



Andre Janecki

Churchill Fellow 2009  
Sea kayak for double leg amputees

**THE WINSTON CHURCHILL MEMORIAL TRUST OF AUSTRALIA**

Report by Andre Janecki

2009 Churchill Fellow

*To visit producers and manufacturers of materials and technologies required  
for the development of a sea kayak for double leg amputees  
France, Austria, USA and Canada*

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Signed: Andre Janecki

Dated: 11/12/09

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## **INTRODUCTION:**

I am extremely grateful to the Winston Churchill Memorial Trust for recognising the merits of this project and providing me with an immense opportunity, which will help in turning this design concept into a reality.

I have thoroughly enjoyed my role as a roaming ambassador for the Trust and will continue to encourage other Australians who wish to follow and further explore their passions and talents.

Thank you also to Robert Mercer and Catherine Zealand for their support, encouragement and belief in my project.

However, it is Cynthia Banham who motivated me to begin this quest.

I feel honoured and privileged that she approached me.

Cynthia, along with her husband Michael, have ignited a powerful flame, a challenging and inspirational one, which has altered my perspective, not only as a designer but also as a person, to think and imagine beyond my own boundaries.

## EXECUTIVE SUMMARY:

Andre Janecki – Principal designer  
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Tel: 02 9211 5522

### Highlights:

- Meeting Tomas Gala and Zdenek Rybnikar from Gumotex
- Attending the West Coast Sea Kayak Symposium in WA, USA
- Meeting some of my kayaking legends including Greg Barton from Epic and Doug Simpson from Feathercraft
- Visiting the Bosworth Company in Rhode Island to explore motorised pump options.

### Major lessons.

- *That I am more committed than ever in materialising this project*

Travelling has really reinforced the need and the potential of this design.

I was exposed to several adapted or modified products, but these were simply compromises, which won't ever provide the independence and accessibility, which is the core focus of my design. This project is long overdue and I feel quite ashamed of myself for not thinking outside the confines of my able bodied view sooner.

- *Here is a real and tangible Australian design, which won't only have an impact here in Australia but across the world*

The impact would be felt on many levels:

Highlighting the daily challenges faced by people with disabilities.

Showcasing a practical and functional Australian design to the world, one which has the ability to empower and promote Australia as progressive in the field of accessible design. Providing a recreational activity for double leg amputees and paraplegics, which they can participate in, without having to rely on the assistance of others.

- *My technical design skills can be applied to other projects*

There are a couple of true technical challenges with this project, namely with fabrication of the sponsons and minimising exposure of motorised elements to consistent abuse from salt water and sand. It is my responsibility to devise new methods in which to achieve the successful integration of these technical aspects.

I can engage with other designers and inventors and assist to apply these methods across different industries and products.

The design itself also has the possibility of being adapted for able bodied paddlers, looking for a recreational, low environmental impact, angling craft.

### Dissemination and Implementation

- Further develop the Hybrid Foundation Limited - the not for profit organisation I have established to support this project
- Continue to promote the Hybrid Foundation Limited website [www.hybridfoundation.org.au](http://www.hybridfoundation.org.au)
- Aim to have full sized non motorised prototype by mid next year.
- Continue to host presentations and demonstrations through the NSW Sea Kayak Club and other kayaking associations throughout Australia
- Post regular submissions on local and international kayaking forums
- Engage with private, government and other non government institutions supporting disability services.
- Approach and engage local kayak/watercraft manufacturers with the view to manufacture

## **PROGRAMME:**

Grabner: Stadt Haag, Austria  
Gertraud Pfaffenbichler  
03/09/09 – 04/09/09

Gumotex: Breclav, Czech Republic  
Tomas Gala  
Zdenek Rybnikar  
07/09/09 – 08/09/09

Lodz, Poland  
Robert Koral  
Clama Fabrics  
Krzysztof Jarzebski- paralympian  
11/09/09 – 12/09/09

Bosworth Company: East Providence,  
Rhode Island, USA  
Ken Bosworth  
Doug Reilly  
18/09/09

Werner Paddles: Sultan, WA, USA  
Jim Miller  
12/09/09

West Coast Sea Kayak Symposium:  
Port Townsend, WA, USA  
Bambi Krieg- Event Organiser  
Doug Simpson – Founder and designer, Feathercraft  
Greg Barton – Co-founder and designer Epic Kayaks  
25/09/09 – 27/09/09

Feathercraft Products Ltd: Granville Island,  
Vancouver, Canada  
Doug Simpson  
30/09/09

What follows is a travelogue, devised into chapters, of the sights and experiences which left an indelible impression on me during my recent Churchill Fellowship.

