ALL ABOUT THE SMALL THINGS

Words: Jamie Christian Desplaces

A *Simpsons* episode entitled "The Computer Wore Menace Shoes" sees Homer inadvertently exiled to an island inhabited by banished souls who "know too much". The collection of geniuses that apparently threaten corporate dominance includes a scientist who's figured out how to run the internal combustion engine on water. Last June, on a far less satirical note, Sir Richard Branson, on another island, assembled a crew of thinkers, doers and thought-provokers to address issues of sustainability and social justice on a global scale. The 15-strong group spent a week on the Virgin boss' tropical Caribbean retreat, Necker Island. The eclectic list boasted Silicon Valley luminaries such Google Maps creator Lars Rasmussen, world-renowned kite-surfer Susy Mai and New Zealand's very own superhero scientist, Dr Michelle Dickinson, aka NanoGirl.

"I never in my wildest dreams thought I'd ever be hanging out with such an elite group," says Dickinson. "It was a surreal experience. Richard surrounds himself with good people with big hearts. They were all generous and humble and there were certainly no egos. There were venture capitalists, entrepreneurs, inventors and philanthropists. They want to create a movement of sustainable businesses and thought my scientific brain would be a good fit."

Dickinson is a pioneer of nanotechnology, the science of all things small. A nanometre is a billionth of a metre, which is about one-five-millionths the length of an ant, or how far our fingernails grow in a second. It's rather poetic that such a microscopic process can be used to solve some of Earth's biggest problems, from the purification of sea water for the Third World to the filtration of fossil fuels and the advancement of regenerative medicine. A work in progress for Dickinson is the replication of polymer hairs that cover gecko feet in order to make things stick better.

"Mother Nature is often the best teacher," says Dickinson. "She's been doing it for millions of years. For an engineer, of course it's better to take an organic concept that works well and copy it, rather than reinvent the wheel." The next generation of solar panels, she says, will be nature-inspired. "The current silicon-based devices use awful chemicals and rare earth metals. But just take a look at photosynthesis; every tree is effectively a highly efficient, living solar panel."

Dickinson hopes that the fascinating tricks of her trade will entice more girls to take up careers in science and engineering. "A big problem in New Zealand – and the world – is that there are no female role models for those subjects," she says. "And I want to change that. I tell them that there's a whole bunch of cool girls that do science, but they just don't get the airtime. You don't need to wear steel toe-capped boots and a hard hat. I can still wear dresses and build and break stuff. I tell them that they can change the world." With that in mind, Dickinson is a TV regular and with her alter ego, NanoGirl, has a strong social media presence. She gives TED talks and makes regular school visits too. She's also in the process of developing a range of toys – for boys and girls – to turn kids on to science. "Boys are brought up with things like Lego, stuff that you build," continues Dickinson, "whereas girls just have ones that they hold, or dress up. They don't develop those engineering skills that form in the brain at a young age." Dickinson certainly did develop those skills, however. Her dad "loved building stuff", and by the age of seven she'd learned to solder a circuit board. She was, she says, one of those "annoying kids who questioned everything". Once, much to her mother's dismay, she dismantled — and broke — the toaster: "I was born to be a scientist! And I've always been active. I wanted to be an Olympic swimmer at one point, and now I'm a competitive martial artist and kite surfer. I find being active helps to focus the mind, especially with sports that require intense concentration."

"Boys are brought up with things like Lego, stuff that you build... whereas girls just have ones that they hold, or dress up.They don't develop those engineering skills that form in the brain at a young age.

It is a focus that has taken her on a meteoric rise — and one that, later in the year, will take her back to Necker Island to further cement the group's plans. "A lot of stuff has happened, though I can't go into details at present," says Dickinson. "But there are big Kiwi companies involved, and government departments. What is exciting for New Zealand is that many of the ventures could base themselves here. From tidal to geothermal, we have the renewable resources. New Zealand really is a tech innovation hub. It's so easy to create and carry out an idea here. To make things happen, fast, without the bureaucracy. Everyone knows each other, or knows someone who does. It's not like that in the States. Others on the island realised how cool New Zealand is, and the potential that it has."