

Practical Velomobiles

Carl Georg Rasmussen - SPEZI 2016, Germersheim, Germany



Start of Velomobile Euro-Tour 2013 – Leer, Germany

2000-2015 The diversified and expanding market

About the turn of the millennium the development of commercial velomobiles gained momentum, first of all thanks to groups of very dedicated and determined bicycle designers in the Netherlands and Germany. Speed became the ultimate design goal and competition parameter, resulting in very low, aerodynamic monocoque models with minimum cross section.

Consequently, lower priority was given to manoeuvrability, visibility, luggage capacity and easy access to get in and out. Still a number of compromises are necessary to keep some characteristics of a practical velomobile in the new generation of vehicles for commuting and long distance traveling.



Mango
Velomobiel.nl



Quest
Velomobiel.nl



Strada
Velomobiel.nl



Orca from Flevobike

More German professionals

In the first 10 years of this millennium, two new German companies joined the velomobile market, both located in the Hannover area.

The Leiba belongs to the category of practical velomobile, with room for luggage and easy access, while the Milan, from Räderwerk, is an extremely low high speed racer, based on Eggert Bülk's many years of development with low racers.



Leiba



Milan



Leiba X-Stream XXL





The Cab-Bike became popular in the USA. Below is Mary Arneson and Dale Hammerschmidt in Minneapolis, Minnesota in 2003.



New generations: Go-One and Cab-Bike

The original "Bubble" Go-One has been followed by new models, with higher speed as primary design goal.

The Cab-Bike was adopted by the American company Blue Velo. It was presented to the US market in a cabrio version.

Hornet (Canada)



CaBike (Germany)

Twin (Poland)



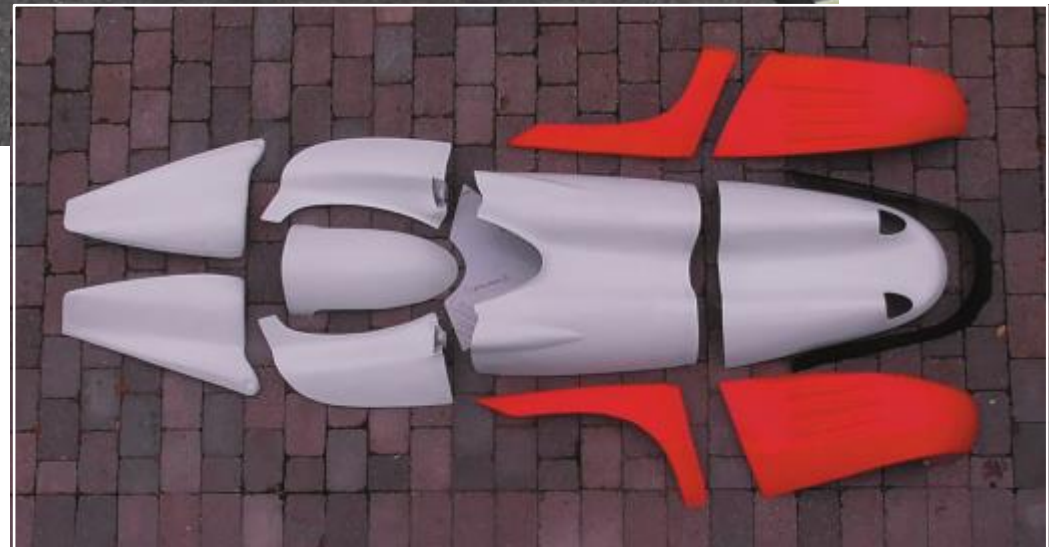


Alleweder
(Netherlands - Germany)



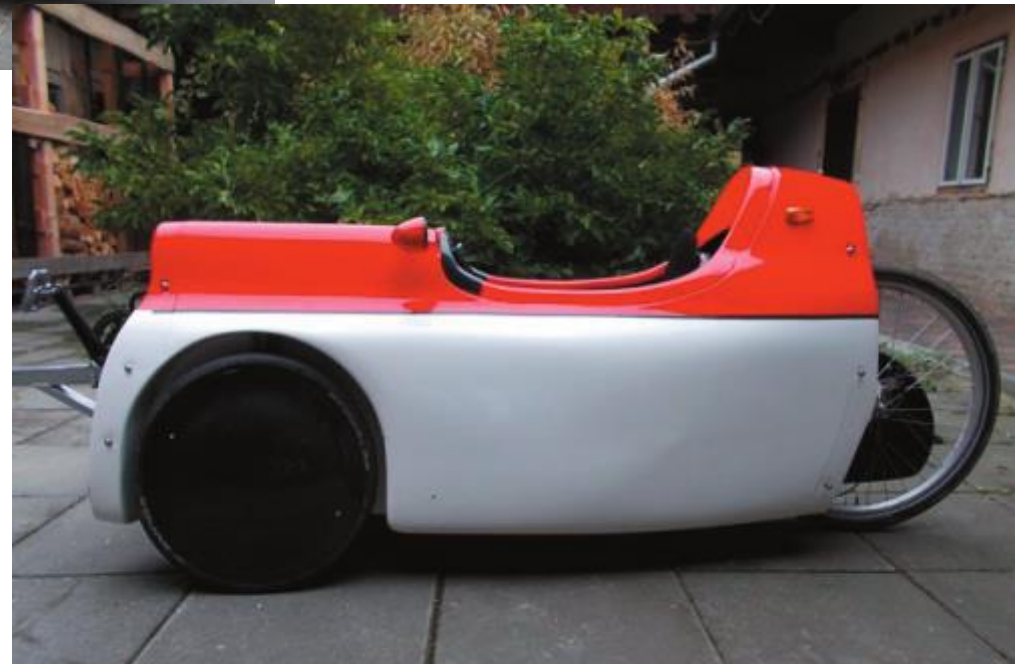


Leitra Wildcat (Denmark)





Katanga WAW
(Belgium - Czech Republic)





Cabriovelo (Germany - Italy)





WeatherVelo (UK - Germany)



Prototypes

Leitra (Denmark)

fitted with optional child seat





Off we go...