## The allure of 'Travelling Light'

I made a deliberate decision on this journey to travel with a minimum of luggage and equipment and yet I still feel I could have taken much less.

Not taking a laptop with me was a relief. Not having to worry about misplacing, recharging it, or possibly having it stolen was a most welcome feeling. At various intervals, usually once a week, I would locate an internet café and email details of my trip back home, to safeguard against any possible loss of information I had gathered, with what I like to call my 'trinity of technologies' – a DSLR camera, GPS and trusty pen and paper.

To avoid to possible separation from my luggage, I had three copies of my itinerary and contacts. One was kept in each of my bags and the other I carried with me. Travelling with your own GPS, loaded with both European and American maps was a great advantage. Having familiarised myself with its operations and functions in plenty of time prior to departure, allowed me to focus on driving on the 'other' side of the road and gave me the confidence to navigate well in often daunting and confusing traffic conditions.

Knowing that my prominent Eastern European accent (despite having lived most of my life in Australia!) would cause some justifiably inquisitive looks, upon introducing myself as an Australian, (most noticeably in the US), I took two things with me, which I found to be utterly indispensable:

Printed business cards for my project

A collection of souvenir koalas with accompanying Australian flags.

These two items, particularly the latter, did wonders in 'breaking the ice' and literally opened doors to experiences, which I could not have predicted!



The SmartCar and my luggage – part of my 'Travelling Light' philosophy.

### **Pay attention to the omens**

Within 24 hrs prior to departure, I was advised by my contact at the French company that an internal company restructure had prompted him to seek employment elsewhere. His penultimate email had me a little confused, so I sensed that possibly things may not go to plan. This left me initially, somewhat disappointed.

However, it was a blessing in disguise as it provided me with the opportunity to visit not only another fabric manufacturer in Lodz, Poland, but also to meet a champion paralympic cyclist, to look at carbon kevlar wheels and components. I had established contact with both parties prior to my departure, with very little prospect of actually meeting, due to time constraints, so this was a real bonus.

It also gave me the unexpected opportunity to meet renowned kayaking legends at the West Coast Sea Kayak Symposium in the US.



One of many prominent and numerous access signs in Lodz, Poland

### **Surely, something's a little lost in translation?**

Believing it to be an incredibly sensible move, I pre booked car rental from Sydney. My booking for part of the European journey, was confirmed 3 weeks prior to pick, with an established and well recognised company.

On my arrival in Austria, I was surprised to discover that the booking had been cancelled. My first thoughts were that this was a computer glitch, miscommunication or some ill advised trans continental prank. I continued to present my printed confirmation of booking – but this coupled with my sketchy and polite German, had no impact. The booking was not honoured and no reason was given for the cancellation, though I was offered a larger vehicle, which I did not require, for more than double the cost of my original booking!

Within the following couple of hours I had made alternative arrangements with another hire company. This is where I had my first encounter with a Smart Car and it delivered me in enviro-style, to my first appointment at Grabner.

## An Austrian interlude



The very dashing SmartCar at the Grabner factory, Haag, Austria

Grabner was established 30 years ago with a handful of staff and today are a large company, employing hundreds of people across two locations. They manufacture inflatable watercrafts, for the recreational market, mostly motorised runabouts, rafts, kayaks and cats.

They have been very commercially driven and as such have acquired other European inflatable boat manufacturers as they have expanded. The scale of the production I witnessed at the headquarters in Haag, was huge and efficient. They currently produce close to 30 products and one of each is on display at this facility. I would have liked to have taken some photos of the interior but I was politely requested to refrain from doing so.

Over the course of my two day visit, I was given a tour of the headquarters by Gertraud Pfaffenbichler, the Product Support Manager (I had wanted to meet with Wolfgang Grabner, the founder of the company, but unfortunately the timing was not favourable). During this time I got to inspect the fabrication rooms and see the different types of materials they use to construct their boats, including Hypalon and pvc composites and had the opportunity to do an in- house test of some of their kayak products and discuss the possibility of designing custom made sponsons for my project.

