



Christchurch anaesthetist and inventor John Hyndman.

BRAIN BOXES

While Richie McCaw took the limelight at the 2016 New Zealander of the Year Awards, perhaps the best story of the night was one that received few headlines – two modest innovators and their machine that will transform lives. Mike White meets John Hyndman and Ivan Batistich and their marvellous invention.

There is hay in the paddock that needs to be baled. There are alpacas over the fence. There's a tractor, a chainsaw, and a winter's supply of wood. There are two dogs at John Hyndman's heel. It's rural. It's somewhere near Rangiora. But in a studio at the back of Hyndman's property, there's an ingenious machine that could revolutionise surgery in many countries.

Twenty years ago, a journalist described Hyndman as looking not so much like the senior doctor he is, but more like a drought-whacked cocky, all brown forearms, undomesticated

hair and fingers the size of irrigation pipe. Nothing much has changed.

But those fingers have helped thousands of patients in a 40-year career as a GP and anaesthetist. And now they curl round the handle of a device that could help thousands more around the world – a low-cost, portable anaesthetic machine that can work anywhere, even when there's no power.

At 15kg and the size of a modest microwave, Hyndman lifts it easily onto the table and unclips the cover to reveal a lineup of cylinders, gauges and dials. The Hyvan is the brainchild of Hyndman and



Hyndman with the Hyvan, a portable anaesthetic machine that costs a fraction of standard models and can be used anywhere in the world.

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his medical engineer friend, Ivan Batistich, and in February they won the New Zealander of the Year Innovator award. In August, the pair will receive another award for their invention in front of 10,000 colleagues at the World Congress of Anaesthetists in Hong Kong.

It’s taken 10 years to get to this – well, no, more like 12 or 13, says Hyndman, working back and doing his sums. There’ve been four prototypes and a smattering of scepticism from onlookers along the way. But Hyndman and Batistich have kept working in their garages and lounges, motivated by the belief theirs was a good idea that was truly needed, not because they thought they were medical geniuses.

“I read a book about [eye surgeon] Fred Hollows recently where he said he’d never looked like a doctor,” says Hyndman. “And I thought, I feel the same way – I’ve never seen myself as a flash doctor. I always thought specialists were someone special. I never thought I was smart enough.”

To put things in perspective, Ted Hughes, immediate past-president of the New Zealand Society of Anaesthetists, says anaesthetic machines used in New Zealand are about the size of four dishwashers, stacked two high, two wide. They

are incredibly complex, with everything electronic, and cost about a quarter of a million dollars.

“Ivan and John’s machine does virtually everything that machine does, and it’s the size of three telephone books on top of each other.” The Hyvan will cost around \$7500, or \$15,000 with a monitor.

“I call it the AK47 of anaesthesia machines,” says Hughes. “It’s simple, it’s robust, it’s reliable, it doesn’t jam, it’s safe as houses, it’s not incredibly flash, and it’s as cheap as chips.”

Hyndman uses another analogy. “The machine I use at work is like a Lamborghini or Ferrari. This is like a Toyota Corolla. But which of those cars would you want in Vietnam or somewhere? You’d want a Corolla, because they go and you can fix them. The Hyvan is just a bit more hands-on – more like a manual than an automatic.”

Hyndman and Batistich have both done voluntary work in Asia and the Pacific and were dismayed by what they saw: secondhand anaesthetic machines donated from the West, but broken down, sitting in the corners of operating theatres or hospital storerooms, bugged and abandoned. The hot, humid and often salty climate was death to their electronics.

Staff frequently lacked the knowledge to operate such complex

machinery. And when something went wrong, there was no technician on hand, no parts available. “It was like a graveyard of these machines,” remembers Hyndman. “And the gear they did have was a real mishmash of stuff, all patched together, and it was bloody unsafe. I used to hate using it and I’d spend half my time repairing it. God knows how people survived. A lot didn’t, probably.”

Batistich had spent years designing anaesthetic equipment and when he met Hyndman at a conference about 12 years ago, the idea came up for a compact, bullet-proof machine, simple enough that anyone could learn to use it, basic enough that it could be fixed in a hospital workshop if needed.

They began working on a couple of ideas, but then the project drifted for a bit until Hyndman rang and said, “Well, we either do this or should we forget about it?”

“And I like doing things,” says Batistich, “so I said, ‘Let’s do it.’”