Ego (USA)



Veemo (Canada)



Pedalist (USA)



*Tripod
(USA)*



E-fox (USA)



MaxxVelo (USA)



*Two new examples
of Swedish design:
PodRide (top) and
Armadillo (right)*

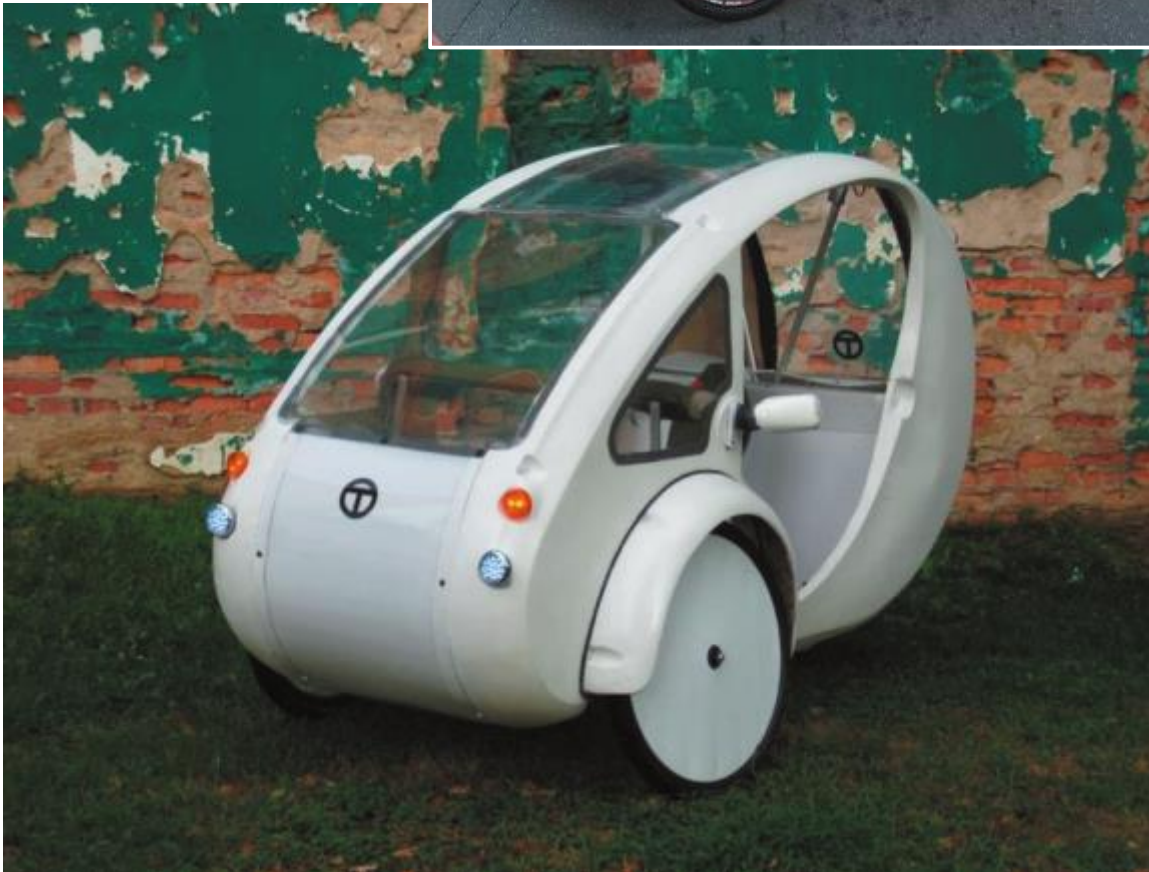




Practical Velomobiles

Powered by the Sun

Elf (USA)



Half (Germany)



