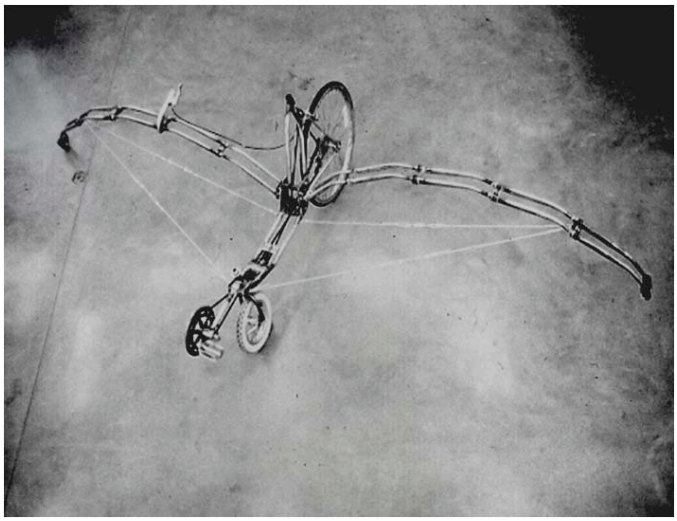
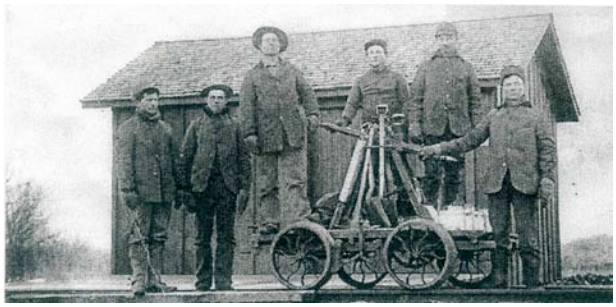
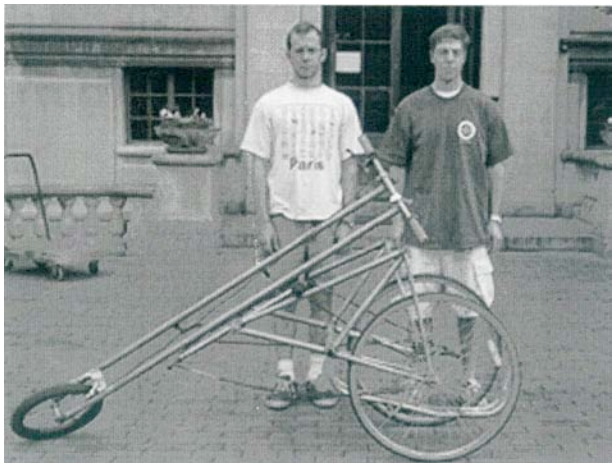


Students: Kara Meadow and Susie Robison

Course Title: *Cycles* (working title)
Course Level: 400 level / Credit Hours: 3cr. / Proposed contact hours: 4
Term: Spring 2012 / Potentially Summer 2012

Lindsey Stouffer, Senior Lecturer of Art and Architecture stouffer@samfox.wustl.edu





Students: Ezra Groskin and Andrew Buhayar

SFSDVA Commons Course Proposal
Course Title: ***Cycle***
Lindsey Stouffer, Senior Lecturer of Art and Architecture

Course Description

Students in this course design and build human powered vehicles from discarded bicycles. Course collaborates with student mechanics involved with Bicycle Works [Bworks]. Students from BWorks work collaboratively in teams with Washington University Students to design and build the work.

Objectives:
Students learn to design and build with metal tubing
Students learn to organize and design with mechanical elements of the cycle
Students develop skills of problem definition and design development
Students develop skills of collaboration

Teenagers from Bicycle Works provided with an opportunity to work in the University Setting. One of the goals of Bicycle Works is to work with teens to develop skills for learning, educational opportunities, and goal setting. By working in the university with university students it makes that experience real and imaginable. In the past they have taught the university students about bike mechanics and consulted with them on designs. I propose the deepening of this relationship into teams that include

See: www.stlbicycleworks.org

Course Narrative / Background
I have previously taught this course as both a required course for sophomore students and as a 40 level elective. As an elective course, it was titled "Machines of Movement". Structured after *Furniture Design* Arch405A, it was offered 2 days per week, for 2 hours per meeting / 3Cr.

