

## May 2011 Volume 14 Issue 2 - Number 70

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### From The Editors – George Durbridge and Stephen Nurse

Welcome to May, we have had many contributions over the last few months and have the results of the OzHpv Challenge and a Trisled record attempt for you. If you've promised an article but haven't made it into this edition, please persevere, we love and need your contributions.

### Internet Snippets



**Bitraptor 3d Cad**



**Tricumbent**



**Russian Front Wheel Drive**

Someone had mentioned the word "Tricumbent" in an email. Sounds like a recumbent trike, wonder if it means something? A google search leads to <http://www.justtwobikes.com>, a manufacturer in Minnesota in the USA. Their main product seems to be a "sociable / side by side" recumbent tandem which looks very fine, but they also sell a front wheel drive, rear wheel steer recumbent trike. Tricumbent seems to be a local brand with a mid to high price for a trike and no options to buy outside of the Americas.

Andrew Powell from Canberra is having his 5 minutes of fame with his "Frisbee chainring guard" which debuted at the OzHpv challenge featuring on the U.S. "Bike Hacks" website. See <http://www.recumbentcyclistnews.com/2011/05/recumbent-chain-guard-hack.html> and <http://www.bikehacks.com/bikehacks/2011/05/frisbee-chain-guard.html>

Save the world, invent a new bike drive system from Pete Heal.

An email has been going round the joint from a company in Italy promoting an alternative bike drive system, see [http://www.bitraptor.com/en\\_alternativo\\_bike.html](http://www.bitraptor.com/en_alternativo_bike.html). The email ends

> Relying on a possible interest to you, we hope to have your feedback as

> soon as possible.

> Sincerely,

Edyson Pavilcu BitRaptor Italy

I think this sort of thing is already available from Alenax, <http://www.alenax.com/about07.html>.

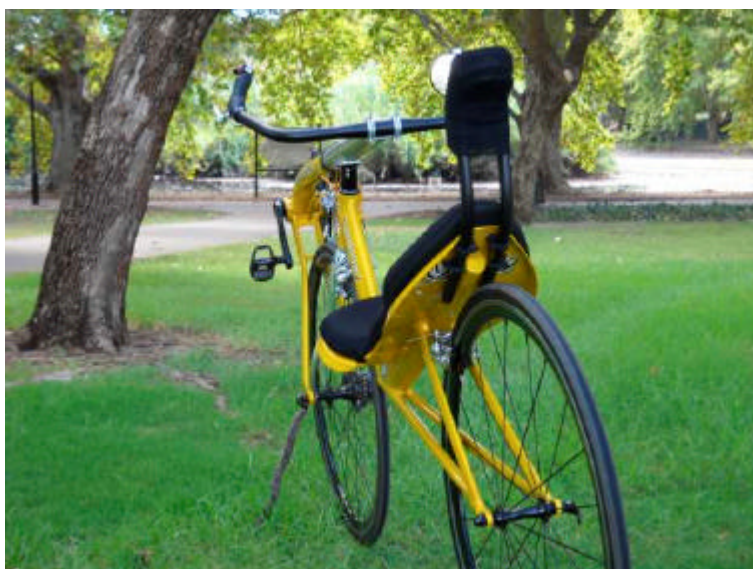
Invest in Bitraptor at your peril!

Somewhat more practical is the front wheel drive hub featured on these pages <http://www.recumbentblog.com/2011/02/19/boris-frolov-gives-nuvinci-360-some-company/> and [http://translate.google.com/translate?js=n&prev=\\_t&hl=en&ie=UTF-8&layout=2&eotf=1&sl=ru&tl=en&u=http%3A%2F%2Fwww.profit2000.ru%2Fvariator%2F](http://translate.google.com/translate?js=n&prev=_t&hl=en&ie=UTF-8&layout=2&eotf=1&sl=ru&tl=en&u=http%3A%2F%2Fwww.profit2000.ru%2Fvariator%2F) . I like part of the text "This type of transmission is designed for installation in a manual transmission for vehicles, where necessary the transfer of torque without breaking."

If you believe what you read on the Internet, the UCI have sanctioned a "Recumbent World Championship". It's a bit like having Ivan Milat work as a babysitter!. See <http://www.recumbentjournal.com/news/sport/item/364-black-rat-challenge-to-hold-world-championship-recumbent-race.html> . There is a comment on the same page, posted by "Slower than Dirt": "The issue is one of legitimacy, and in the recumbent world, the UCI has none". Couldn't have put it better myself!

Lastly, (via recumbentjournal again) an archive of the American Magazine "Recumbent Cyclist News" has become available online. Magazines date back 20 years, are in pdf format and are free. There is a link for donations to maintain the site. <http://www.recumbencyclistnews.com/p/rcn-archive-2002-2004.html> . Maybe a good reason to buy one of those ipad / kindle / e-reader thingummies!

## **CRUZBIKE NEWS by Kim Tolhurst**



### **Latest Cruzbike Vendetta and the ever Jovial Mr. Kim Tolhurst**

\* CRUZBIKE will be displaying the Cruzbike on the New Inventors television show and taping took place in the second week of May in Sydney. Watch out on [ozhpv@yahoo.com](mailto:ozhpv@yahoo.com) for broadcast times.

"The Vendetta is the latest model of Mr. John Tolhurst's Cruzbike range. He claims there are three discoveries which are embodied in the Vendetta.

- 1) He has created a low-cost conversion kit and interacted with about 100 buyers to determine what geometries work best for these front wheel drive bikes
- 2) John identified the principles that allow maximum power capture from the body's limited strength, and how this must be channelled by the structure to create power at the wheel - and he has a patent for this.
- 3) He resolved problems with the gear and brake shifter design to create the right ergonomics for the Vendetta rider. This makes part of a second patent being lodged soon.