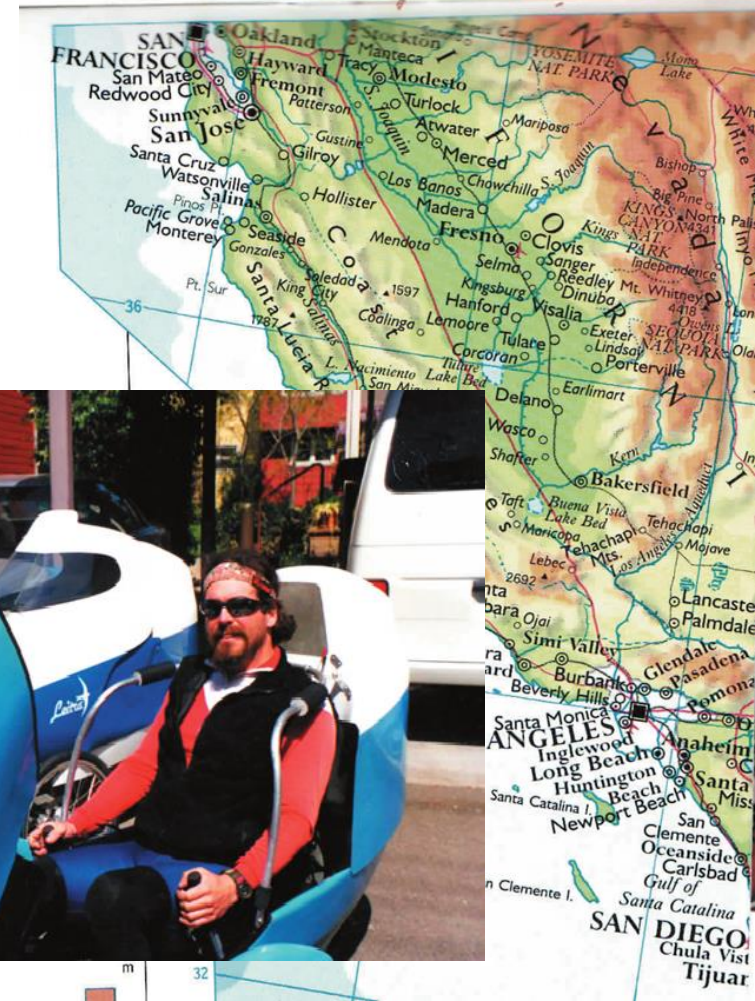
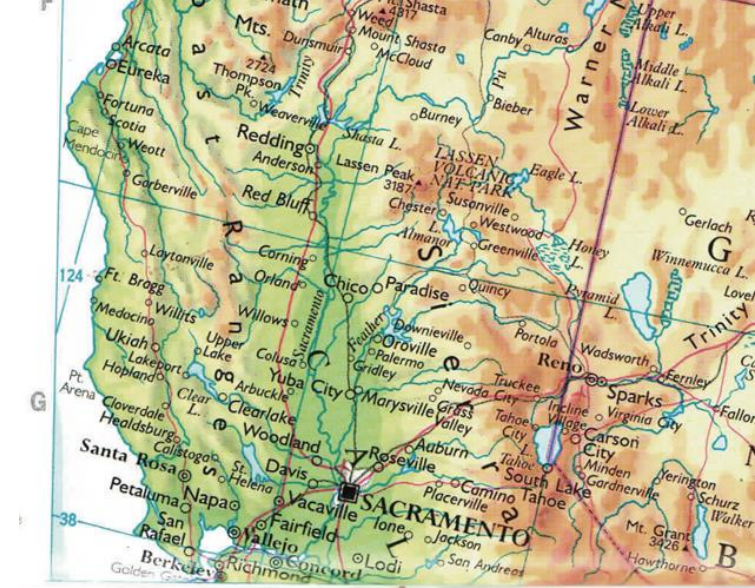
Mö (Spain)





*Leitra with foldable
solar panel*

*ZAP - California NS
by solar energy*



SunGlider (Germany)



DIY design

The last 5 years has been a period with high activity by homebuilders and DIY (Do-It-Yourself) designers. The velomobile is now a very popular design object in schools, clubs, or for individual inventors and designers. Many different materials have been taken into use in order to make a practical velomobile more affordable, lighter, easier to maintain and suitable for a specific purpose.

Individual styling creates identity, and that is part of the fun by the design process. The Internet is crowded by DIY-projects and open source design, CAD-designs and even programs for 3-D printing.

Super light designs:



Danish nylon fabric.



MEUFL, design with PE-foam by Harald Winkler.



The French Mosquito.



