25 years

Motor Vehicle Design for Rural China

Magnus Goransson’s concept vehicle for rural China has been on display at the 2004 Detroit Motor Show. Magnus, who has just graduated from the Master of Design at Griffith University, designed his vehicle as part of his studies. His design won the Michelin Challenge Student Design Award. This award was established to bring forward and display innovative automotive designs that would not normally be shown at an international venue. The six-person international jury reviewed more than 125 entries from 40 countries before selecting the 17 finalists.

Magnus said “I think it is bad ethics not even trying to build a light sturdy, environmentally sustainable vehicle adapted to the rural community, when it actually might be possible. Who says it still can’t look like something from the international car shows.

“It is time for me to try and find another vision of an umbrella; it is time to rethink the concept of the car again. What is its purpose? What would its purpose be on the Chinese market? Who are the users? What kind of possibilities do they have? Or put in other words: What kind of vehicle does the emerging vehicle market in China need?”

Magnus carefully studied the demographic requirements for his design. This resulted in the vehicle being designed to fulfill the needs of farmers and rural workers of China, where sealed roads are a luxury and a vehicle has to be all things to all people. Responding to his research the vehicle:

• Handles large amounts of different sorts of cargo like people, animals such as boxes of chickens and the odd pig or two, sacks of grain, and bamboo
• Is cheap and gives good value on the investment, through qualities such as a long life span
• Is simple and robust as the bicycle and the tuk-tuk, and is easy to repair locally
• Is easy to understand without manuals
• Is adaptable to the terrain, rutts, dust and dirt
• Is reliable as a ‘best friend’, making the user’s life better
• Is possible to repair with local materials and resources
• Minimises the impact on the environment
• Is fuel efficient
• Allows easy modifications

To avoid some of the problems associated with rutted roads, the four wheels are distributed in a triangular configuration, with the two driving rear wheels fixed very closely together. A basic motorcycle-type handlebar arrangement is used to steer the vehicle.

Other features include its lightness, fuel efficiency, good ground clearance and suspension with a chassis protected by a large metal plate. There are four main cargo areas for storage, some lockable, with the front grill able to be flipped down for easy access and loading. The vehicle requires only 3 wheels to drive with the second wheel at the front being able to be used as a spare. The body panels are made from interchangeable recyclable thermoplastic, with most dents being able to spring back. The fuel tank is large and is detachable with a handle to allow it to be transported for refueling. Further development includes a loading crane being incorporated into the structure of the vehicle.

The success is due to the simple vehicle design with a futuristic touch that uses some traditional connections.

From his computer aided design files, (as shown here), a 1:10 scale model was fabricated for display in Detroit. This was produced by Ark Silhouette at Calamvale, Queensland.

Using Rhinoceros 3D modelling software, Magnus created his digital model of his rural Chinese Vehicle in eight weeks. Every part was digitally created to be exported as a stereolithic file to be manufactured.
Sunglasses Design

Francesca Chipp and Roz Bobridge were delighted with the sunglasses they designed for the Opus International Design Awards contest. The Brisbane duo exploited some shady new connections to launch an international career in sunglasses design. They collaborated on a pair of fashionable sunglasses which were chosen for manufacture from more than 1,500 entries submitted.

Only five entries in the Opus Design Awards were picked up for commercial production by the contest’s Japanese sponsor Eyetec. When the first pairs off the production line arrived in the Queensland designers’ mailbox they could not have been prouder of them.

“I wear them around the house. I wear them to bed. I love them,” a delighted Roz said.

Eyetec have marketed the Aussie-designed glasses on the Internet throughout the northern hemisphere at $388 a pair.

“People always think I’m staring at them, but really I’m just looking at their glasses,” she said.

Her design partner Francesca, said the win was “a little out of left field” for an interior designer but she was keen to pursue any opportunities it opened up. She said the original design of the sunglasses was slightly more unconventional than the end product.

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After hearing people complain about nose pieces on sunglasses, the creative partners designed a pair which wrapped back around the head instead of joining at the nose.