This is all for a clear choice, with the joys of cycling, a bike with a saddle or a seat? or is there more to it? "

For more information see [www.cruzbiking.com.au](http://www.cruzbiking.com.au)

# OzHPV Challenge 2011, Wodonga, April 9 & 10

## OzHpv Challenge 2011 Results

Racer No.	Name	WODONGA GO-KART TRACK							PLUNKETT ROAD, WODONGA						OVERALL	
		GO TO WHOA		SHOPPING RACE		TWIN SLALOM		ROAD RACE	1000m TIME TRIAL			200m SPRINT				
		TIME	PLACE	TIME	PLACE	TIME	PLACE	PLACE	TIME	SPEED*	PLACE	TIME	SPEED*	PLACE	POINTS	PLACE
3	Malcolm Butler	33.12	2	68.3	2	17.5	2	2	92	39.1	3	13.4	53.7	3	14	1
19	Jamie Friday	31.06	1	89	4	15.5	1	3	90	40.0	1	13.7	52.6	5	15	2
5	Tim Marquardt	36.03	6	83.02	3	18.1	3	6	92	39.1	3	12.4	58.1	1	22	3
8	Peter Heal	36.94	7	99.33	8	28	12	1	90	40.0	1	13.2	54.5	2	31	4
6	Andrew Stewart	35.84	5	92.69	5	21	8	4	93	38.7	5	13.5	53.3	4	31	5
15	Andrew Powell	35.37	4	118	9	19.5	6	5	106	34.0	6	14.8	48.6	6	36	6
1	Steve Nurse	34.75	3	67.3	1	22.5	9	9	136	26.5	8	16.6	43.4	7	37	7
12	Alex McNee	36.97	8	93	6	18.5	4	7	118	30.5	7	18.6	38.7	8	40	8
7	Matt Heal	38.42	9	95.02	7	20.5	7	10	999		13	99		13	59	9
17	David Downing	45.4	10	137	10	24	10	12	190	18.9	9	22.1	32.6	9	60	10
16	Faye Downing	52.78	12	206	12	24.35	11	11	278	12.9	10	30.8	23.4	10	66	11
18	Ken Houghton	47.03	11	139	11	18.5	5	13	999		13	99		13	66	12
20	Duncan Cleeland	99	13	999	13		13	8	999		13	99		13	73	13
Kids																
78	Bryce Marquardt	40.56	1	108	1	22	1	1	141	25.5	1	18	40.0	1	6	1
43	Laura Houghton **	113	4	127	2	28	3	2	235	15.3	3	29.2	24.7	2	16	2
42	Guy Butler	50.47	3	142	4	26	2	3	225	16.0	2	38.3	18.8	4	18	3
41	Kate Butler	51.9	2	132	3	29	4	4	247	14.6	4	32.6	22.1	3	20	4

\* Speeds are approximate and affected by wind, gradient and just about everything else.

\*\* Laura competed in the Adults and Junior Section and won the Women's Division with Faye Second

The OzHpv Challenge was held for the 3<sup>rd</sup> time in Wodonga in early April. Attendances were down a bit but as usual enthusiasm was high. The Challenge races are unique in my experience: they are open to a wide range of abilities, ages and vehicles and the emphasis is on fun as much as winning.

This was the first event I have attended as President of OzHpv. And I stand by every word I've said about the races in the past: a great event and well worth attending for all cycle enthusiasts and cycling families, whether or not you are interested in human powered vehicles. Tim Marquardt was the main organiser and showed off the Trisled Rotovelo on the track, coming 3<sup>rd</sup> overall and winning the 200m sprint.

Many Thanks to all the volunteers and sponsors, especially Kim from Cruzbike, Alex from Natural Engine Speed Shop, Ken from Trisled, and Duncan Cleeland who all helped out extensively. Ken was really in the spirit of things, riding a dragster in some of the races, supporting his daughter in others and timing and helping out wherever he could. Alex competed fiercely and the Performer bikes he sells were the predominant brand on the track. Kim brought up a large shelter which served as "officials' hq" for the event and happily demonstrated his Cruzbikes throughout the event. He also kindly loaned Jamie Friday a wheel which got him going in the events. Duncan organised the catering for the event with his Mum. He only entered one event himself and got both dinner and breakfast on the table for a hungry mob.

Sponsors who couldn't attend were [Greenspeed](#), [Bikebox / Schwalbe Tyres](#) and [recumbent.net.au](#). We look forward to seeing you at next year's Challenge.



200m sprint start: David & Faye Downing (Photo: Steve Nurse)



Ken puts the foot down (Photo: Andrew Stewart)



Tim & Bryce Go Shopping (Photo: Malcolm Butler)



Jamie Friday in the Sprint  
(Photo Malcolm Butler)



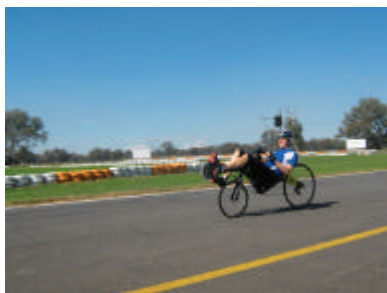
Ken Smith & George Durbridge with "Jamaican Me Crazy"  
(Photo: Malcolm Butler)



Almost Everyone!  
(Photo: Peter Heal)



Award Ceremony, Tim & Laura  
(Photo: Peter Heal)



Andrew Powell  
(Photo: Andrew Stewart)



Faye Downing  
(Photo: Andrew Stewart)

## Our Rickshaw Trike by Christine Nurse

In March 2010 my husband Steve, bought a rickshaw trike from “Bicycle Garden” in Chiltern, Victoria (<http://thebicyclegarden.com.au/tbg/>). Steve had for some time been toying with the idea of using parts of a wheel chair and somehow attaching it to one of his bikes, so he and I could go on rides together. Then one day he saw the rickshaw on e-bay and went for it. The model of this rickshaw is such that the passenger sits in the front and the runner/driver is behind, and both facing forward. We were told it came originally from Vietnam. Even as recently as 1988 it has been estimated that there were 150,000 Cycle-Rickshaw and Goods Tricycles in daily use in Vietnam. Today many countries have discouraged and/or outlawed the use of rickshaws over the concern for the welfare of the runner/driver. China eliminated them completely in 1949 as they were seen as a symbol of oppression for the working class and Japan has issued no new licenses since 1975. Today they are ridden primarily as tourist taxis for the major hotels. We arranged to visit “Bicycle Garden” and see what we had bought.

