

FORM & PERFORMANCE 1

natural models for environmental fitness

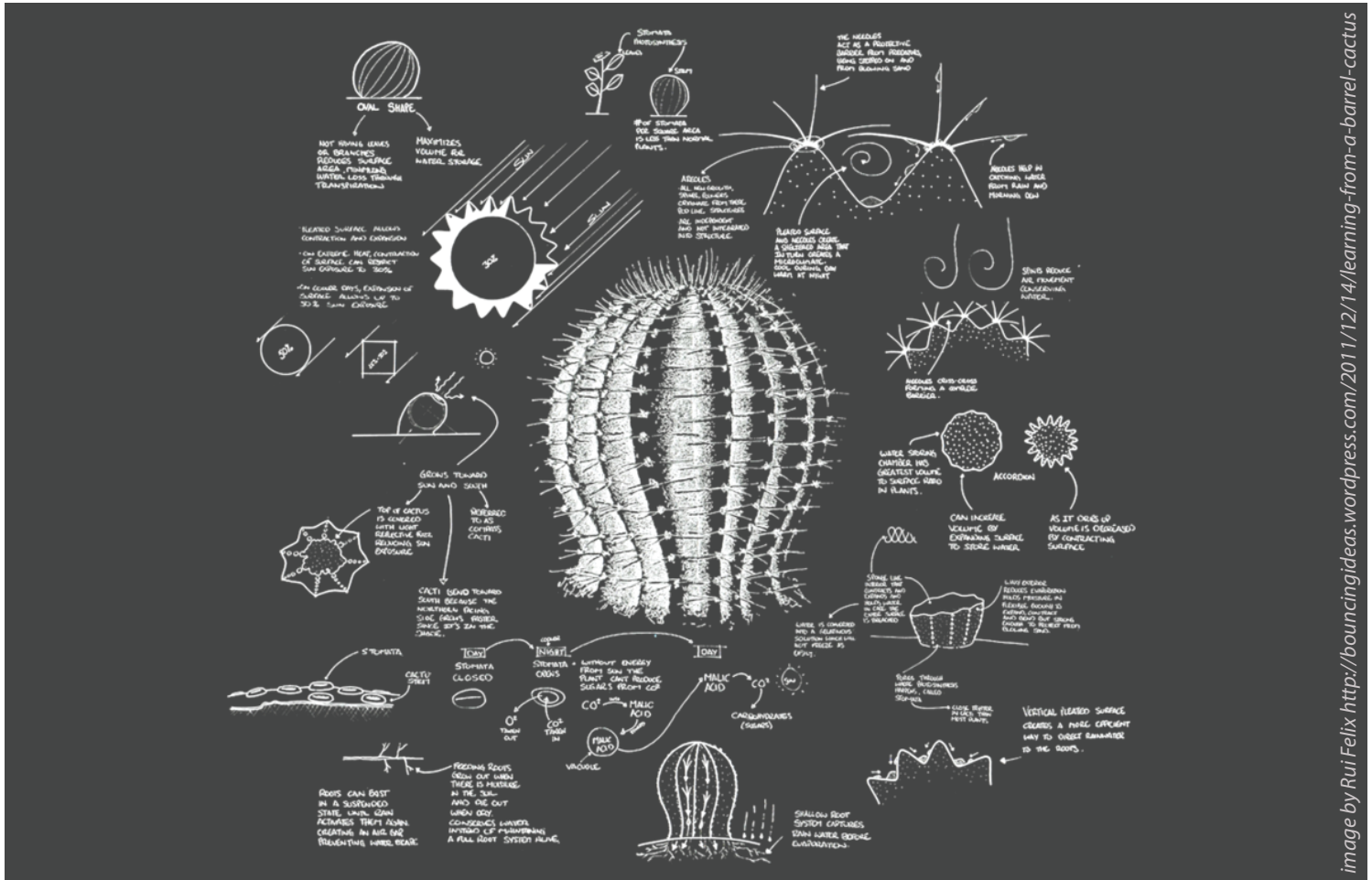


image by Rui Felix <http://bouncingideas.wordpress.com/2011/12/14/learning-from-a-barrel-cactus>

Plants and animals thrive in their habitats because they have structures, mechanisms and systems that work efficiently in specific environmental conditions. This class will examine how natural organisms can be models for architectural design using Biomimicry 3.8 principles and morphogenetic parametric design. Students will first study how product designers and architects have used biomimicry, with attention to how natural systems are translated into geometric relationships and dynamic systems. Students will emulate the examples in studying how skins, membranes and shells work as environmental mediators.

To generate and analyze biomimetic form, students will learn how to use Rhino Grasshopper plug-ins. Plug-ins such as Ladybug/Honeybee will be used to visualize climate data, assess and optimize environmental forms

from the urban scale down to the room scale. Students will learn to design adjustable facade modules and tailor modules to criteria such as prevailing wind direction or summer solar radiation.

The course will have seven weekly sessions with a final exam in week 11. The class sessions will include presentations, hands-on software sessions, and discussions of reading and homework.

Pre-requisites: Arch 4/591, Arch 4/592, Arch 384. All students must bring a Windows computer with Rhino 5.0 software installed to class. Students should have some knowledge of some kind of 3D modeling, previous experience with Rhino and Grasshopper is helpful but not required.