## The industrial heart of the village

A notable feature of the landscape in the Czech Republic were the wind farms. On my way to visit Gumotex, I came across three commercial operations, one of which was not far from my destination. There appears to be a progressive exploration and application of renewable energy supplies in this region, as even the Gumotex factory which I visited is in discussions to switch part of its operations to run on cleaner energy. Still travelling in my SmartCar, I felt I was continuing to do my bit, however small, to minimise my impact.



One of several wind farms in the Czech republic

One of the larger companies is Gumotex, which currently employs over 1100 people. Gumotex are manufacturers of inflatable boats and other recreational watercraft. They have a reputation for quality and innovation so I was keen to meet with Tomas and Zdenek. If our email correspondence was any guide, this was going to be an exciting and productive time. Seeing the row of bicycles lined up outside the premises, was a very welcoming and relaxing sign.



The preferred mode of transport for many Gumotex staff

I was greeted with open arms and a fulfilling lunch from the onsite canteen, both days I spent at Gumotex. They took me on a tour of the facility where I inspected a variety of equipment and materials. My main interest in visiting Gumotex was to look at the manufacturing and materials processes of sponsons, the 'inflatable tubes' which form an integral part of the design.

Over the course of my visit there, they welcomed my presentation. I took along a scaled model and drawings to demonstrate how the kayak would function, including the launching and transportation logistics.



Tomas and Zdenek in the foyer of the Gumotex factory

I even engaged them in a 'Design Challenge' – the object of which was to demonstrate that the same object, in this case a paper plane, in the hands of three different people, can feature varying shapes and intricacies, thus creating custom designs. This was not lost on them and they were very open to the potential of my project, as a new, if not select market for them. They appreciated the sense of freedom and independence that comes with it and the opportunity for their company and employees to be involved in developing an innovative purpose built craft.

Gumotex really embraced the concept of my design and since my visit, were exploring ways in which they could potentially fund the prototype. This was a very exciting prospect, which, given financial constraints, unfortunately, has not come to fruition.

### **A pirogi or two!**

My unexpected visit to Poland took me to Lodz, (pronounced Woodj) which is the fabric manufacturing centre of the country. I was interested to explore possible options for the material to use on the deck of my kayak.

Whilst in Lodz, I visited the Clama fabric house to see the production of synthetic glass fibre fabrics in action. I was welcomed by Robert Koral, the owner of the business and given a tour of the factory, which was newly constructed a little over 12 months earlier. Like in the Gumotex factory in the Czech Republic, there was a well appointed staff canteen, where I was treated to plate after plate of pirogis – little dumpling like parcels of vegetables and meat.

The majority of the equipment was new or new near, which was indicative of the recent economic robustness of Poland. Indeed, Poland was one of the few European countries to experience growth throughout the previous year and this particular fabric manufacturer was producing large volumes and exporting throughout Europe, Asia and Oceania with strong demand.



Robert and staff in the Clama factory with the synthetic glass fibre fabric

I was very excited to meet up with Krzysztof Jarzebski on my final day in Lodz. Krzysztof is a paralympian cyclist, who became a double leg amputee as a result of an illness. He has somewhat of a mythical status in Poland, as he is constantly challenging himself and his endurance. Earlier this year he completed a record ride cycling 425km in 24 hours and completed an epic journey from Poland to London over 16 days.

I had the chance to get up close to one of his custom made bikes and assess the components used in the frame and the wheel technology he was using. It was invaluable to get his feedback as my kayak incorporates wheels, wheels that will be exposed to water, salt and sand and also function as a steering or rudder like mechanism for the kayak. I was interested in the durability of the wheels he was using and how they rated for assembly, transportation and maintenance.



Me with Krzysztof Jarzebski during a road training session



Krzysztof on one of his custom made bikes

## At the core of the economic universe



Two of the most recognisable emblems of The United States – the flag and McDonalds

On the surface, the East Coast and Rhode Island looked in denial of the recent economic upheaval. I was surrounded by incredible structural examples of wealth, large private estates, country clubs, and historic houses, particularly in Newport. This is in stark contrast to parts of Manhattan, where public infrastructure like bridges and the metro show visible signs of neglect and sporadic maintenance. Accommodation here was still expensive, across all sectors. State taxes and tourist taxes are applied at various rates depending on the state you are in and you are always expected to tip – regardless of the perceived quality of service.