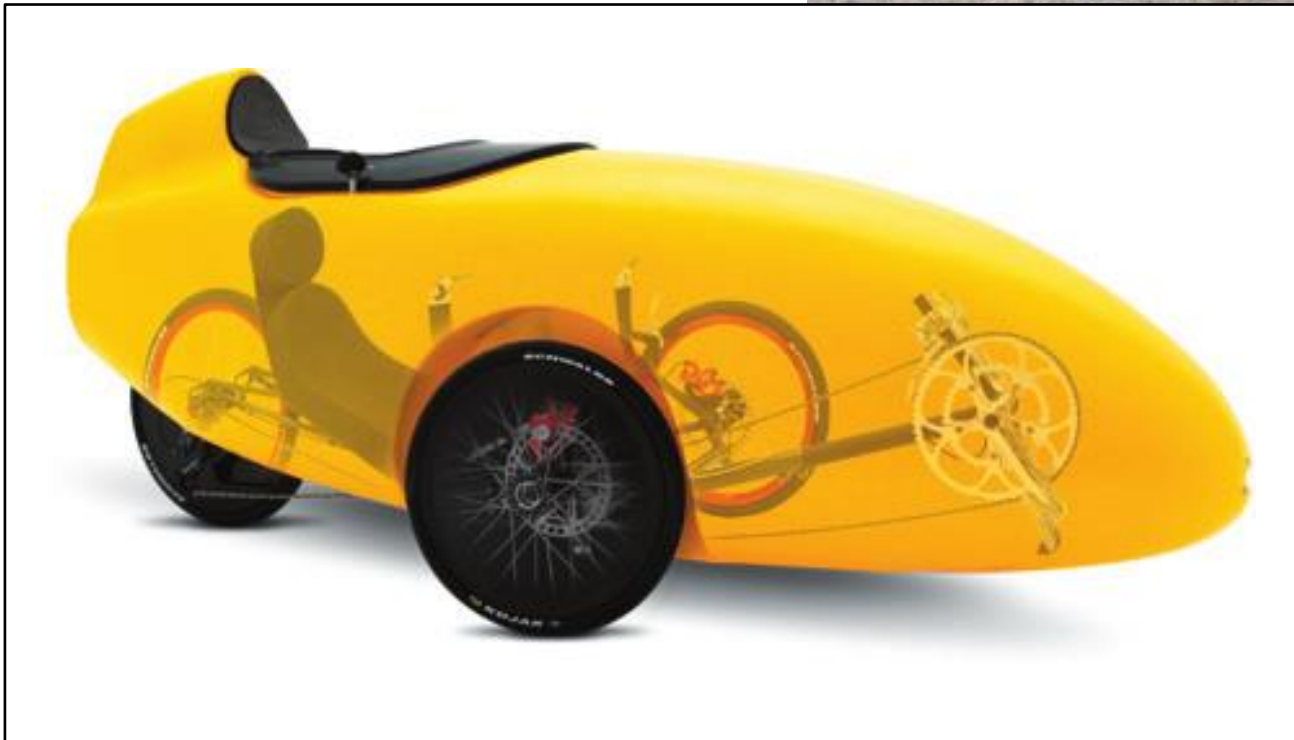
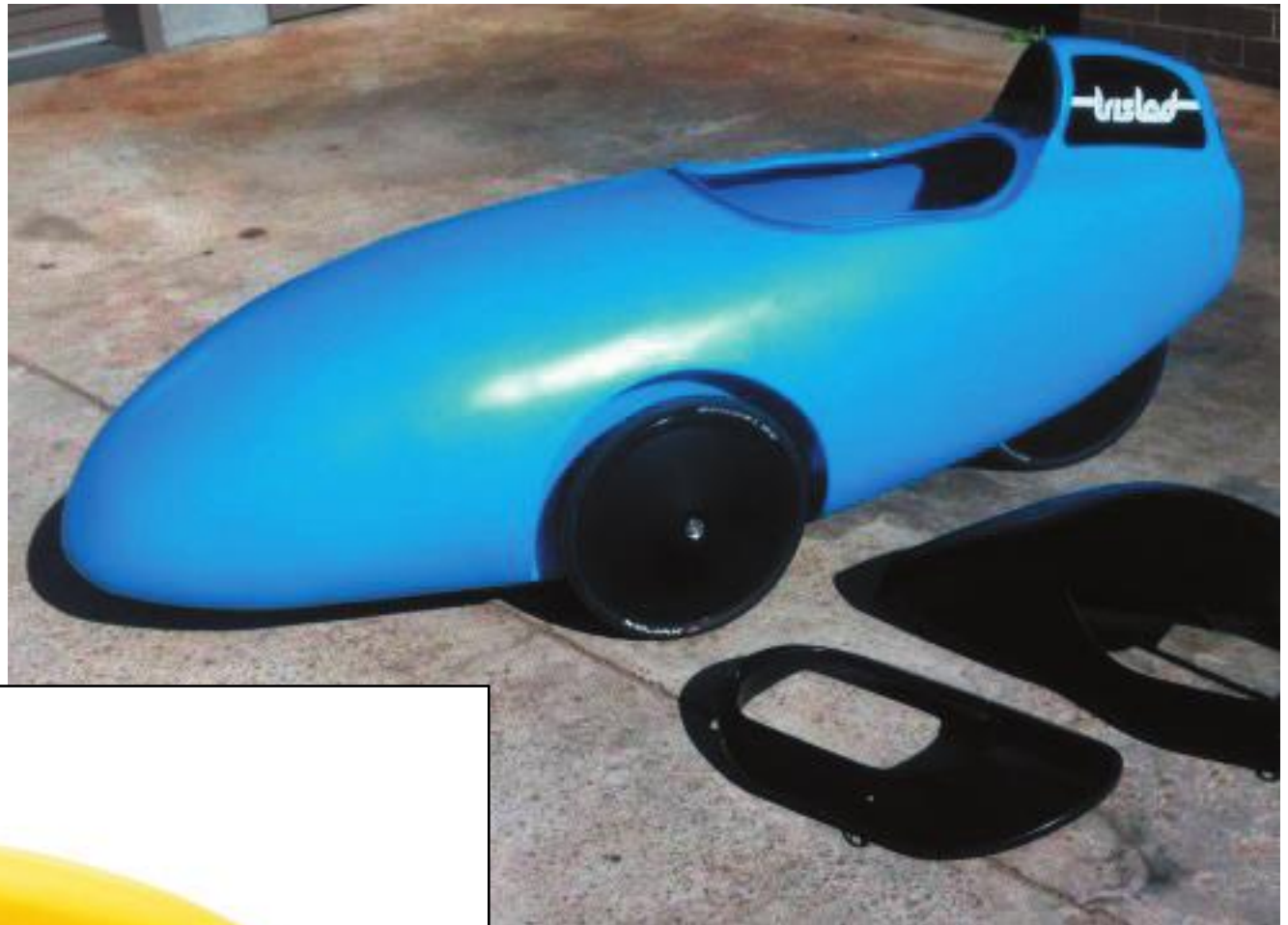
Dutch Plywood.