Initial models were trialled on animals at Otago University’s medical school as part of a research programme. When Hyndman shifted from Dunedin to Canterbury, he continued developing the Hyvan and asked his friend, Bill, to find a sheep to test his latest prototype on.

Bill shot round to a neighbouring farmer and said he had a mate



Ivan Batistich (far left) with Hyndman (second from left) at the 2016 New Zealanders of the Year awards, with other winners, including Richie McCaw.

who needed a sheep to euthanise. Hyndman and Batistich duly put the sheep to sleep, found the machine worked perfectly, woke the animal, and sent it back with Bill. When the farmer saw his sheep trotting up his drive, he was astonished.

“Jesus, what’s happened?” he asked.

“Oh, I got it wrong,” said Bill. “He wanted to anaesthetise it, not euthanise it.”

Batistich says anaesthetic machines are essentially simple – gases come in, get mixed with the modern equivalent of chloroform, and the patient breathes this in and out, with CO₂ being removed. So he was confident they could make something straightforward and strong that would function in the widest range of circumstances.

“The thing with these modern machines is, over the years they’ve had problems that arise and what they’ve done is put in an alarm for that. But all they’ve done is put in a system to warn you something’s gone wrong. I thought, ‘Let’s do away with the stupid design so the problem doesn’t arise in the first place.’

“I said to John, ‘We’ll never make a machine that’s completely foolproof for everybody. There might be some places where someone will find some way to put a screwdriver through it or something. But we’ve just got to do our best

to make it less sophisticated, but still make it safe and reliable.”

To that end, Hughes says the Hyvan could have a huge effect on surgery around the world. “It’s a most extraordinary thing. It gives people in the Third World access to modern technology at a fraction of the price of current machines. It’s just perfect.”

He also points to its use in disasters, such as tsunamis, and even things like industrial accidents or earthquakes where emergency amputations are needed.

Hughes has worked with Batistich in the Cook Islands and says the work he did there installing anaesthetic equipment has saved many lives.

“When you talk to Ivan, you kind of think you’re dealing with someone who’s a hard-case farmer’s boy from Kaitaia. That’s because he is a hard-case farmer’s son from Kaitaia. But the man’s got a heart of gold. And he’s really bloody clever – really bloody clever. He’s absolutely brilliant at thinking up number 8 fence-wire solutions but then putting them into practice with very high levels of bio-engineering expertise.”

Hyndman says Batistich reminds him of Burt Munro, the Invercargill motorcycle racer and innovator who Hyndman looked after when he was ill.

“He’s exactly like Burt, working in his little workshop, making all these incredible things out of nothing. He’s the original New Zealander, Ivan.”

Everyone you talk to mentions Batistich’s perceptive genius, his ability to solve problems by thinking long and laterally. But those close to him also talk of his compassion.

Six months after he was married, his wife developed multiple sclerosis. Batistich nursed her for nearly 30 years until her death, while manufacturing medical and veterinary equipment from his garage. Many of his inventions have been simply to help others, not to make a profit.

“Money doesn’t really worry me very much,” says Batistich, who’s now 70 and splits his time between New Zealand and Thailand, where he does volunteer work. “I’m not a man for flash cars. I’ve got an old ’94 Mercedes and John’s got my old Camry down there that he runs round in. And I’ve got a scooter that I whip round Auckland when I’m here. That’s about it.”

The fact nobody has previously made a machine like the Hyvan might seem strange but boils down to money, says Batistich. “If the big companies can sell a machine for \$150,000, it’s better than selling one for \$15,000 because you can imagine the 20 per cent profit is a lot more. They talk about saving the Third World – but they’re not really interested in that at all. They want big-value stuff around the place – I like putting a smile on people’s face, making the outcome a bit happier for people.”

Money’s never driven Hyndman, either. He reckons he and Batistich have spent \$300,000 of their own getting the Hyvan to this stage.

“It’s eaten into my retirement savings considerably,” says

Hyndman, 63. “The bills just come in all the time. But what can you do? I think it’s worth doing. I’ve got no expectation of a return. I just want to see the thing made and sold and used.

“You could turn it into a big business. But once you do that, once you get all those hangers-on, the next thing the price doubles or trebles. That’s what we want to avoid.”