On first seeing it, in my opinion, it was a bit of a rust bucket with well worn and split leather rider and passenger seats and canopy. The passenger seat was severely reclined backwards and the length between the seat and foot supports was major. As I am of short stature we arranged for the seat to be righted and the length between the seat and foot supports shortened. To have any suspension I made suitable cushioning and elevation, and friends gave us a pair of wooden rests to be attached as arm supports - which reminds me I need to give them a coat of varnish. The rickshaw is now painted a beautiful deep green and a new black riding saddle and black cushioning have been added. We have discarded the canopy. I can't discuss the mechanical alternations made to our rickshaw because I would only be making it up! Steve sorted that out and negotiated the adjustments required to get the rickshaw “back on the road”; after all he is the engineer. I do know our rickshaw is a single speed trike and this means we can't go too fast, thank goodness! The rickshaw was delivered to us some weeks later with its wonderful upgrades and all that was left for me to do was commission a driver and get a helmet.

Steve has ridden us along the Yarra Trail Track starting in Clifton Hill through Westgarth and on to the Melbourne Zoo. This is a mixture of beautifully flat to extremely hilly terrain. The Yarra Boulevard is a beautiful ride through parklands around and over the Yarra River to the cafes and boat sheds and numerous picnic and BBQ spots. We are fortunate to live close to a bike track and travel into Alphington and Fairfield is easily accessible. So far I have taken my cane basket on my lap when we have visited a plant nursery in Northcote and we are working on other carrying ideas for larger loads in the future. After the first few rides and getting a great sun tan on my feet through sandals, I now wear closed shoes for safety and protection.

Initially I was terrified being in front of the rider and sooo exposed to the traffic and elements, no safety belt, no car bonnet between me and the traffic ahead. But my confidence has grown and I now wave to other cyclists on the road and footpaths, not quite the royal wave yet but am working on it. I enjoy ringing the bell to let others know we are on the cycling path and we receive beeps from cars on the roads and calls of “way to go”, some from people we know but more often than not they are bemused strangers. Needless to say we receive many a long look and stare, and a good mixture of thumbs up, comments and many opinions.

Our travels are always during the day light hours. We have no lights, flags or whistles. The only other rickshaw I have seen in Victoria is the one lonely red specimen chained to a post outside a local gardening shop. It is used as a drawcard to their business not for the enjoyment of a ride. Perhaps Steve and I for our next excursion should ride to that shop, and let them know how much fun they are missing out on!

Christine Nurse - one happy passenger!

Steve's comments: At the moment the rickshaw only has one gear which restricts our range a bit – not because you can't go fast but because hills become insurmountable obstacles. I just bought a Sachs Orbit hub with a reducing gear built in and it should make some nice low gears for the trike – maybe the caf at the Abbotsford convent or Fed Square will come within range. A couple of good books on rickshaws are *The Rickshaws of Bangladesh* by Rob Gallagher and *Chasing Rickshaws* by Richard Janson and Tony Wheeler.

## Cross Country Cycling? What's stopping you? By Rebecca Edwards



So you've had a long held dream to one day ride your bike from one side of the country to the other. But your legs are getting older, it would be too hard to arrange, too many "what if?" things stopping you. Well just get out there and do it, and after it is done, I bet you'll be wanting to do it again.

In early 2010, I had that same crazy idea, and really, it was crazy at the time. I was unfit, had never done anything like it before, and really had no idea what I would be getting myself in to if I tried. To cut a long story short, I ended up riding the 3,500km's from Perth to Melbourne, in five weeks. Now I'm not going to go into all the details of triumph over adversity (like not wearing make up for five weeks), or anything like that, but I will give you an idea of the things I learnt along the way. My ride was a solo effort, no support crews so I had to be self sufficient. If things went wrong, it was up to me to fix them. Pre-planning the ride was just as important as putting feet on pedals. The biggest concern was water. How much did I need to carry, how much would I consume each day, how far was it between fill points.

Water was really only a concern for the 1200km stretch between Norseman and Ceduna. Apart from that section, you are really never more than a day away from a water supply, if that. Even during that stretch, there are road houses every 200-300km, and they are well stocked with water supplies..., at a price. Even then, there is usually rain water available, and a couple of water purification tablets ensures you are not going to get sick. There was only one time when I ran out of water on the ride, and that was when someone had vandalised a standpipe. Even then, I was only 70km from the next Road House.

The next time I undertake a ride such as this, I will be more mindful of the weight I am carting about. Including water, I had 40kg in the trailer, and I certainly noticed it on the hills, and yes, there are a lot of hills. I carried too many clothes, too heavy a sleeping bag, too much weighty food, and too many tools I never used. My advice would be to get high end camping gear, if you plan is to camp out. It takes up less room, is lighter, and far better quality. That \$40 two man tent I had sure was roomy, but it sure was wet inside during the downpours.

