

CourseNo: ARCHA4787_001_2013_1
Meeting Location: AVERY HALL 504
Meeting Time: R 03:00P-05:00P

Instructor Information:
[Amanda J Parkes](#)

Beyond the outlet: Bio Energy & Land Use

Columbia GSAPP Visual Studies Spring 2012

Thursdays 3-5PM, Avery 504

Instructor: Amanda Parkes, PhD

Contemporary society has evolved around an energy paradigm of large scale centralized systems, often times away from public view, in which our personal understanding and interaction need only extend to the wall outlet. With the global energy crisis, however, our paradigms of energy production are being reevaluated at every scale within our culture and as designers, our awareness and abilities need to evolve to fit a new energy landscape ripe with opportunities. Moreover, in the increasingly mobile nature of contemporary life, our 'environments' transcend structural spaces but with our digital devices we remain tied to the grid, and we are only as mobile as the length of our battery life.

This course explores new ideas in energy production and capture through biological systems based on the interaction between biological organisms and the natural landscape. Approaching energy must begin with an investigation of materials, as all materials represent an embedded either naturally, through phase change, (electrical, magnetic, mechanical) or artificially, in the process energy of production or transportation. Additionally, new methods in growth and aggregation which use living organisms in the production of materials present possibilities for new biomaterials which can be immediately intertwined with natural cycles of waste and renewal.

In energy production, we will focus on energy systems derived from the natural cycle of growth and decay within the landscape including algae based biofuels, microbial fuel cells, earth batteries, bio batteries, landfill methane gas, and bio gas from anerobic fermentation. We will conclude with an investigation into future thinking ideas for energy production using synthetic biology, for example, the tissue engineering of electric eel cells for voltage. The project concepts generated will explore how we can tap into or optimize existing natural infrastructures and biological processes and how these approaches can be combined and appropriated into innovative models for sustainable energy from a personal to a global scale within our built environment and contemporary lifestyle.

The course will feature a visit to Olana in Hudson, the estate of Frederick Church, Hudson River School Painter, as a possible site of installation for new alternative bioenergy technologies.

Structure:

The course will be a mixture of technical studio design work, combined with lectures, readings, discussion and critique. Students will be introduced to new materials, and expected to produce physical prototypes and future thinking concepts for assignments. Through a combination of producing objects and engaging in critical reflection, students will be encouraged to develop a design practice which innovates technically in process and materials as well as situates their work in the context of contemporary culture and technology.