Rhode Island is somewhat of a shrine for all things nautical - sailing, rowing and kayaking and the legacy of the funds invested in the infrastructure to support it is clearly evident.

Visiting here gave me the opportunity to introduce myself at a number of boat clubs and stores, in order to spread the word about the Churchill Fellowship and the project.



The Narragansett Boat Club (NBC)  
Rhode Island



Immaculate interior of NBC, showing variety of glass fibre skulls

## Pump to it!

The Bosworth Company who specialise in design and manufacture of pumps for water craft, industrial and agricultural applications, have established a reputation for the quality and reliability of their products over the last 40 years. They are a focused, family run company who are dedicated to precision and functionality.

It was this reputation that attracted me to approach them, more than 12 months ago, to engage them in the manufacture of the first purpose built hands free kayak bilge pump kit – The Hybrid Guzzler, which was a joint project between myself and Bosworth. All my previous communication with them had been via the email and VOIP, so this was an excellent opportunity to finally meet the team in person.



Exterior of the Bosworth Company building, Rhode Island

And what a friendly team. It is obvious that they enjoy what they do and the time invested in the engineering of each piece is evident.

Ken Bosworth, the founder and head engineer along with Vice President and Product Development Manager Doug Reilly, are justifiably proud of their attention to detail and commitment to quality.

I felt extremely welcome. They even went to the trouble to organise an Australian style lunch, with kangaroo, prawns and an Australian beer... pity I no longer drink!

The majority of their products are designed for boats.

Indeed, the Hybrid Guzzler kayak pump was the first design they had produced specifically for kayaks and it has been an effective and well received product.

This demonstrated that they are open to new concepts and ways of thinking.



Inside the machine room at the Bosworth Company

The equipment including mould presses, grinders, drills, spring and valve extrusion machines, were all lovingly maintained and some came with a vintage, older than the company itself! I got a real sense of possibility here and indeed, Doug and I have canvassed initial designs for a pump for this particular project, which will need to be motorised and exposed to water, salt and sand and be easily operable by the paddlers fingers and accessible for maintenance and cleaning...no simple challenge!

### Go west young man!



Kayak shop in Fort Bragg, CA – one of many I visited during my travels along the West Coast

My efforts to keep my environmental impact low, were severely tested. No Smart Car here! For this portion of my journey, I found myself with what was classified as a small SUV (it was still a long wheel base) and compared to the size of the majority of vehicles I saw on the road, it really was tiny. I felt like I had entered the land of giants- especially when along side a procession of motor homes, more than 12 metres in length, towing 4WDs behind them, in turn towing trailers with motorbikes! The allure of very affordable fuel and the philosophy of 'size over substance' remains for many, a powerful force.

Unlike the East Coast, the West Coast of the US, north from San Francisco could not so readily disguise the economic storm of the previous twelve months. Many smaller towns just inland from the coast were shadows of their former self. Indeed, some stretches along the main coastal route through northern California and Washington it was the exception to the rule to not see properties and businesses up for sale.

The feature that dominates the landscape here are the trees (and the copious number of US flags which are hoisted atop everything from toilets to City Halls!) A great proportion of the West Coast has been crafted from massive plantations of oaks, and a variety of pines and thankfully, some old growth forests have been preserved, with one of the most majestic examples being 'The Avenue of the Giants', along Highway 101 in northern California. With such an abundance of timber, it was not surprising to see so few buildings constructed out of bricks or steel.

Yet, comparatively very few commercially available kayaks are constructed from timber, mainly due to the labour intensive process involved. Working with rotomould plastic and fibreglass is a much quicker and easily repeatable process for mass production. I was fortunate sometime ago to own a Red Fish kayak. This was designed and crafted by Joe Greenley, who I consider to be a master. It was constructed from cedar strips with rosewood inlays with a mirror epoxy finish. It was like paddling a work of art.

It is popular in America for timber kayak kits to be sold for assembly by the user. This option provides you with a cost effective, design limited, 'do it at your own pace' alternative. You craft a kayak from timber for the appreciation and passion for shaping and working the wood, particularly in the S&G (stitch and glue) method of construction, which has been my experience.

The majority of kayak shops I visited on my travels stocked either fibreglass cockpit kayaks, sit-on-top plastic kayaks, popular for the rental market and open cut and inflatable canoes. At the time of my visit in early autumn, the paddling season was just on the cusp of slowing down for the winter break, although the rivers and lakes were still comparatively warm, if you had your full body keg on, that is.