Coroplast—DIY (USA)

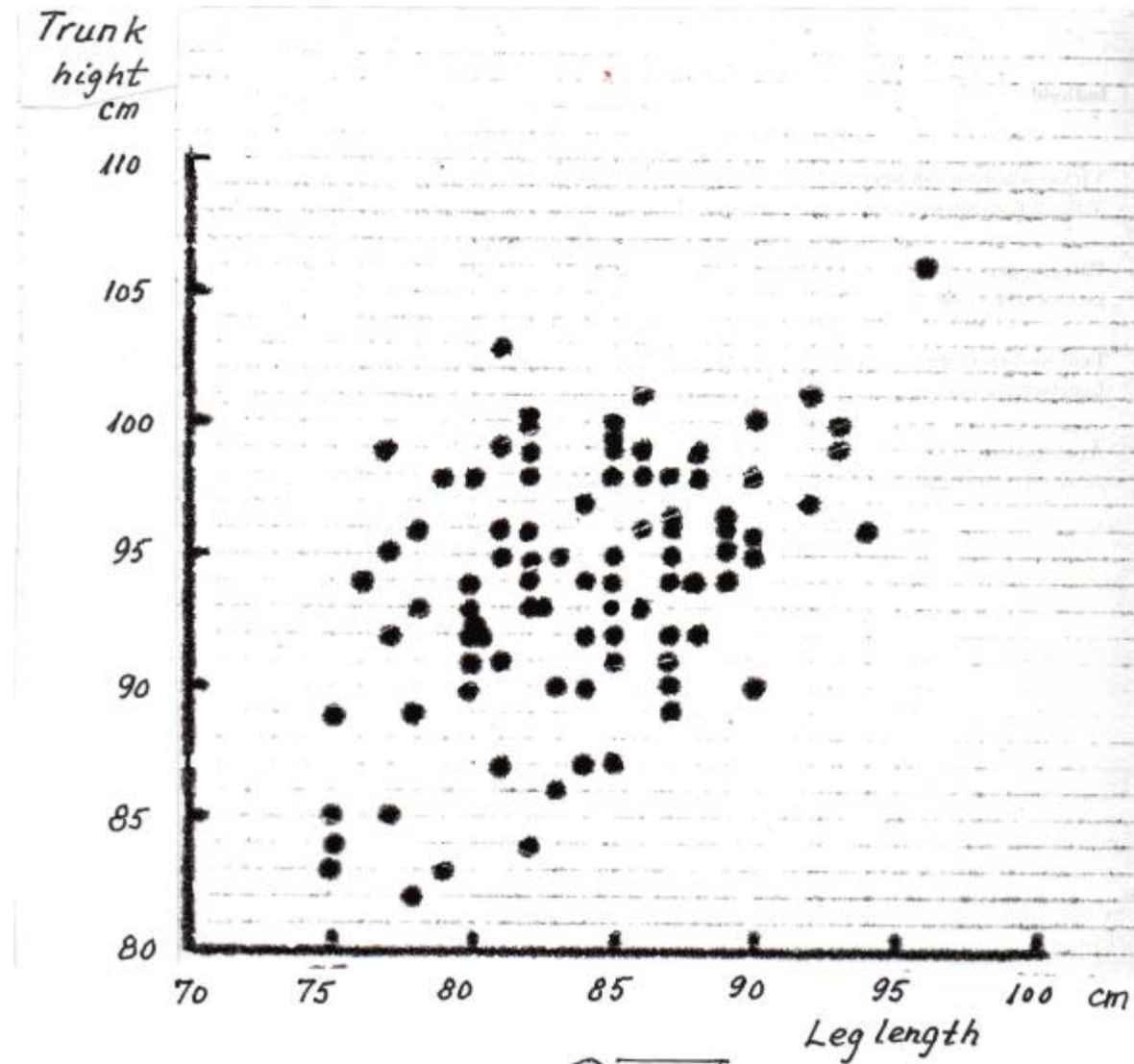


*Rotovelo — Trisled
(Australia)*

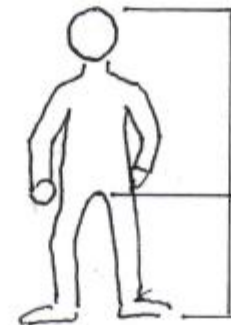


Industrial production method

Little correlation between height and leg length

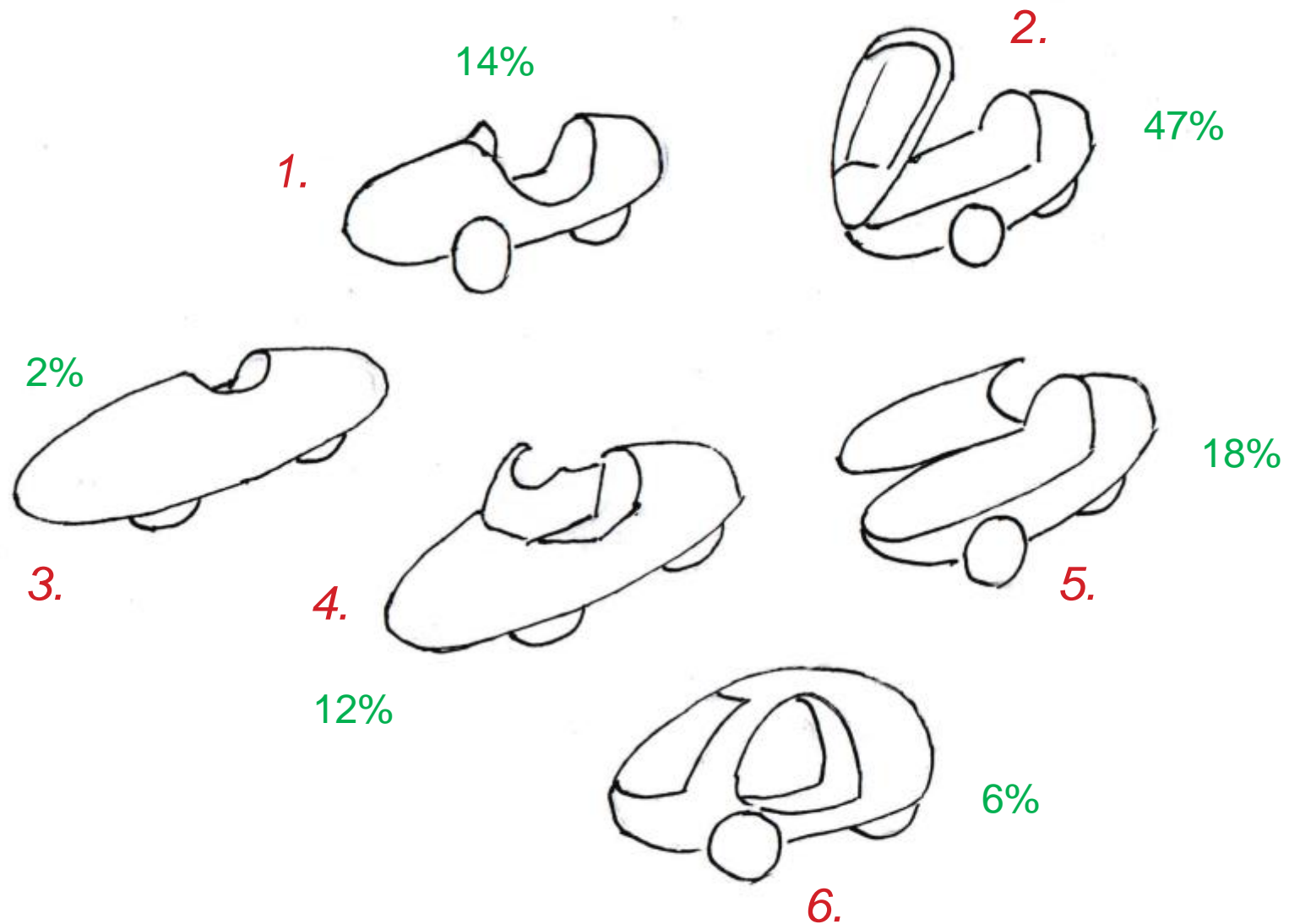


First group
of testriders



A

Getting in and out

