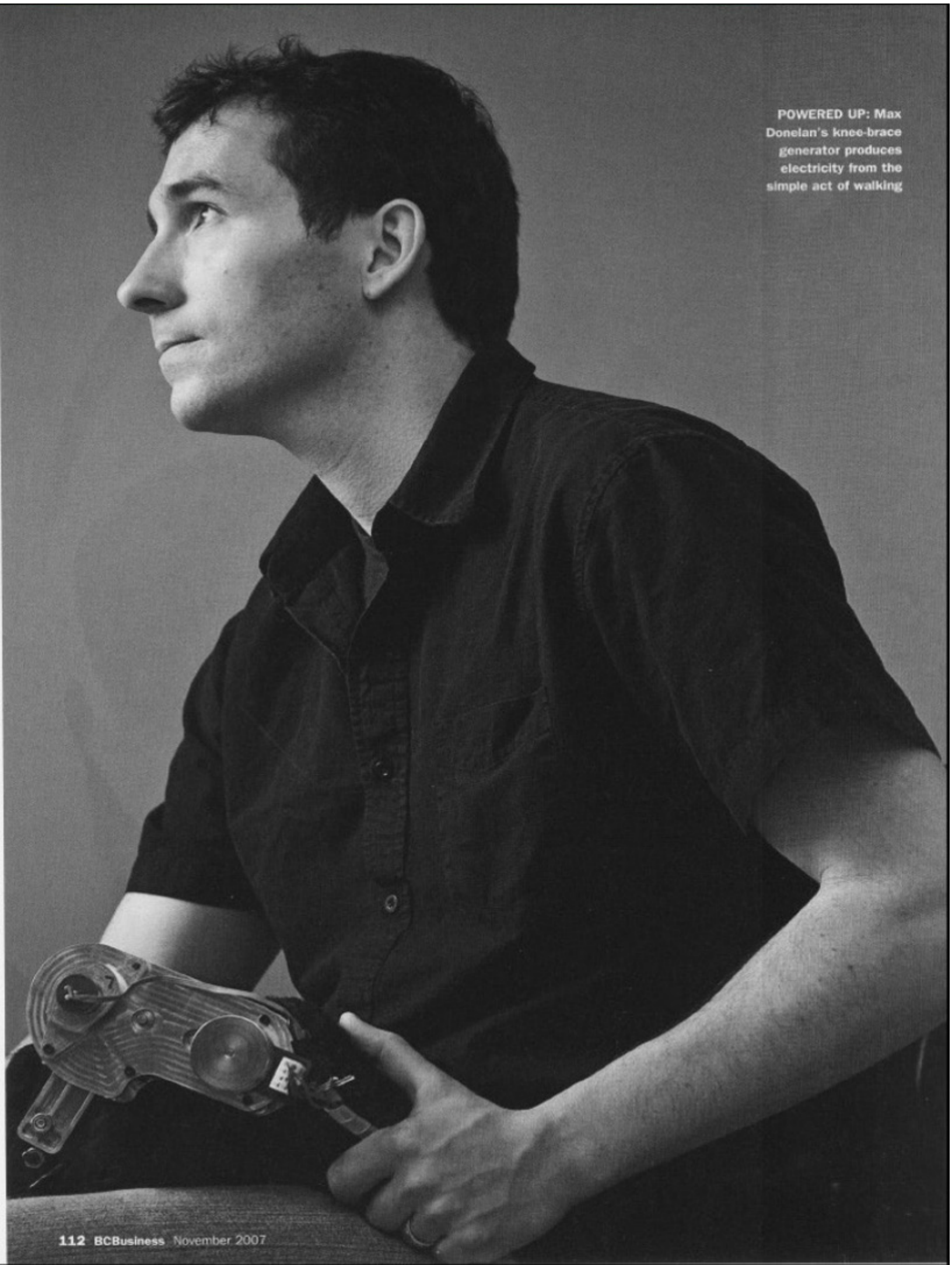

POWERED UP: Max Donelan's knee-brace generator produces electricity from the simple act of walking

explains. The amount of energy our bodies can produce out of some stored fat is roughly equal to the energy in a stack of batteries weighing 100 times more. While we won't be powering cities anytime soon, Donelan is working out a way for us to self-power our cellphones, MP3 players, laptops and medical devices.

Donelan and his team have developed what they call a biomechanical energy harvester to grab hold of some of this energy, he says, producing power from a person while demanding no extra effort. Their invention is a high-tech knee brace that grabs energy from a walking person.

"We want to do it in a smart way, which is called generative braking," he says.

It's much like what a hybrid car does when it uses energy from braking to recharge its battery, Donelan explains. The brace does the same thing with legs. In every stride there is a distinct moment when our muscles put on the brakes. The device uses this force to spin a generator and produce electrical energy.

"While the idea is kind of simple," Donelan says, "the implementation is a bit more complicated. It requires some good engineering skills and also some good physiology. You need to know about how people walk to do it properly."

You wouldn't want a machine to take energy from you when you stand up from a chair, he says, but it can grab a lot of energy from you when you sit down that you won't miss at all. The current model generates about five watts without requiring any extra effort from the walker, Donelan says, enough to run about 10 cellphones. Bionic Power was spun out of SFU this year and is still working on gathering core funding, Donelan says, but potential clients have already come knocking. Makers of medical devices and prosthetics are interested because they're moving toward more sophisticated computerized devices, Donelan says, and their big hurdle is power use and battery capacity.

"The future of this, one of the directions, is a fully implantable version that would power implanted biomedical devices," Donovan predicts.

Another excited observer, and one of Bionic Power's first investors, is the Canadian military, he says. The modern soldier packs an average of half a kilogram of batteries to feed his or her growing digital arsenal. Anything that can help the military reduce this burden, increase battery reliability and save money is definitely on their radar. ■

INVENTOR: Max Donelan
Invention: biomechanical energy harvester
Created: over the past seven years
Origin: developed at SFU, continued at Bionic Power Inc. (Burnaby)

Speaking with Max Donelan, one gets a new appreciation for the term "alternative energy." Donelan, assistant professor of kinesiology at SFU and chief scientific officer at Bionic Power Inc., isn't working with wind, water or sunlight; he's interested in walking.

People are excellent sources of energy, he

READ MORE about the inventions we discovered while researching this project at **bcbusinessonline.ca**