Dehydrated food packs are great, and don't be too worried about the carbs, you'll be burning them off anyway. Fresh fruit can be an issue out there, but a few fruit cups should get you through. I worked on carrying a seven day supply of food, more in-case of an emergency than anything else. For cooking, I had a Whisperlite stove, an investment, well worth it, in my opinion. Punctures are a concern, mainly due to the road condition in parts. Use of thorn resistant tubes, and new tyres before the ride are an expense, but an investment well worth making. Sure you might lose out a little with roll resistance, but you'll save a lot of time by not having to change countless tubes beside the road.

The road condition is fairly good, except in South Australia. This is not crow eater bashing, simply there isn't as much of a shoulder, so you find yourself riding on compacted gravel more often than not. The trucks are not an issue, just keep out of their way, and they'll go right around you. More of a concern are the tourists out there, who are more interested in getting a photo of you, than paying attention to the road, especially if you're on a recumbent. It may sound dangerous, but if you have ever ridden on the road in a major city, you'll be fine out there.

The last thing to be mindful of is time. Work out just how long you want to spend out there. I calculated 100km a day, for 35 days, because I had to get back to work. In reality I wish I had an extra week, so I could have enjoyed the scenery a bit more, and not have to push through all the time. I was also advised after three days to have a day off from the bike, advice I now wish I had undertaken more seriously.

You may be thinking you'll get pretty bored out there, but believe me you won't. Australia is an amazingly diverse country, and as you cruise along, you'll be amazed at the variety around every corner, even if that next corner is 90 miles away. Crossing the country on a push bike will give you life long memories, crossing it in a plane just gives you four hours of cramped seating with a bad movie to watch. So get out there and really enjoy stretching your legs.



Jeff Neilsen & Christian Aschenberg – 24hr HPV Distance Record Holders

## 2011 World 24hr distance record attempt, Sunday April 24th, Chelsea Velodrome

Easter Sunday this year saw Jeff Neilsen & the L'il Overzealous trike making another attempt on the 24hr distance record, currently 1219km, set by German Christian Aschenberg in July 2010. Jeff had previously set the record at 1107km, a year ago, in the same trike. The weather on the morning looked great: cloudy, cool, light winds. I was on hand to setup & co-ordinate the timing. Additional OzHPV members assisted during the ride to ensure the correct number of laps were recorded. Thanks to Rick Willoughby, Peter Weiss, Mirko Zlatkovic, Graham Signorini & Mark Gilligan for their time.

Jeff arrived about 9.30am, and we eventually set him off at about 10.40am. Jeff has been doing a fair amount of testing over the past few months, trying to reduce his power requirements. Many tyres were tested. Holes were cut, wheels were covered, wheels were sealed. All were tried & tested. The results were sometimes surprising (wheel disks required more power!). But in summary, L'il Overzealous was seen with new tyres, no disk covers, a sealed of rear wheel, and a vent hole at the very front of the windscreen.

Chelsea velodrome is a 500m concrete track, and Jeff's aim was 2500 laps at about 34sec per lap, or about 52kmh! So, he was circulating really quickly. Go on. Try it. Find a velodrome & try to ride a SINGLE lap at 52kmh... It's not easy. This gives you some idea how efficient the trike is. Apparently, at this speed, Jeff is putting out about 130-140 Watts.

So, back at the timing tent, the 2 OzHPV officials were marking down lap times, and making sure the number of laps counted was spot on. We had 3 systems going: Auto lap counter (IR Beam), Computer manual timing, hand written. The 3 were constantly cross checked to ensure the count was accurate.

Food & water was transferred, whilst riding, from another Trisled trike to Jeff, at roughly 2 hourly intervals. He would throw out 2 empty bottles, and we'd know it was time for a fill up. Gareth in the food trike would roll out, and once passed by Jeff, he's accelerate alongside Jeff, handing the supplies quickly across. Time lost was approx 4 seconds over 2 laps!

Anyway, Jeff was riding very consistently, knocking off 34 sec lap after 34 sec lap. At 3 hours, he pit stopped for 3min, as he was unable to pee whilst coasting. This was really odd, as last year, you could see him coasting, with drips falling out behind the rear wheel. After that, he jumped back in & returned to 34sec laps. At 6 hours, he again had a stop, citing pain in his right leg. He was given a quick massage, a walk around, and popped back in, to resume his metronome like pace.

But, as the time wore on, it became clear 34sec laps were a thing of the past. He was slowly dropping to 35, 36 & 37 sec laps. At 9 hours, he again stopped. He was pulled out of the trike, given a quick walk around, given a stern talking to by (Trisled director) Ben Goodall, and pushed back into his coffin. 15 minutes later, clocking 38sec laps, he pulled in for the last time. His hip flexor was in considerable pain, and getting worse. Not a state you want to be in with 15hours of riding to go. The crowd were disappointed, but understanding. So Jeff hopped (or really, was hauled out) of L'il Overzealous & took a well earned rest. The rest of the spectators & officials on hand helped to

unpack the tents. As this was going on, the fog descended, which would have caused considerable problems for Jeff, both in terms of speed (foggy air is really heavy & slow) & visibility. If the hip didn't get him, the fog probably would have. Good lesson learnt there!

So, in some respects, a wasted opportunity. But, some valuable lessons learnt. But the most important lesson was that we really need to find a suitable venue for this type of riding, because 52kmh is really pushing the limits of rideability for this particular velodrome. Ben & Jeff will re-group. Can we find a better venue? That is the bigger problem? Any ideas to: themarqs@netspace.net.au

Tim Marquardt.