### **Follow the road north**

Continuing north through Washington, I had the opportunity to visit Werner Paddles in Sultan. Housed in an unassuming corrugated iron shed, Werner design and manufacture arguably the finest quality blades and shafts available on the market for a variety of paddling applications and have grown over the last 30 years, from a small family operated business to now be one of the largest paddle manufacturers in the world. Their paddles are used extensively in national and international competitions, spanning white water, kayaking, rafting, canoeing and SUP (stand up paddling) and are consistently winning awards for their design and performance.

Having used a number of their paddles over the last 20 years, I was familiar with their quality and strength, (referred to as 'bomber' durability) achieved from using various combinations of fibreglass weave, reinforced nylon, carbon kevlar and core blade designs.

I was given a tour of the production facilities and given a 'sneak peek' of some of their new adjustable ferrule paddles, as yet to be released on the Australian market. I also met with Jim Miller to present my project and explore possible partnership/sponsorship options for having custom made paddles to complement my kayak design.



Werner Paddles headquarters  
in Sultan, Washington USA



Foyer of Werner paddles proud of their history and achievements in paddle design

### **In the presence of kayaking legends**

As mentioned earlier, this opportunity to attend the West Coast Sea Kayaking Symposium (WCSKS) was born from an initial setback, so it was quite a thrill to be able to attend this event.

The WCSKS is the oldest and largest gathering of kayak manufacturers, kayak accessories and paddlers on the West Coast, having run for 25 years. It is held annually and is a very 'hands on' event, offering instruction, trips and the chance to test some of the latest craft and equipment.

It was held in Port Townsend, the striking north eastern peninsular of the state. Coming from Sultan, I discovered that the most direct access was by ferry, so I took my chances and turned up at the Edmonds ferry terminal, (armed with my trusty souvenir koalas) and was the second last vehicle to be loaded on the final boarding of the afternoon.



West Coast Sea Kayak banner across the main road in Port Townsend

The Symposium was held in Fort Warden, a former military base, now a state park. It is dotted with grand old timber buildings, generous parklands and accessible sheltered bays, which made it ideal for such a large scale paddling event.

I was greeted by the organiser Bambi Krieg and other support staff and was introduced to the main exhibitors and was granted an unscheduled introduction at the welcoming address, where I spoke about my project to the participants.



Fort Warden – hub for the West Coast Sea Kayak Symposium

Yet the real thrill for me was to meet paddlers who I consider kayaking legends. People like Greg Barton. Greg is the co founder and designer of Epic Kayaks. He is a dual Olympic gold medallist and has been instrumental in promoting the sport of kayaking in North America. He was gracious enough to engage me in a couple of hours of his time, where I talked of my project and design experience and discussed current kayak construction methods and materials he uses.

Another bonus was meeting Doug Simpson, the founder and designer of Feathercraft foldable kayaks. Feathercraft kayaks are a Canadian based company who are celebrated for 'skin on frame' kayaks.

The skin consists of a PVC composite hull with a synthetic deck, which is stretched over a demountable anodised aluminium sectional frame with reinforced composite crossribs. They are designed for portability, without having to rely on a car to transport them. They can literally be deconstructed and packed into their accompanying bag. They are a true feat of engineering, constructed with high quality components and attention to detail. I have had the pleasure of owning both the K-Light and Khatsalano models and have enjoyed hundreds of kilometres of paddling in some very remote areas.



A kayaking legend –  
Doug Simpson, founder and designer  
of Feathercraft folding kayaks

Many of the kayaks are designed for recreational touring and expeditions and provide ample storage in the hatches and offer a high degree of both primary and secondary stability due to the wide shape. Both single and double kayaks are manufactured in different lengths and volumes and come in a selection of colours, which reflect those found in the sky and on the water.



Amongst the latest Feathercraft foldable kayaks

I also met two very experienced kayak guides and instructors, Leon and Shona who operate a company called Body Boat Blade, based in the Orcas Islands, just south east of the Canadian border. They inturn introduced me to a man called 'Dub Side' – a commando kayaker, with full body length dread locks, who has chosen as his path in life to share his talent for kayak rolling, by travelling around the US, with his foldable (Feathercraft) kayak, solely by public transport and other sustainable means.

