In ‘Les Stratégies Fatales’ Jean Baudrillard poses the question: „Perhaps the object deceives us because it is dissatisfied with its alienation in consequence of observation? Perhaps it contrives its own answers; not only those commonly expected of it?” Students investigate whether the singular character of minimal surfaces paves the way for objects beyond mainstream design with software. In collaboration with Prof. Dr. Konrad Polthier, Chair of Mathematical Geometry Processing, FU Berlin.

The exhibition is closed now.
Thank you all for visiting in such numbers.
LTH Industrial Design

Minimal Surfaces + Objects

Designma 2007 - „Digitalability“
“When your only tool is a hammer, every problem looks like a nail”

Prof. Abraham Maslow (behavioural theorist, Brandeis University)
A traditional step-by-step process with...

...2D geometry
...NURBS surfaces
...parametric solids
...polygonal meshes
...point clouds

results in objects that are at best parametrically dependent static assemblies
Examples

Intersected, trimmed and patched surfaces
A contemporary rule-based process with...

...procedural forms
...genetic modelling
...generative surfacing
...lindenmeyer networks
...iterative function systems

results in objects that evolve into associative forms and structures
Examples

Subdivision network, voronoi-polytope, minimal surface
Object evolution

Growing and twisting a minimal surface
"To find an optimum (such as to find a minimal surface) belongs to the central problems in many areas of life. Every day, we are trying to find the shortest distance or finish projects in the least amount of time"

Prof. Dr. Konrad Polthier (mathematician, Freie Universität Berlin)
„A minimal surface is a surface, which spans a given boundary and minimises its area. Surfaces of soap films and bubbles are minimal surfaces“
„They minimise the area of the surfaces with given boundaries and if they are enclosed, keeping given volumes“
„This happens because the surfaces have surface tension within themselves“
„Surface tension makes molecules pull each other and they end up minimising the area of the surface...
...balancing all the forces of tension...
...which means the surfaces minimise their energy"
„Minimal surfaces have become an area of intense mathematical and scientific study over the past 15 years, specifically in the areas of architecture..."
...molecular engineering...
...and materials science...
...due to their anticipated nanotechnology applications"

Satoru Sugihara (researcher, UCLA)
Catenoid surface

Discovered 1774 by Leonhard Euler
Enneper surface

Discovered 1864 by Alfred Enneper
Costa surface

Discovered 1983 by Celsoe Costa
Jorge-Meeks surface

Discovered 1986 by Luquesio Jorge and William Meeks
Delaunay + Smyth surface (CMC surfaces)

Discovered 1999 by Rob Kusner and Nicholas Schmitt
Objects

student works
Magazine Stand

Susanne Bargi
Rocking Chair

Oskar Daniel
Chandelier

Tomas Johansson
Vita Lounge Stool

Nadja Maya
Modular self-draining Staircase

Carl Nordenskjöld
Thanks to

Prof. Dr. Konrad Polthier, Chair of Mathematical Geometry Processing, FU Berlin
Satoru Sugihara, M.Arch., University of California Los Angeles
David Toop, samples taken from „37th Floor At Sunset“ (sub rosa)