Links: This Attempt <http://www.facebook.com/pages/Trisled/164374643594582> (Posts from April 24)

Current Record <http://translate.google.com.au/translate?hl=en&sl=de&u=http://www.milan-velomobil.de/news.htm&ei=SALVTarVEli-sAO65cXpCw&sa=X&oi=translate&ct=result&resnum=4&ved=0CD0Q7gEwAw&prev=/search%3Fq%3Dweltrekord%2Bhpv%2B24%2Bst%26hl%3Den%26biw%3D1045%26bih%3D475%26prmd%3Ddivns>

Trisled Record: [http://www.trisled.com.au/news.asp?news\\_id=15](http://www.trisled.com.au/news.asp?news_id=15)

## The development and build of an off-road trike – part 1 by Sam Q

Many years ago some of you would have seen me with my trike at the Greenspeed annual at Broadford. This was with my third trike which had been developed purely for off-road use. It had a narrow track, was a crude & simple design and light with a very tight turning circle. This is shown below:



For its intended design it did and still does work well. I designed it such that the seat was just off the rear tyre for maximum traction and with the very knobby rear tyre it could climb very well. However my quest for something better kept me coming back to a concept I had been thinking about for many years- powering all three wheels.



There was a Russian trike from AS Engineering (trikes.ru) that used the same rough concept but it had two main problems for my use - it didn't look like it would handle what I had in mind and it hung the dérailleur right in-between the two front wheels to power the front axles. I personally had already torn one dérailleur right off my bike when it was fairly well protected next to my rear wheel so having it hanging just off the ground in-front was a disaster waiting to happen.

So my basic designs began and keep on going for a very long time before I picked up my first piece of metal. The concept was an intermediate shaft above where the intersection of the crucifix normally is on a trike, this would hold the gears and let the dérailleur sit just low enough that the chain clears the front boom. From here a chain would go to the front axles and another to the back wheel.

I chose Nimbus dual wall 19" rims and once again the amazingly grippy and huge Maxxis Creepy Crawler 19" x 2.5" trials tyres.



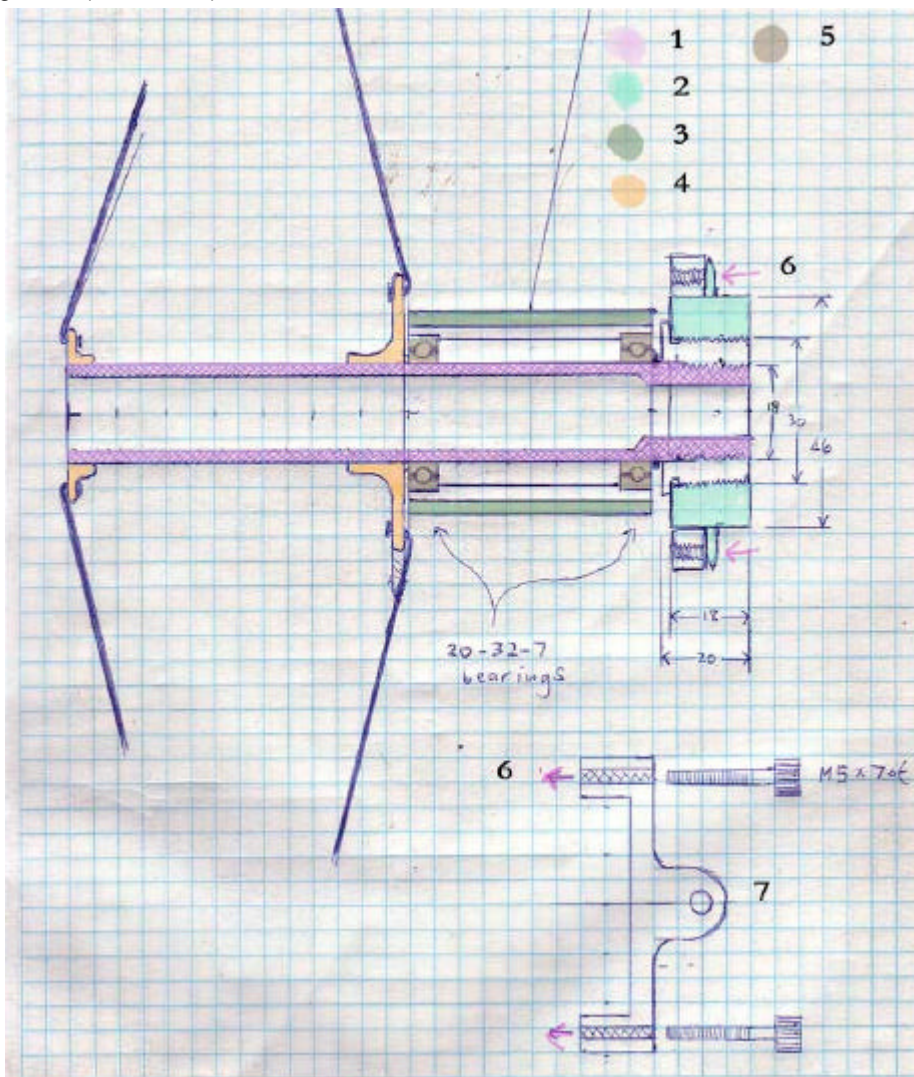
(above) The actual tyres and rims for the project, the gold will be stripped off.

Instead of a differential I decided on free-wheeling axles for which I initially machined a coupling to hold two BMX sprockets together, I change my design later to having axles with an adapter to hold a small freewheel on either end. This would have the advantage of letting hubs free-spin independently of the drive-shafts, save on uni-joint drag and stress.



(above) my initial coupling I made that was to be in the middle of my frame and act like a crude differential. It's two BMX freewheels linked together and would have had an axle joined to either side.