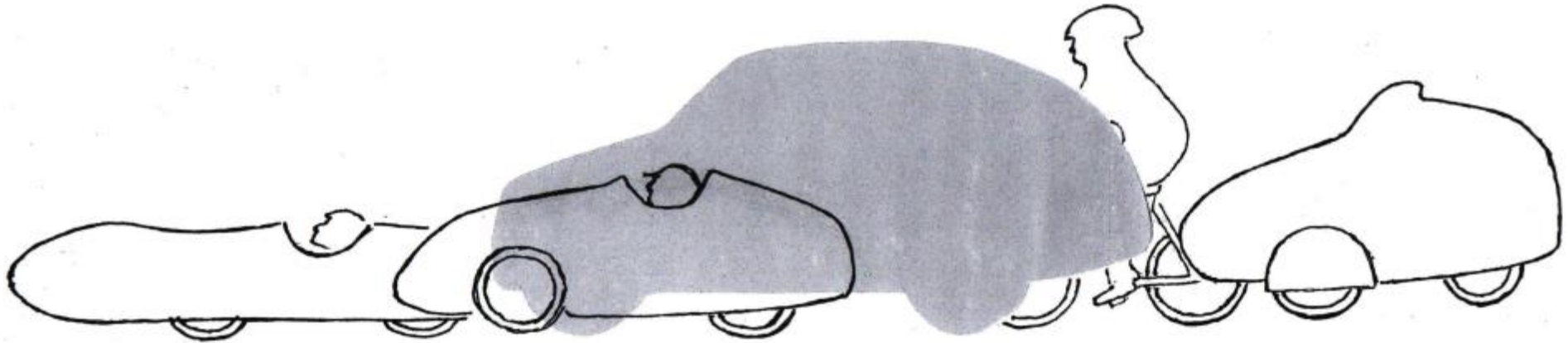


Audience preference (% , rounded to nearest whole number)

Votes cast: 49 (from audience at SPEZI 2016, so already interested in recumbents / velomobiles)

B

See and be seen (eye level)



How low can you go?

1.

<50 cm

16%

2.

50-65 cm

20%

3.

65-80 cm

31%

4.

80-100 cm

16%

5.

