Paper Variations

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This project was a 3 week design-and-build installation conducted with the students of Feng Chia University in Taiwan.

The design emerged out of some earlier research we had conducted on phenomena of swarming and fish-schooling found in nature. What we found particularly fascinating about these phenomena was the research such Craig Reynolds' "Boid" software which is able to emulate these complex collective behaviors by assigning a very small number of simple rules (usually around 3-4 rules) to each of the individual members. From these simple rules, repeated in adjacency with their neighbors, complex patterns emerge.

A similar emergence of complexity from simple rules can be observed in the work of some artists. For example Sol Lewitt or John Cage whose artworks most often consist of a series of simple instructions to be carried out by assistants or performers. Despite the simplicity of the instructions --sometimes as little as one sentence or paragraph-- very rich and often surprising results can emerge.

With these two things in mind we wanted to devise an installation that could assemble complexity out of some very simple rules. In addition we were hoping that the process of assembly (following the instructions) would become a performance in itself. In addition, given the temporary nature of the exhibition and the theme of sustainability, an entirely recyclable material (paper) was chosen for exploration.

The final installation consists of only one paper module which is arrayed across the surface of a wall. Each module is connected to the wall at one point and then connected back to itself at varying positions. In all 11 of these positions were chosen. For each position the free edge of the module projects out from the wall a different amount, purely as a result of the paper's propensity to resist bending. This in effect gives 11 different modules from 1 flat piece of paper. Following a simple map which located the different positions the students arrayed these modules across the wall. In all assembly took just 8 hours.

The result is a field of simple modules which combine into a whole that is much more than the sum of its parts. With the changing light patterns in the daylit space a potentially almost infinite variability of light and shadow emerges. Despite the simplicity of the given instructions the overall effect does, in some way, "re-originate" (to use theorist Jeff Kipnis' term) some dynamic effects from nature, without succumbing to "bio-mimicry". Using means which could be described as architectural --the repetition of relatively simple elements over a large field-- novel architectural effects are produced through the manipulation of light and shadow.

Some observations made by the students or visitors to the exhibition were: that from one angle it appears like the turning of a school of fish; but from the other it has the fluffiness of clouds and from yet another it was like wind blowing through feathers.

paper variations

Location: Taichung, Taiwan
Area: 30 m2
Client: Taichung Developers Association
Contract Value: NT$300,000
Status: Built

Today parametric design combined with information management using BIM give the possibility of increasingly sophisticated building envelopes. But these tools must be used to interact with the light and air of our natural environment to produce new and equally innovative effects. This installation takes these emerging possibilities as the starting point for a research project which explores material, tectonics, light and variability in a cohesive whole. Given the temporary nature of the exhibition and the theme of sustainability, an entirely recyclable material (paper) was chosen for exploration. Using **only one paper module** which is connected to itself at varying points an almost infinite potential of variability of light and shadow emerges. These modules are arrayed across a surface combining into a whole which is much more than the sum of its (very simple) parts. The overall effect re-originates some dynamic effects from nature (from one angle the fluffiness of clouds from the other the turning of a school of fish) without succumbing to "bio-mimicry". Using architectural means -the repetition of relatively simple elements over a large and varying field novel architectural effects are produced: the manipulation of light and shadow.

fabrication steps

module shadow studies