To power the front wheels I wouldn't have a traditional trike king-pin arrangement that used an axle with a hub that spins on it. I would alternatively have what was effectively a spindle in that it was an axle with two spoke flanges welded to it, the whole axle would then roll in a housing that had bearings in it (see below)



- (1 - pink) The axle: will be welded to the spoke flanges in orange (4)
- (2 - blue) BMX freewheel: as used as a very tough one way device
- (3 – navy) Spindle housing: this will be welded to the kingpins, it houses the axle bearings
- (4 – orange) Spoke flanges
- (5 – grey) Bearings: slimline bearings (20-32-7)

Shown below is a test construction of a spindle design without the spoke flanges attached, this was with a 25mm axle before I decided to use 20mm instead.



As shown above I was going to initially use the uni-joints out of a 1/2" drive socket set however after some advice and the fact I couldn't source what I wanted I have since decided to make my own using 8mm pins and some 8-12-8 needle bearings.

With such a complex overall design in this trike it's an constant uphill battle to keep it light, particularly seeing that each rim and tyre by themselves are close to 1.6kg each! To combat all this I am removing every last bit of metal where possible when designing parts. So this means hollow axles/shafts everywhere and all parts machined to only have material where needed.

An example of this is for my rear hub for which I just needed a simple freewheeling model with a BMX sprocket on it. However due to being unhappy with what was available and to save weight I decided to make my own to take a large axle & have a thin wall design. Here's how it ended up



It uses a large diameter body with an equal 3mm wall thickness for all aspects of the design. The final weight of the bare body was just 101 grams, had it been for road use I could of significantly downsized the thickness. It also featured radius on all the bends throughout for stress distribution and was made from 6061 aluminium. Designed to use a 17mm axle an aluminium axle out of a mountain bike suspension fork machined down from a 20mm. The frame design to suit would not even have a conventional drop-out in it as such but instead a clamping arrangement much like that of the front of motorbikes.

It's going to take me years of machining but I have been planning it much longer and plan to stick with it no matter how often I am having hair pulling moments (most of the time). If there is the interest I can post more parts of this build as it unfolds.

Interested to hear feedback and suggestions.

Sam-Q  
[sam@s-86.com](mailto:sam@s-86.com)

## How To Train Your Bike by Rebecca Edwards

Outside of riding my bike, I have a career, and that involves public transport, mainly trains. So naturally I get to see a lot of bikes on trains, and also how many people get it wrong.

Most people will go straight for the first door, of the first carriage on the train. When it comes to having your bike on the train, this is the worst location you could be, for a number of reasons. First of all, the first carriage is designated for people with special needs, mainly those in wheelchairs. When you have your bike in this area, you are making the journey time longer for everyone, because of the extra time it takes for everyone to move around, so the wheelchair can fit on the train.

Secondly, there is a door from the drivers cab, into the passenger section of the train. This door is a designated emergency exit. When people put their bikes in the way of this door, so the bike is out of the way of other passengers, they are blocking an emergency exit. I'm sure the dangers in doing this don't need to be spelt out.

So where should you go with a bike? Well the best place is the middle of the train. On a six carriage long train, what you find at the front of the train in terms of space, is repeated twice in the middle, and once at the back of the train. If you are in the middle of the train, you leave enough space for those who have to travel at the front. Now sure this may mean you have a slightly longer walk down the end of the platform at the end of your journey, but isn't the point of having a bike to get some exercise?

Many trains these days are standing room only. Add a bike into the mix, and it becomes even harder to find space. Something many cyclists don't consider is the chain on their bike. When travelling with a bike, have some consideration for your fellow passengers, and have the chain on your side of the bike. This way if the chain rubs against someone, it will be you that ends up with the grease on them, and not someone who is just trying to catch a train.

So when it comes to taking a bike on the train, have some consideration for the other train travellers. By leaving the front of the train clear, by spreading out along the train, and by ensuring your bike doesn't interfere with other passengers, you are doing your bit to help keep the train on time, and for the journey to be a pleasant one.

This article applies to Melbourne trains during busy times – travelling early in the morning and against the flow of traffic on trains gives me a bit more room! What are your experiences of bikes and public transport – maybe you carry a different machine on a train or bus or tram in a different city. If you have a story to tell, we would love to hear about it. Send your contributions to [huff@ozhpfv.org.au](mailto:huff@ozhpfv.org.au).



### Sigma CLWB recumbent bike by George Durbridge

You see very few compact long wheelbase bikes in Australia. There are a few of the Bike-E and the Tartaruga Type Folding, but the type seems never to have sold well, or even attracted much interest from home builders here. That is a pity. Although the full LWB may be too much of a good thing, the CLWB can be built as a good compromise, with a recumbent seat and a fairly high seat position. Although trikes are easier to ride, the CLWB is the recumbent design most likely to be accepted by the general public. It has characteristic downsides. Because the rider sits fairly upright, the bike is only moderately aerodynamic, and will never take the Land Speed Record. For the same reason, the seat squab takes most of the rider's weight, and must spread it over a wide area. If it is built long, it has slow steering, and can be bulky to pack. If the designer keeps the bike short by putting the rear wheel close under the seat, it will be tail-heavy. The Tartaruga Type Folding (<http://www.bikedesigners.com/English/Designers/prof-tartaruga.htm>) has most of these defects, but I have ridden one long distances on tour, and found it satisfactory. There ought to be a place in the Australian market for a competent CLWB.

I was very pleased to discover that Cruzbike had produced a CLWB, called the Sigma. Kim Tolhurst, the Australian distributor of Cruzbikes, kindly gave me the opportunity to take several day rides on a Sigma. Cruzbike have sold a number in the US and some in Perth, but Kim's demonstrator seems to be the only Sigma in the Melbourne area so far. It is overall a conventional compact long wheelbase recumbent, with all of the fundamental advantages of the breed. Also some of the disadvantages, though it avoids more of the traps than the Tartaruga. Exceptionally for a Cruzbike design, the rear wheel is driven, not the front, and the bottom bracket is fixed.