Colleagues describe Hyndman as supremely skilled and unflappable in operating theatres. But he’s equally at home on the tractor on his small farm. During his career he’s helped establish a hospice in Southland; written an ebook on anaesthetic treatment; started a private hospital in Blenheim; led a far-sighted project to integrate public and private health systems there; and organised an exchange programme for Cook Islands’ hospital staff. He writes poetry, submitted several designs for the flag referendum, and once invented a radical “boomerang” sail for a yacht. He has a baritone voice but when he laughs, it’s the giggle of a kid being tickled.

Hyndman reckons he’s a bit eccentric, but the reality is that, like Batistich, he just thinks deeply and logically about how problems could be solved.

The pair has had help with the Hyvan along the way, including input from Sir Ray Avery of Medicine Mondiale. Helen Lunt, a Christchurch physician who works for Via Innovations, which encourages medical initiatives, says Hyndman has been utterly tenacious in overcoming the hurdles that lay between a good idea and getting his product to market.

“A good idea is a starting point, but it’s not sufficient. You have to work at making other things fall into place. Only a very, very small proportion of good ideas make it to the stage John’s got to. But this is a good story, and it’s such a simple story to tell, that I knew it would grab other people’s imaginations. It grabs your head and heart at the same time.”

While Hyndman and Batistich have been happy taking advice, they were determined to keep control of the Hyvan. They’ve found

their own designers and software engineers. They’ve organised ISO certification and clinical trials. Hyndman has even insisted on the Hyvan being manufactured in Highlanders’ colours, a homage to the southern region where he grew and worked for many years.

And they’ve made the rare decision to manufacture the Hyvan in Christchurch.

“I’m a New Zealander, you know,” says Hyndman. “I just like the idea of keeping these things in New Zealand. It may not make good economic sense, but I’ve got more control over what goes on. And quality is everything.”

Hyndman says he and Batistich have never had a moment’s dissent, never a cross word.

“It’s a very old-fashioned relationship. We’ve got nothing in writing apart from the [ownership split] agreement. We had to do that apparently.” (Hyndman owns 51 per cent of the company and Batistich 49 per cent, because Batistich insisted someone had to make the final call on things.)

“We’re just two old guys trying to do something before it’s too late, before the sand in the hourglass runs out.”

Ted Hughes says some in the anaesthetic world greeted the Hyvan concept with doubt.

“Because it was outside the square – a long way outside the square – and a lot of senior anaesthetists thought it was a step back in time. But it’s not an attempt to turn the clock back in New Zealand – it’s an attempt to turn the clock forward in the Third World.”

Any local scepticism has now evaporated, Hughes says, with people realising the Hyvan can help people throughout the world. “And manufactured from Christchurch, earthquake-stricken city of New Zealand, without much industry. And Christchurch will come out as its biggest backer, of that I can assure you, because everyone loves a winner.”

Tomorrow, says John Hyndman. Tomorrow he’ll get that hay in. But first he has to strip the Hyvan for another certification inspection.

As a kid, Hyndman wanted to be a farmer. His Irish forebears were all men of the land, and his father was the first furrow in the agrarian line, becoming a GP surgeon. Hyndman’s father originally trained as a priest, then as a civil engineer, then served in the military in northern India. The army surgeon there was short of equipment and would get Hyndman’s father to make operating theatre tools in the camp workshop. He became so fascinated with surgery, he enrolled in medical school when he was demobbed.

Hyndman’s father badgered his son to become a doctor, despite Hyndman having been accepted to do geology honours at Otago University. “So to appease him, I applied for medical school. And unfortunately I got very good marks and got accepted.”

As a teenager, Hyndman had helped his father in theatre, watching doctors use the old “rag and bottle” technique of putting patients to sleep, by dripping ether onto a piece of lint over their face. Hyndman still has the rudimentary metal mask his father used on patients for anaesthetics. Sitting beside the Hyvan it’s a reminder of how far we’ve come in a couple of generations, the effort that’s been devoted to easing others’ pain, and the contribution Hyndman and Batistich are making to that.

Senior spinal surgeon Bruce Hodgson, who worked with Hyndman for more than a decade in Dunedin and trialed early Hyvan prototypes on animals, says Hyndman and Batistich combine a wealth of skill with genuine altruism.

“The wonderful thing about Kiwis,” says Hodgson, “is that they can come across looking like they’re from the back of beyond but they’re actually very, very sophisticated in their thinking.

“These are two people who are quietly ticking away, developing something that’s going to be very effective and is going to be extremely useful for a lot of people in a lot of places. And that needs to be celebrated.” +