>100 cm

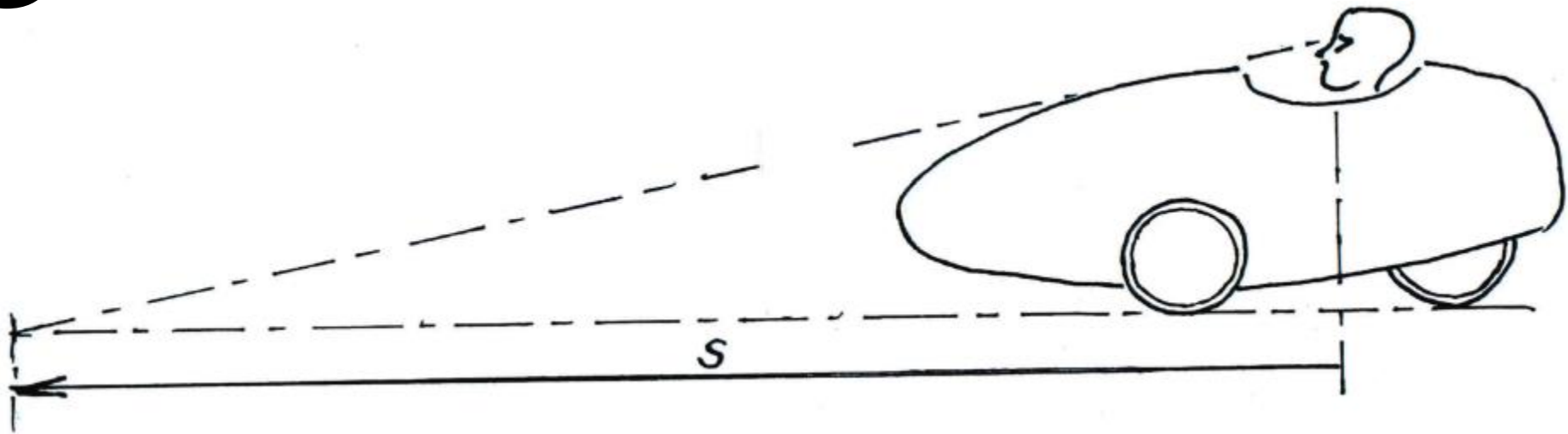
16%

Audience preference (% , rounded to nearest whole number)

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C

Sight distance



1.

$<4\text{ m}$

25%

2.

$4\text{-}5\text{ m}$

21%

3.

$5\text{-}7\text{ m}$

19%

4.

$7\text{-}10\text{ m}$

17%

5.

$>10\text{ m}$

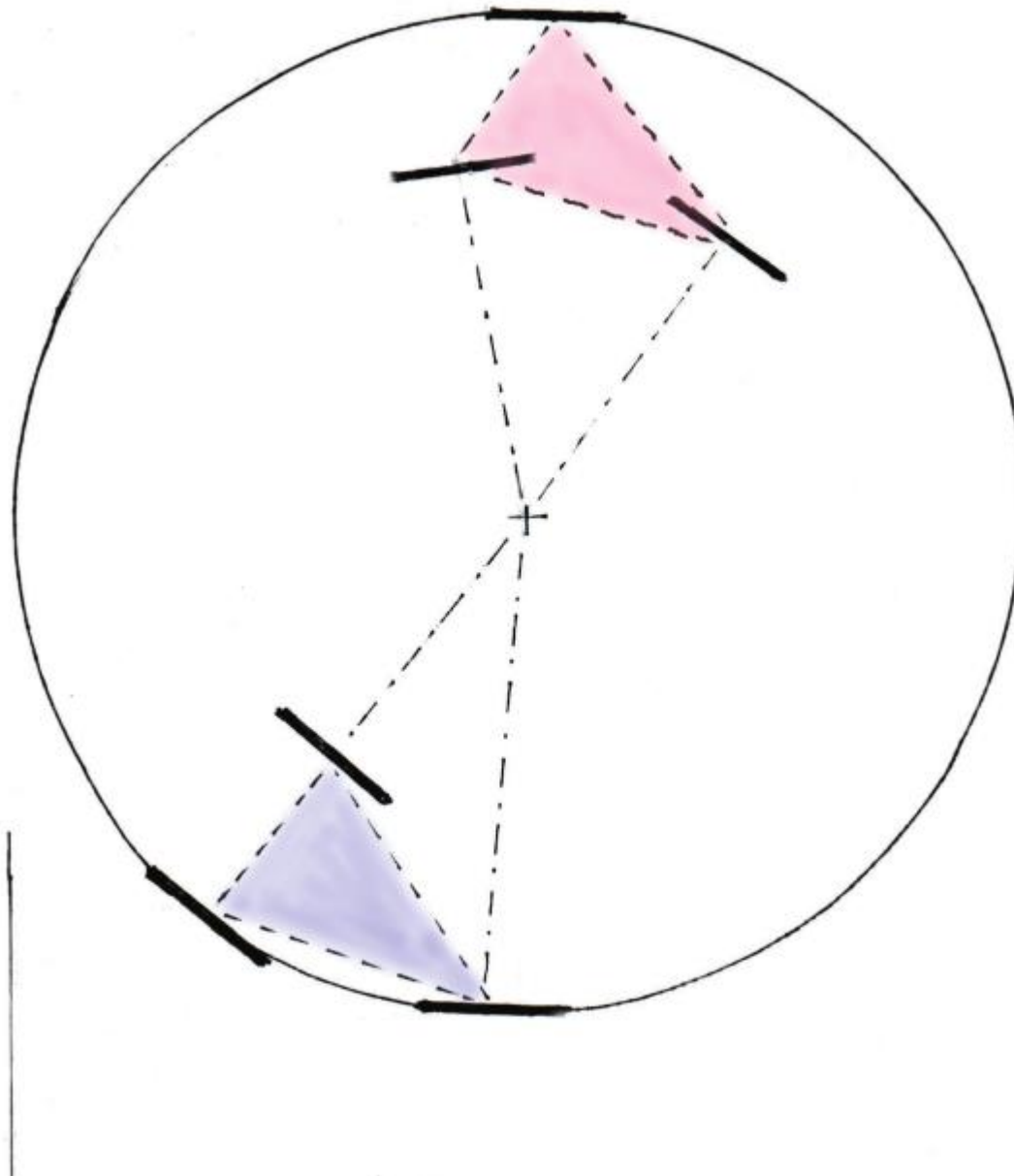
19%

Audience preference (% , rounded to nearest whole number)