It is attractive to look at, stylish, well made and nicely finished, the components and assembly are good, and many details of the design are innovative. In brief, it has 26" and 20" wheels, above seat steering, a 9-speed hub, an alloy and chromoly frame, a padded alloy seat, and an unusual suspension. The wheelbase is about 5ft 6 in, overall length about 7 ft 6 in. It is fairly light - about 13 kg. The brakes are cable-operated Avid BB7 disks and work well. About 60% of the weight is carried on the rear wheel, which is ideal. The photo shows a rear rack, but I understand that panniers can be slung under the seat, an unusual but very sensible arrangement, which would maintain the weight distribution.

The seat is a simple affair, much the same as on other Cruzbikes, made of a couple of light alloy sheet pressings, one for the squab and one for the back, bolted together with a thickly padded cover. The squab is clamped to the top tube and slides along it for adjustment. The back is supported by a pair of telescoping struts from the rear dropouts. If you sit upright and uptight, the seat feels hard, but once you relax the support is fairly well spread.

The tyres fitted to the review bike are Kenda Kwest 1.5" 100psi tyres. These are now rather old-fashioned, but give low rolling resistance, at least at 100psi. There seems to be room enough in the forks for more modern 2" balloon tyres, which would ease the ride for both the rider and the top tube.

Forward of the rear triangle, the frame is a twin-rail design. This layout usually has a straight large-diameter top tube, to take compression as well as torsional and lateral flexing loads. The bottom tube can be much lighter, to take only tensile loads. If a substantial load is placed in the middle third of a tube, particularly a thin one, most designers would brace that tube to support the load. This frame departs from all of those rules. The bottom tube is a large-diameter light alloy tube running more or less horizontally from the rear dropout to the bottom bracket. The top tube is a 1 1/8" chrome-molybdenum steel tube, which slopes upward from the rear fork to the front and curves upward to support the steering assembly. The seat is mounted on the top rail, with no triangulation whatever to support it. The reasons for these unusual design decisions lie in how the bike folds, and in an unusual form of suspension.

The frame folds in an unusual way. The top tube is held in place with two clamps. With the top tube, the wheels and seat removed, the head tube and front fork pivot to lie beside and parallel to the bottom tube. Folded, the frame forms a long but compact bundle, taking up the same sort of space as a pair of skis. This wouldn't be handy as cabin baggage on a plane or bus, but should take very little space in a wagon or hatchback and be easily boxed to go in the hold of a plane.

Since you sit fairly close to the middle of a fairly long wheelbase, you have less need of suspension on the Sigma than on most recumbents. That is just as well, since the bike has no springs. The top tube is intended to provide some suspension, however, by flexing under the seat. I did not feel any flex, and I hope there is none to speak of. If the top tube flexes enough to provide useful springing, I expect it to die young from metal fatigue. In fairness, there is a little give in the clamps holding the top tube, the tube is steel rather than light alloy, and the designer thinks it will withstand greater loads than it is ever likely to meet.

The riding position is good. The bottom bracket is lower than the seat, and immediately behind the head tube, and the pedals clear the front wheel. The rather short above-seat handlebars do not pivot from side to side, but turn the steering head via a universal joint, as on the Mochet velocars: the action is not the usual LWB tiller, but a very natural motion more like a steering wheel. The steering tube telescopes for adjustment, and locks in place with a single Allen bolt.

While these details are good, overall the steering is disappointing: it is twitchy, particularly at low speeds, and takes a lot of getting used to. Several people rode the test bike at Williamstown and at Wodonga, and all wobbled badly. I don't think the universal joint is in any way at fault. The steering rake is fairly high, but the principal cause of the wobble seems to be inadequate trail due to a strongly forward-swept fork. Some rough measurements suggest the trail is nil, or even negative. This is very disappointing, and replacing the fork with a straight one would probably transform the bike's handling. The fork may have been chosen to obviate any risk of the rider's feet fouling the front wheel, but the location of the bottom bracket above the fork is basically sound, and no collision would be possible even with a straight fork, except at extreme steering angles, and any rider experienced enough to manage a CLWB should be able to manage this risk.

The transmission is a SRAM 9-speed i-Motion hub gearbox, gearing approximately 30"-101", twistgrip change. The good news is that the ratios are nicely spaced, with even increments of about 17%, the change is crisp, the gearbox runs smoothly, and there is a neat pair of cams to help set chain tension. The bad news is that the gear range is modest, compared to even a basic derailleur setup: SRAM quote 340%. Recumbents need a wide range of gears - 600% isn't excessive. Although top gear on the bike I rode was high enough, the relatively high bottom gear limited the bike's abilities at low speeds. The poor low-speed steering and the high bottom gear make the bike hard to control at walking speed, such as on steep hills. Fortunately, this is offset by one of the inherent virtues of the CLWB design, which is that you can very readily put your feet on the ground. You could get a lower bottom gear with a different choice of chainring and sprocket, but then you would lose the high top gear. I assume that it is possible to fit a Schlumpf or Rohloff gearbox. A 24-

speed derailleur setup would have been more capable than the SRAM and cheaper, but the dropout design probably makes it impossible to fit derailleur gears.

For about \$2150, at current exchange rates, should you buy a Sigma? In many ways it is a useful and satisfactory machine, with no direct competitor in this country, and with a lot of clever details. Apart from the steering, it is easy to ride, comfortable, light, looks good and will pack well. If you would like a CLWB, give the Sigma a good look, but ride it before you buy it. Cruzbike offer a front fairing, which will make it more aerodynamic. There isn't a lot you can do about the transmission without overcapitalizing the bike. You can get used to the steering, but it would be better to insist that Cruzbike fit a straight front fork. By fitting Big Apple tyres, you can mitigate the lack of real suspension and the worry over the flexing top tube. You can find more detail, and a lot more photos, at <http://www.sigmabike.com> .