## Crossing the border

The first thing I became aware of once over the border was the relative restraint shown in Canada to display the national flag, compared to their southern neighbours and the fine lines and design integrity of the entry point. Being the entry point closest to the coast, you would expect it to be busy, yet everything was streamlined and the wait was minimal, pleasant even.



Crossing the US/Canadian border at the Blaine entry point

I continued on my northern journey to Vancouver to visit the Feathercraft kayak manufacturing facility.

Once again I had a chance to meet with Doug Simpson and see the entire process from design to construction. From the initial sketches and CAD drawings, to the fabric testing, to the laser cutting, welding and sealing of the hull and deck and specification of the sectional frame. It is a very well organised and structured routine and there is at least one person who supervises each step of the process to ensure a consistent quality.

I was particularly interested to observe a continuous welding technique, which they devised in order to change the fabric used for the construction of the hull. Earlier models were constructed with a Hypalon hull, which could be glued to create a seal, whereas the Duratek would not lend itself so easily to this process. However, with the welding technique, the nylon weave based fabric, with its excellent abrasion resistance properties, is now the fabric of choice for the hull.

I was impressed with the continually high level of components used throughout every phase of assembly, from the aluminium frame, on board cockpit coaming and high density polyethylene cross ribs, to the sponsons, which assist with tensioning of the deck and hull and provide added stability to each kayak.

They are fanatical about quality and it shows in each product, which has put them at the forefront of the foldable kayak industry for more than 30 years.

## A lasting legacy



Promotional still from the documentary 'Solo', as screened in-flight (note the carbon kevlar seat casing)

On my return flight, I was fortunate enough, as I was on my arrival, to fly on the Qantas A380. Apart from being a more spacious and quieter aircraft, it also features prominent use of carbon kevlar, which is a material I intend to incorporate in the design of my kayak. It was interesting to see it applied as exterior casings for the seat modules. It is a favoured choice for its strength, lightness, aesthetics, relative low maintenance and multitude of applications... but it certainly does not come cheap!

While exploring the in-flight entertainment, I came across the Australian documentary *Solo*. Directed by Jennifer Peedom and David Michod, *Solo* charts Andrew McAuley's ultimately fatal quest to become the first person to kayak solo from Australia to New Zealand in a commercially available kayak.

Andrew was a friend of mine and I had paddled with him on a number of trips. He dedicated his life to adventure, be it mountaineering or kayaking and was constantly showing others what was possible. He dared to dream and achieve the unthinkable and each time that I watch this film I am reminded of his inspiring legacy. It is now three years since I last saw him, just prior to the launch of his expedition and in many ways, it's as if he is still here, as he continues to drive and encourage me to seek and explore, just as my Churchill Fellowship has allowed me to do.

## CONCLUSIONS:

- That I am more committed than ever in materializing this project.

Travelling has really reinforced the need and the potential of this design. I was exposed to several adapted or modified products, but these were simply compromises, which won't ever provide the independence and accessibility, which is the core focus of my design. This project is long overdue and I feel quite ashamed of myself for not thinking outside the confines of my able bodied view sooner.

- Here is a real and tangible Australian design, which won't only have an impact here in Australia but across the world.

The impact would be felt on many levels:

Highlighting the daily challenges faced by people with disabilities.

Showcasing a practical and functional Australian design to the world, one which has the ability to empower and promote Australia as progressive in the field of accessible design.

Providing a recreational activity for double leg amputees and paraplegics, which they can participate in, without having to rely on the assistance of others.

- The primary obstacles are financial

It is always a challenge to source funding for projects, even more so in a climate of inter-continental economic turmoil!

My objective is to demonstrate the benefits of this project across broad community sectors and encourage and educate people that their investment in this project is visionary and one that will have long term results, which are not necessarily measured in dollars!

- Apply my technical design skills to other projects

There are a couple of true technical challenges with this project, namely with fabrication of a custom shape of sponson and minimising the exposure of motorised elements to consistent abuse from salt water and sand.

It is my responsibility to devise new methods in which to achieve the successful integration of these technical aspects.

I can engage with other designers and inventors and assist to apply these methods across different industries and products.

The design itself also has the possibility of being adapted for able bodied paddlers, looking for a recreational, low environmental impact, angling craft.

This is what drives me – the motivation and the allure of 'the unknown' – to embark upon a new approach, to explore and extract the innovation.

*"When you change the way you see the world, you change the world."*

Warren McDonald

Adventurer and double leg amputee