

Semester proposal - bram van Waardenberg

Exploration of the ubiquitous computing theme in furniture based on five sided shapes.

More explicit: two pieces of furniture consisting of non-rectangular shapes. (Two standing for "more than one" - this gives also a possibility of communication between the two chairs.)

The surfaces of the parts, which in the images is flat must be shaped, given a relief, identity, or having a perforated pattern.

The inside of the parts must be enriched with electronics, like sensors and rudimentary AI software.

In the picture we see an existing chair. DIY by handsaw. The surfaces are not yet enriched by moulding, shaping, relief.

The existing chairs (there are more) are really "sketches". This chair is made "nearly" without screws, like a puzzle.

The making process was rather unpredictable, always adjusting while sawing and puzzling the pieces together. The thing itself is its own description. To copy it, it must be taken apart.

The electronics inside the parts will be an exploration of the secret inner life of a chair. All parts will have a special function or application of electronics. The parts should be interchangeable where possible, so everyone can make his own assembly.



Application: partially the electronics can be hidden in a "box" inside; partially it can be part of the surface decoration.

Lots of questions:

What if a chair was semi AI, would it mean enrichment for my home? What could it sensor, signal? Or would it develop a language between furniture, incomprehensible for humans?

The wiring must be applied at all elements at the start? Must the wiring of the elements be totally or semi standardized? If the wiring and the electronic elements form part of the surface, from a design point of view, the relief and the moulding would acquire significance.

The electronics: another current project

In a project with a fashion designer (colleague teacher at the school of art) I already have made modules for application in/on clothes. The modules are equipped with senders/receivers (hacked wireless doorbells) in combination with

8x8 LED blocks. Also I have reduced an RFID device to its chip U2270B SMD + an ATTINY 2313 (I (hard) - programmed the tag-code in the attiny using BASCOM), and the coil, so that the cost of the parts of this RFID reader is under 10 euro's.

Picture of the smart textile block:

The ATmega168 can trigger the text in the LED-block if received the signal. It also waits for a signal and if it takes too long, it will start sending itself.

I would like to develop this rudimentary AI to something more exciting.

For the chairs the PCB's must be appropriately shaped - that is: not rectangular. Also the square LED-block must be redesigned to become five sided.

Direct action:

Design:

Design of the chair in a modelling program (BLENDER)

Problem: details! Where to stop with BLENDER and take a simple pencil, probably for digital milling every detail must be shaped in BLENDER.

The surface patterns must be designed in accordance with the "electronic" behaviour of the parts.

Study: what is the secret life of a chair?

Study possible AI and decide what to use, give a purpose to the electronics in the chair. What can this electronics add to the possibilities of my PDA? This must be either local information, or a life of it's own.

Possibilities: every part its own function:

1. One part with five 555 timers equipped with LDR and speaker to produce soundscapes.
2. One part with movement sensors, which should be important for a chair.
3. I would like to do several parts in a "classical" artistic way, that is to say, for instance making a relief on it either from my pentagon-drawing-machine (shockwave movie) or from my drawings, without electronics.



4. One of the parts should be the “master” using an ATmega168 for coordination of the different parts

5. One part will become the signalling part, using a self made shaped LED block to show text.

6. A RFID reader - part would be another sensor to recognize persons sitting on the chair.

After modelling: cutting, milling etc

Wiring, programming

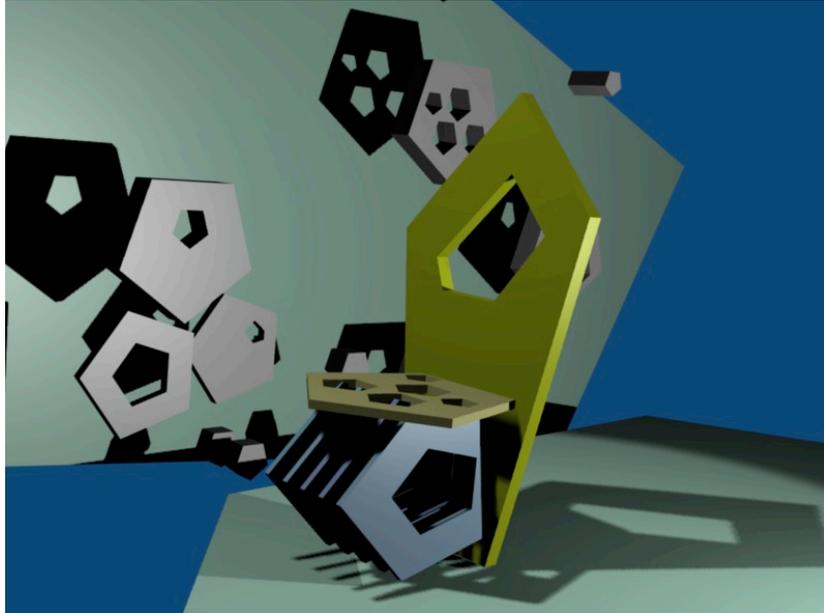
Starting Ideas for relief/perforations (based on former work on the five sided symmetry)



<http://www.contrechoc.com/driedvb/bremen12.htm>

Example of one of my drawings of a hand (detail of a bigger drawing), which will be used for a relief:





first blender sketch of the chair, the details of the parts are try-outs.

The use of this alternative geometry is grown out of the observation that nearly all shapes made by humans are derived from the rectangle. Nature has more varieties, like flowers, hands and tools. Personally I think humans when “combining” with other human beings behave more like shapes which don’t fit as tightly as rectangulars, that is why I explore more complex geometries.

Further details and explorations in the BLENDER animations

on the code side I spent a lot of time exporting my model to Xcode

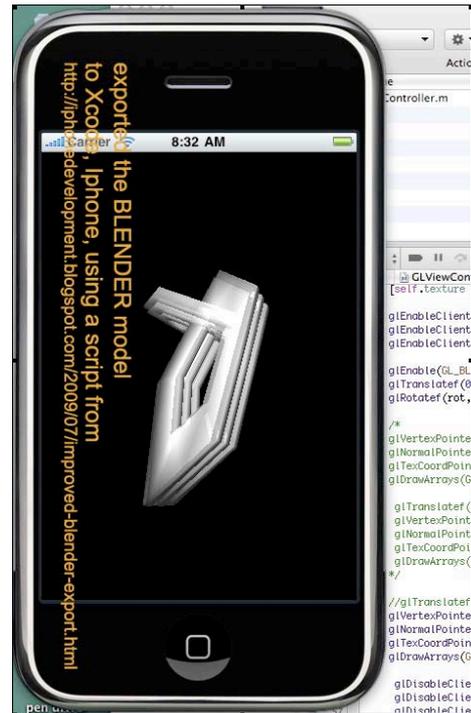
to use it on the Iphone, with the script of:

<http://iphonedevlopment.blogspot.com/2009/07/improved-blender-export.html>

this is possible. But the collada XML export seems better.

To get my model in FLASH AR, the so-called FLAR, I had to be able to export the BLENDER model to PaperVision3D of FLASH. This took even more time, but finally with Collada it is easy.

Why do I want to export? I am a programmer more than a modeller, so having a model feels like being imprisoned, I have to be able to export, to use the model in code....



It turns out the models must be fairly simple for being exported to either Iphone or Papervsion, due to memory and speed constraints.