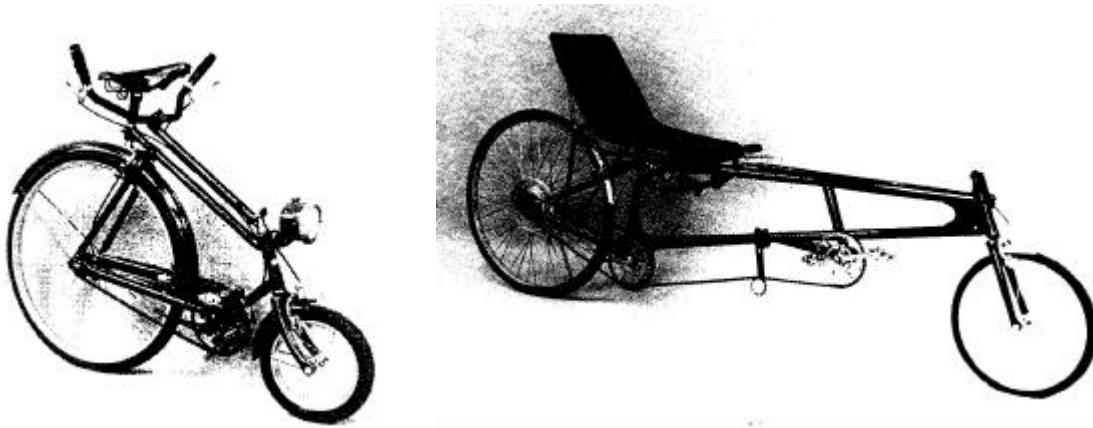
More good news on the CLWB front: as well as the Sigma, there is another new CLWB from Perth, although so far this one exists only as a prototype. Martin Arnold of Logo Trikes has been good enough to send me photos of the prototype Longfellow and to discuss the design with me. It has an overall specification rather like that of the Sigma, but the critical details are different.

Like the Sigma, the Longfellow has a 26" and a 20" wheel, the bottom bracket lower than the seat and just behind the head tube, disk brakes and a fairly upright seat (a modified RANS) which slides for adjustment along the upper tube of a twin rail frame, and (on the prototype) a hub gearbox. Judging by the photographs, the weight distribution should be about 60:40, and there are pannier rails under the seat to keep it that way.

Unlike the Sigma, the Longfellow has no suspension, the frame is the right way up, and a dual drive or rear derailleur transmission can be used. The steering is the conventional above seat arrangement with a fair degree of rake and no universal joint, but with a straight fork, little tiller and about 32mm of positive trail. Measuring from a photograph, the Longfellow is a little longer than the Sigma: the wheelbase is about 6' and the overall length 8' (1.8 and 2.4 metres). It may be longer because the bottom bracket is further away from the front wheel.

The frame is chrome-molybdenum steel, and has been designed to be light. It doesn't fold, but the first prototype has a detachable rear triangle, which is used also on some of Logo's trikes. The next prototype will probably use S&S couplings instead, which will separate it into more manageable chunks.

None of these details are final, and I haven't seen a Longfellow, only photos, in which the bike, the components and even the welding look good: as they do on Logo's trikes. If the Longfellow makes it into production, it deserves to be a winner. The design is stylish and imaginative, but conventional enough that it should be thoroughly practical and reliable. That would leave us with the big question: is Australia ready for a competent CLWB?



Velocino and Avatar 2000 bikes from "The Safety Bicycle"

### The Safety Bicycle: The Book and the Name by Stephen Nurse

The book "The Safety Bicycle" is by Ian Jones and is a 2010 reprint of a 1986 book. It's nicely printed and if you ignore things like barcodes and "printed in China" it has the look of an even older book with a nostalgic early 1960's cover and clunky typeface.

There are only 32 pages but there are 75 photos spread throughout. Most of these are from the Museum of Harlow in the UK where the author worked as a curator. The cycles shown are all 2 wheel, rear wheel drive safety bikes but these are a really good assorted bunch. A couple are early replicas of Kirkpatrick Macmillan's wooden treadle bike and later there is a good sprinkling of folding, compact, Moulton and recumbent cycles.

The caption for a very staid looking Avatar 2000 style bike reads in part: "The American version has proved to be a very fast machine on the track". You wonder how the author would describe a Quest, No-Com or Varna vehicle used by today's riders. Overall the book is a good read and I've enjoyed it.

My copy of "The Safety Bicycle" came from Ebay. The publisher is Shire books, and their output is mainly nostalgic and for collectors: "Garden Gnomes", "Vintage Motorcycles" and "Beach Huts and Bathing Machines" are amongst the esoteric titles on offer. The cover prices listed include 5 UK pounds and \$US11.95 so my guess is you should be paying about \$AUS 8 to 12 before postage. There are several Australian distributors listed on the Shirebooks website.

You have to go back a long way, but the "safety bicycle" wasn't always what we know it today, ie a 2 wheel machine using pedals and chain to drive the rear wheel. Safety bikes started in the late 1860's and 1870's as alternatives to the precarious Penny Farthing or "Ordinary" bicycle. Until the rear wheel drive safety came along conquering all before it, a number of front wheel drive machines were also called "safeties". Archibald Sharp's "Bicycles and Tricycle" book of 1896 includes the Kangaroo (chain drive), Crypto Bantam (hub gear), Facile and Xtraordinary (Treadle drive) front wheel drive safety bikes. Whatever else they did, safety bikes made cycling more popular and accessible to almost all men and women.



Early Safety Bikes from "Bicycles and Tricycles":  
Facile, Xtraordinary, Kangaroo, and Bantam.



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