

### “Hey Dad, it’s one-armed Will”

Suzanne Wemp

*The following is excerpted from the winning entry in CMAJ’s 1999 Amy Chouinard Memorial Essay Contest for Canadian journalism students. Suzanne Wemp is a recent graduate of Langara College, Vancouver.*

The year is 1986 and Will Craig is an outdoor enthusiast whose lifestyle depends very much on the strength of his 18-year-old body. Then his youthful sense of immortality is challenged when a car he is riding in flips over and rolls into a ditch. Those few seconds of roadside horror change his life forever.

Craig suffered extensive facial disfiguration, losing part of his cheek and an eyelid, but that was nothing compared with the loss of his left arm — the arm that had pulled him up mountains, taken him water-skiing on the ocean and steered his bike.

Bucking the doctors’ unhelpful predictions for his rehabilitation, Craig returned to his sports and then ventured into the world of medicine because he wanted to invent better prostheses. A year ago Craig, 32, graduated from medical school at UBC and is now doing his residency in psychiatry and rehabilitation medicine at Dalhousie University in Halifax.

“I was pretty pissed off after the accident so I was just determined that it wasn’t going to stop me from doing anything,” says Craig. Two months after the accident, he was back mountaineering, and that’s when he first saw the need to address a problem that has plagued amputees for centuries: prostheses may be functional, but they have never been very versatile. They have always enabled people to do *something*, but Craig wanted to do *everything*.

“This all began out of frustration,” Craig explains. “I got tired of having no dexterity. When I was going through rehab I was told I couldn’t do a lot of things.” Those things included scrubbing in for the operating room and riding extreme mountain bike trails.

Craig says prostheses have not evolved substantially since World War II. When he first started riding his bike after the accident, he simply made some slight adjustments to his conventional prosthetic arm. But that didn’t last long. While riding the infamously rough “Ladies-Only” off-road trail in North Vancouver, he broke his arms — both the prosthetic one and his own. And thus, painfully, 10 years of modifications began.

Craig began working on new designs for prostheses while completing his master’s degree. His aim was to design an arm that suited his multisport lifestyle and everyday use — switching arms for each activity was not an option.

Initially he took the elbow piece off his prosthetic arm, replaced it with a coil-spring suspension kit made for a mountain bike and then attached the arm to the bars. It worked well, unless he crashed. He began working with UBC engineering students to build the first mountain-biking-specific prosthetic hand. It ratcheted on to his handlebars and served him well, but left lots of room for improvement. The next version featured a flexible stem. It worked even better but had to be rebuilt 5 or 6 times due to wear and tear.

Eventually the flexible stem was replaced with a shock from a bike suspension company. The suspension piece runs from his upper arm to his forearm. Instead of a hand he uses a fitting, with nothing to bind it to the handlebar. A cord runs from his prosthetic hand to his right hand so that when he pulls his right hand off the bar, the prosthetic arm releases as well.

With each modification Craig’s arm becomes potentially more useful to other amputees. The newest version of the arm will be lighter and more durable.

While the device was inspired by sports, Craig’s focus is much broader. “The goal is eventually to make this practical

so it can be used for other activities too, like work,” he says. “I’ve also been working on a number of other things like a functional hand, and a functional elbow that will be strong enough for multiple uses, rather than having a separate arm for every activity.”

He now receives calls from Americans seeking mountain-bike-specific arms, and is looking forward to pursuing further innovations because of grant money he received from the provincial government and support from UBC.

His prosthetic research may eventually allow amputees to accomplish any physical feat they attempt, but Craig’s attitude is the thing that encourages them to try new things. Kids often ask him questions. At a local bike shop, for instance, a young boy excitedly pointed out the locally famous “one-armed Will” to his father.

Craig smiled as he recalled the incident: “I think attitudes are starting to change in rehab medicine.” ?



**Dr. Will Craig: “I was just determined that it wasn’t going to stop me from doing anything.”**