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D

Turning circle



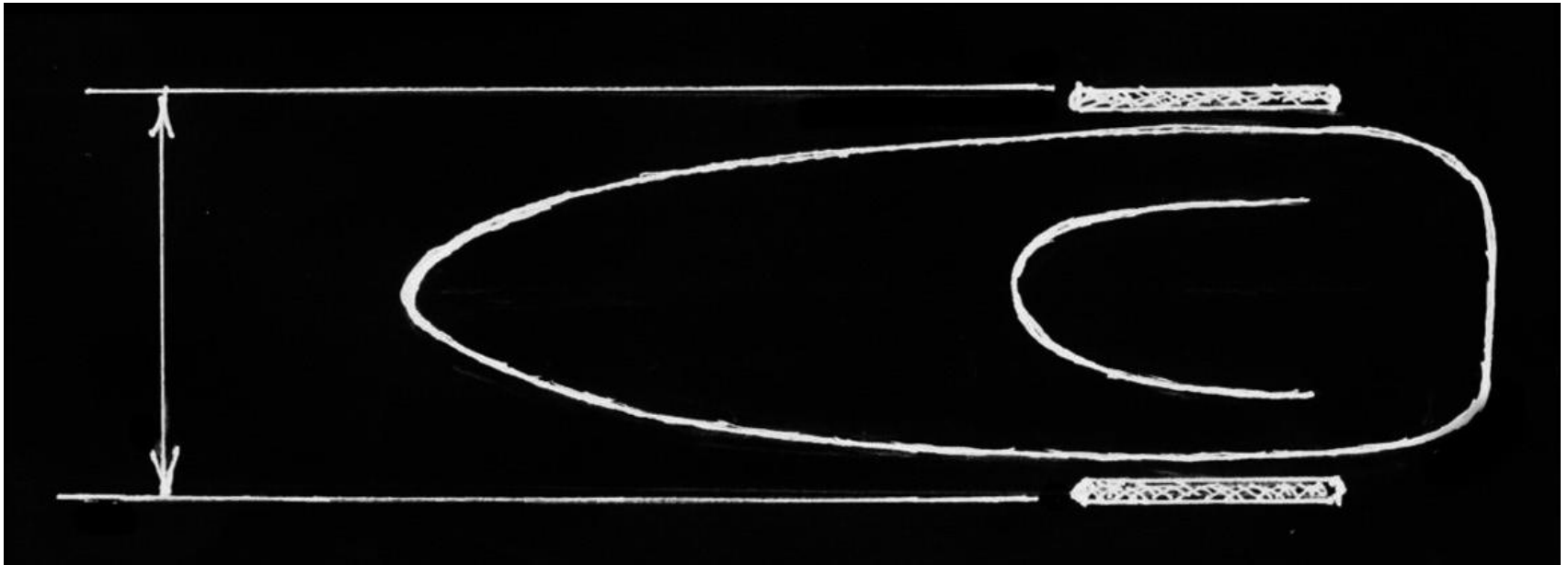
- | | |
|---------------------------|-----|
| 1. $<4\text{ m}$ | 10% |
| 2. $4\text{-}5\text{ m}$ | 27% |
| 3. $5\text{-}7\text{ m}$ | 47% |
| 4. $7\text{-}10\text{ m}$ | 6% |
| 5. $>10\text{ m}$ | 10% |

Audience preference (% , rounded to nearest whole number)

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E

Gauge (Track)



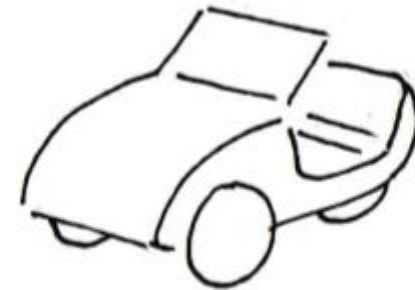
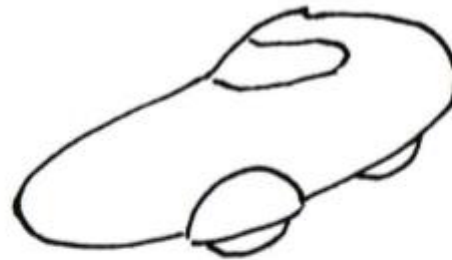
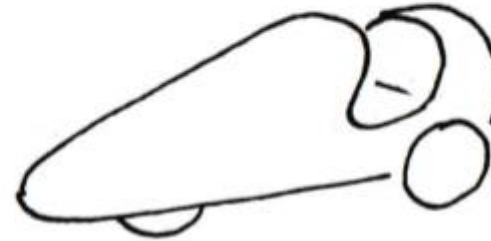
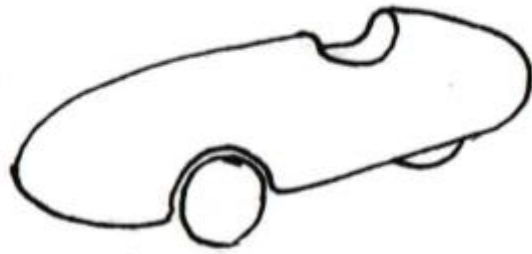
1.	2.	3.	4.	5.
60-70 cm	70-80 cm	80-90 cm	90-100 cm	>100 cm
13%	41%	22%	22%	2%

Audience preference (% , rounded to nearest whole number)

Votes cast: 46 (from audience at SPEZI 2016, so already interested in recumbents / velomobiles)

F

Price level



1.

<4,000 €

10%

2.

4,000-6,000 €

44%

3.

6,000-8,000 €

38%

4.

8,000-10,000 €

4%

5.

>10,000 €

4%

Audience preference (% , rounded to nearest whole number)

Votes cast: 48 (from audience at SPEZI 2016, so already interested in recumbents / velomobiles)



1



2



3



4