Timing is important since the Bicycle Works students are enrolled in school and have limited means of transportation. Consequently late afternoon is optimal – summer might also be a good option. The course needs to consider season / weather since outdoor product testing is essential.

This course will require development and coordination in order to make the collaboration between Bicycle Works and Washington University as effective as possible. Careful planning is essential to prevent the collaboration from becoming superficial and a burden on the Bworks students rather than an important opportunity.

If the course is selected, I will seek funding from the Danforth Foundation (or other funding agency) to help provide transportation between BWorks and Washington Univ. and kits for each group. Kits would include an inexpensive digital camera, sketchbooks, money in Paper-Cut accounts, safety goggles, tape measures, and hearing protection. Our university students are normally expected to provide their own supplies, but we would need to supply the BWorks students with their materials.


ST. LOUIS POST-DISPATCH METRO TUESDAY, NOVEMBER 23, 1999

MetroWatch

Going out for a spin on a class project

JERRY NAUMEISTER JR./POST-DISPATCH

DeVaun Sanders, a sophomore at Washington University, test drives a cycle Monday that he and classmates Ian Withers and Eric Whitney designed for an architecture class. The assignment by their professor, Lindsey Stouffer, was to design a human-powered vehicle that is influenced by the motion of an animal.The students said the swaying motion of a praying mantis inspired them and that is incorporated into the vehicle in the back wheels, which steer the vehicle by being moved in either direction.

Caption reads:
DeVaun Sanders, a sophomore at Washington University, test drives a cycle Monday that he and classmates Ian Withers and Eric Whitney designed for an architecture class. The assignment by their professor, Lindsey Stouffer, was to design a human powered vehicle that is influenced by the motion of an animal. The students said that the swaying motion of a praying mantis inspired them and that is incorporated into the vehicle in the back wheels, which steer the vehicle by being moved in either direction.

Clarification: The movement is created by the centrally located headset / steering column under the seat back.

SFSDVA Commons Course Proposal
Course Title: ***Cycle***
Lindsey Stouffer, Senior Lecturer of Art and Architecture

Bike designed to move like an eagle riding air currents. Students observed that the arcs of the eagle's movements were similar to compass points. Bike turns when rider leans to one side activating the compass point at the tip of the wing. Wings made with bike forks, tension cables, and a roller blade wheel at the tip.

Course Schedule

Weeks 1 - 3: **Introductions**
Meet and greet. Bicycle Works Tour / University Tour / Form Teams
Introduce Design Problem and discuss collaborative working skills
Introduce a history of bicycle design and its role in culture

Bicycle Mechanics
Take apart and reassemble bikes / document in photo and drawings
Learn the names of the parts of the bicycle / tricycle / unicycle and on.
Test drive bicycles and describe the effect of various frame designs.

Weeks 5 - 7: **Metal joinery and fabrication: cut, clamp, and connect**
Skills: Hack saw, metal band saw, cutting lug joints
Skills: Clamping / creating jigs / mechanical connections
Skills: Brazing, MIG, and TIG welding

Week 8 – 9: **Design and model**
Drawings, digital models, and hand built models / Collect materials

Week 10 – 15: **Fabrication**

Week 15: **Review / Party / Films of process**
Student teams submit a process portfolio that documents the course and their design. Submission includes a disc of digital images (one copy for each team member + one copy to school)

Sample Design Problems: three of the most successful design problems that I have worked with:

1. **Vehicle to move like a selected animal**: Students study of animal locomotion by examining their skeletal structure, movements, and habitat. Frame designs are inspired by this research.

2. **Site-specific vehicle**: Students study a site, looking at its terrain and the way it is inhabited in order to determine a pace that one would move through it. Students establish a posture of/for place. Students research cycle frames; since bikes are task / terrain specific (ie mountain bikes, racing, cyclocross etc…) there is a natural relationship between site and vehicle. Designs are hyper specific. Sites have included Brooking Stairs and the large tree to the West of Givens.

3. **Vehicle movement inspired by contemporary choreographer:** Inspiration for this assignment is from the awareness architectural design bears a relationship to dance. In dance, naturally the use of space is so clearly considered as is pace and specific types of movement (ie Twyla Tharp: percussive, vibratory, etc…). Students study contemporary choreography, the way space is used, and types of movement. This is combined with the study of the way cycles move as a consequence of frame geometry and mechanics. Solutions bring these together in the development of a design.