“Apart from the fact they’ve added a nose piece, it’s very, very true to the original,” Francesca said.

Yacht fenders aren’t normally associated with comfort and style, but they are one of many materials Alexander Lotezian experimented with to illustrate his belief that design has no boundaries. Alexander discovered the rubber fenders which are used to protect boats during mooring, while working on a friend’s yacht, and quickly recognised the potential to transform them into a sofa. He constructed a stainless steel frame to support the fenders which became the seat and back supports and the Cruise Sofa was born.

Described as “serious in intent but whimsical in form,” this funky sofa is as comfortable as it is fashionable. Although a masterpiece in modern design, the sofa is very informal, evolving a great sense of fun, together with a strong approach to environmental sustainability through its use of recycled components and easy disassembly. The Cruise Sofa’s cutting-edge design was quickly recognised by leading Australian furniture manufacturer FMCA which has since commissioned an entire collection using the same philosophy.

Concept Boat Design

Brent Philip’s design was one of sixteen entries to be shortlisted from 22 worldwide entries. These short-listed entries were displayed at the Southhampton Boat Show in September 2004 with the winners to be announced in January 2005 at the Schroders London International Boat Show.

The annual Concept Boat Competition 2004 is a global unique competition intended to encourage enthusiasts, both amateur and professional, to design a boat of the future. The 2004 theme was for environmentally friendly recreational or commercial craft up to 24m in length. Parameters set for the 2004 competition included increased use of renewable resources, energy and resource efficient vessel, low emission or non-polluting design or the minimization of the effect of boating on the marine environment.

Brent credits his design to the methodology of research he was taught. That is, extensive research and an artist’s approach to a blank canvas being vital in achieving a desirable outcome. Based on his research, Brent identified the need to develop the United Kingdom’s canal boat fleet.

The Environment Agency of the UK currently has a multi-million pound development of its rivers and canals that will ultimately make them comparable with the best in Europe. Brent saw this as an opportunity to take this development and create a new concept for a canal boat for the future.

The design was created for a series of CAD drawings which were then used to create the final design for the boat. Brent’s research involved understanding it must eventually be connected to rapid prototyping hardware, where the 3D model is commercially produced or a concept model produced through prototyping systems such as stereolithography, laser sintering, ground curing, direct production casting or digital light processing. In accordance with industrial expectations and requirements, the teaching of computer systems has become a necessity in the area of design.

At university, as in other education institutions, students should not only be taught the generic design skills but also how to think ‘outside the square’ which leads to innovation that encourages individuality and results in designs which satisfy functional and aesthetic needs. This complete design process is called contemporary innovative resolution to todays and tomorrows problems and needs. These design stages used with our students from comprehensive generic research to conceptual development are listed below:

• generic research
• brainstorming
• focused research
• concept / critique
• concept development
• resolved design / critique
• implementation / fabrication
• reflection

The ability to communicate effectively is an essential requirement in every field of endeavor and often our communication requirements are inadequately served by hand drawn designs. This is to say that manual dexterity such as sketching is commonly used in the concept stages of a design while the computer is used to resolve the solution. Computers are often needed to enable clear and efficient communication, using a combination of design, modeling, and simulation technology. Students should be exposed to each of these experiences and be expected to use specialised equipment and software to present designs in an efficient and accurate way. They should be taught the potential, creative and advanced functions typical of design packages and explore the packages’ features for which they are designed.

Design technology gives the student’s the power and versatility to create with all the benefits of the computer packages design tools; allowing for faster creation, storage, manipulation, display and presentation times that would be nearly impossible to accomplish manually, with astonishing accuracy and higher quality. Complex and sophisticated design problems can be analysed and processed through 3D modelling, animations, and simulations, and can include such effects as light sources, reflections and shadow analysis on the design itself and its relevant areas. The computer can output the design work in professional and standardised presentations, including multimedia presentations, websites, and its fabrication.

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